Empowered lives.
Resilient nations.

Improving Environmental Monitoring in the Black Sea (EMBLAS)

1st Progress Report - Annexes

ENPI/2012/293-589

1 January – 31 December 2013

December 31, 2013

Content

[1] Other Chapters of the EMBLAS Diagnostic are also ready in first draft, the only one which is not yet well developed is the Chapter on Data availability. And the Final Chapter on Conclusions/Recommendations needs to be compiled based on what was concluded and recommended in all chapters of the report in separate.

Annex 1: Questionnaire Part I (English and Russian version)

EC/UNDP Black Sea Project:

"Improving Environmental Monitoring in the Black Sea", Acronym: EMBLAS

Diagnostic Report

guiding improvements in the Black Sea monitoring/data collection and data management

Questionnaire Part I

The Questionnaire

The purpose of this questionnaire, prepared in the frame of the EC/UNDP Project EMBLAS[1], is to identify your organization's observational and informational capacity in the area of **Black Sea-related** monitoring (drivers, pressures, state, impacts, vulnerability/sensitivity, response, and recovery), data/information collection and their management, and consequent assessments. Based on your feedback, the following questions shall be answered in a special report, named Diagnostic Report:

1. What is the legislation/policy framework of the Black Sea-related monitoring and/or data/information collection in your country and what kind of change/advancement in national legislation/policy shall be recommended to ensure sustainability of a complex monitoring/data collection in support of ecosystem-based management of the Black Sea environment protection in your country?
2. What is the institutional framework of monitoring and/or data/information collection in your country and what changes in it shall be proposed to improve the Black Sea environment protection in your country[2]?
3. What is the present Black Sea monitoring like and for the next 5-6 years what kind of new parameters and methods shall be seen feasible to incorporate in the existing monitoring programmes? And what kind of equipment shall be needed for that?
4. What is the level of operational monitoring development and what shall we recommend ensuring its wider integration into the routine monitoring programmes related to the Black Sea in your country?
5. What are the Black Sea data availability and accessibility in your country and what shall we recommend for improving them both?
6. What we would propose to integrate the monitoring of pressures (anthropogenic and climate-related) with that of impacts/vulnerability observed in the Black Sea?
7. What kinds of data storage and management tools are presently used in your country and what improvements we should suggest?
8. Are the Black Sea-related data available in your country suitable to calculate indicators and sufficient to make knowledge-based decisions on Black Sea environment protection?
9. What is the system of Quality Assurance and Quality Control (QA/QC) presently used in the field of monitoring and data management, and what improvements we should suggest?
10. What is the equipment availability and what shall we recommend to more efficiently using the available infrastructure, equipment and vessels?
11. What Black Sea assessments are produced, which tools are used, and what shall we recommend to harmonise and improve them in your country and in the Black Sea region?
12. What are the capacity building needs in your country which would improve the Black Sea environment protection and specifically the related monitoring and data/information collection and their management?
13. How do you identify/classify water quality and good environmental status, in general? What shall we recommend to harmonise the approaches?
14. What are the harmonization needs in the field of the Black Sea monitoring/data collection?

As the questions to answer are many, the Questionnaire is split into two parts, further below is **Part I**, which deals with the state of the Black Sea monitoring/data collection, data management, classifications and assessments, as well as with the relevant needs in capacity building. The **Part II** of the Questionnaire will be distributed in September 2013, it will deal with data availability, equipment needs and priorities in harmonization.

[1] EMBLAS is a two-year project (2013-2014), financed by the European Commission (EC, http://ec.europa.eu/europeaid/index_en.htm) and by the United Nations Environment Programme (UNDP, http://www.undp.org/content/undp/en/home.html), aiming at improving of Black Sea monitoring and data management so that to ensure knowledge-based decision-making and adaptive management of the Black Sea environment protection. EMBLAS supports the Commission on the Protection of the Black Sea Against Pollution (Bucharest Convention, www.blacksea-commission.org) and three of the contracting parties to the Bucharest Convention (Georgia, Russian Federation and Ukraine) to achieve important management targets, specified in the regional Black Sea Strategic Action Plan (http://www.blacksea-commission.org/_bssap2009.asp).

[2] Among others to ensure a complex monitoring implementation in the most optimal way (cost-efficient and time-saving) in your country, for instance.

I. General

Name of organization	Postal address/webpage	Contact person (name, address, tel/fax, e-mail, skype)	Name of the person who fills in the Questionnaire and contact details

What type is your organization?
☐ Governmental ☐ NGO ☐ Private ☐ other (please specify here)
Please specify your organization's field:
☐ Monitoring ☐ Environment data collection ☐ Socio-economy data collection ☐ Environment protection management ☐ other (please specify here)

Is your organization part of a national monitoring system? ☐ Yes ☐ No
If Yes, please specify/describe.
What other national and international networks related to the Black Sea monitoring/data collection is your organization part of?

***Note**: Please press the enter key in the field above in order to add more lines*.

Is your organization part of a national data collection system? ☐ Yes ☐ No
If Yes, please specify/describe.
Is your organization part of SeaDataNet? ☐ Yes ☐ No
What other national and international networks related to data collection is your organization part of?

***Note**: Please press the enter key in the field above in order to add more lines*.

Is your organization affiliated to a Ministry, Academy or other organization? ☐ Yes ☐ No
If Yes, please specify.
Specify relevance of your monitoring/data collection to other human activities beyond environmental sphere (please click on YES or NO in the appropriate cells of the table).

***Note**: this is to identify which are the main application areas of your organization data/assessments.*

Human activity	Yes/No
Public health	☐ Yes ☐ No
Coastal and urban development	☐ Yes ☐ No
Marine and riverine traffic	☐ Yes ☐ No
Fishery and aquaculture	☐ Yes ☐ No
Tourism and recreation	☐ Yes ☐ No
Offshore gas and oil exploitation	☐ Yes ☐ No
Agriculture and farming	☐ Yes ☐ No
Various branches of industry	☐ Yes ☐ No
Military activities	☐ Yes ☐ No
Other activities (please specify) (*Note: Please press the enter key in the field above in order to add more lines*)	

II. Black Sea Monitoring and data collection

1. Legal/policy instruments and institutional framework (***Note**: please add to the Tables as many lines as you need*)

A. *International environmental legislation (conventions, multi- and bilateral agreements relevant to the monitoring/data collection performed by your organization)*

N	Title of Convention or Agreement	Coordinating Institution in your country, webpage	Contact person/Focal point (name, contact details)	Is your organization involved in implementation (Y/N)

B. *National environmental legislation (please specify laws, decrees, other legal acts related to the monitoring/data collection performed by your organization; print dates when these instruments have been entered into force to trace the progress during the last years)*

N	Title of National Legal Act	dd.mm.yy	Is your organization involved in implementation (Y/N)

C. Administrative instruments (*statements, resolutions, ministerial regulations, national standards, guidelines, scientific programmes, etc. related to the monitoring/data collection performed by your organization, including sub-national level instruments). Please, where possible give dates of publishing and links.*

D. Financing institutions (*those which provide the budget for the data collection carried out by your organization and approve the programs you work under*)

Name of organization	Postal address/webpage	Contact person (address, tel/fax, e-mail, skype)	Level of the organization[a]

[a] ***Note:*** Level means: central, local, own resources, etc. *If the responsibility of the organization is not environment protection, please specify it also.*

E. Please specify what gaps you see in the legislation/policy and institutional framework which prevent you to sustain and/or further develop the monitoring/data collection conducted by your organization. List the documents which you would recommend for revision or what new policies should be developed?

F. Please specify shortly or demonstrate in a chart the changes you would recommend in the institutional framework of Black Sea-related monitoring/data collection.

2. Type of monitoring implemented by your organization, stations, parameters, frequency

Type of monitoring [a]	Is the monitoring regular (Yes/No)[3]	Geographical scope	Time period (years from-to)	Frequency of sampling per year (from-to)	Number of stations per year(from-to)	Number of parameters per sampling campaign (from-to)

[a] ***Note:*** *e.g., Environmental complex monitoring; Water quality; Ecotoxicological monitoring; Surveillance monitoring[4]; Compliance monitoring[5]; Operational monitoring (based on real-time observations[6]), Fisheries surveys (and collation of fisheries data), Biodiversity monitoring, Seabirds Monitoring, Habitats Monitoring, etc.*

Please provide:

A. Map of sampling stations (with appropriate resolution) and list with coordinates in the Table below"

Name of station (or code)	Coordinates	Area/name of transect [a]	Type of station [b]
	Latitude: 45.1333 Longitude: 29. 2765		

[a] ***Note:*** *if the station belongs to a transect.*

[b] ***Note:*** *transitional, coastal or marine waters, if such a specification exists in your organization; please indicate which stations are Reference stations.*

[3] If No, please explain beneath the Table the reasons and the mode of the monitoring implementation.

[4] **Surveillance monitoring** is usually the environment monitoring for trends (complex and routine monitoring);

[5] **Compliance monitoring** is the one checking the relevance of water quality and level of discharges against certain norms (governmentally established);

[6] **Operational monitoring** - real time (satellites, radars, any automatic devices working for real-time collection of data).

B. List of parameters[7] (of biodiversity, eutrophication, contamination, commercial fish, marine litter, underwater noise, etc.) with frequency of observations.

Parameter	Analytical Method[8]	Frequency of sampling per month/per year				
		In Water (specify Surface/Depth/Layer)	On bottom	In Sediment	In Biota	On-Coast [a]

[a] ***Note:*** *on coast means: monitoring of land-based point and diffuse sources (e.g. discharges from waste water treatment plants, rivers, etc.).*

C. Does your monitoring provide for long-term trends? If yes, please specify for which parameters trends are regularly updated (up to-date).

Parameter	Trend (Yes/No)				
	In Water (specify Surface/Depth/Layer)	On bottom	In Sediment	In Biota	On-Coast [a]

[a] ***Note:*** *on coast means: monitoring of land-based point and diffuse sources (e.g. discharges from waste water treatment plants, rivers, etc.).*

D. Please specify what parameters are covered by real-time data and what equipment is used for each parameter.

Parameter	Equipment	Period (since when or from-to)

E. Please specify major gaps in the monitoring implemented by your organization.

3. Procedures of QA/QC in the field and in laboratory

A. Please provide References of major guiding documents and where possible internet links.

B. Please list proficiency tests/exercises which your organization takes part in and their frequency.

C. Please specify the needs of your organization to improve QA/QC in the field and in laboratory.

[7] The vocabulary of SeaDataNet shall be used (http://seadatanet.maris2.nl/v_bodc_vocab/welcome.aspx)
[8] Please give reference, no description of methods is required.

4. Reporting of Black Sea data (to whom, kind of formats used)

Note: If the data are reported (not the assessments but raw data and/or indicators), please specify to whom.

Name of institution to which your organization reports	Postal address or webpage and contact person	Frequency	Related Convention and/or National Legal Act (if any)	What data[9]	Link to the Data Base where the data are stored[10]	What the data are used for?

Note: *Please provide links to formats used (if any), (e.g. the BSC, SeaDataNet, etc. formats are available online) or the Formats themselves where possible (as Annex to this Questionnaire).*

5. Please recommend how to improve the use of data collected by your organization

6. On-going projects (national and international) with Black Sea monitoring/data collection component in which your organization takes part (***Note****: the projects which are currently implemented regardless the starting date*)

Please provide the name of the project and link to its website, duration, very brief annotation for the national projects (objectives of the project) and for each project specify:

A. Cruises planned, timing, stations, parameters (for each project please describe the cruises planned)

Name of the project/Cruise planned in the project.	Timing	Geographical coverage	Number of Stations	Parameters (list them one after another)

B. Data collected

Name of the Project	Time period for which the data are collected	Geographical coverage	Parameters (list them one after another)

C. Reporting to the projects (what data and how the data are reported, where stored) –short information; if there are project databases, please specify and give link.

Name of the project	Raw Data (Y/N)	Indicators or other data products (Y/N)	Data Base (Name if any and Link)	List of parameters stored in the project data base

[9] E.g. Air pollution, Biodiversity, Land-based sources of pollution, Chemistry, Biology, etc.
[10] If such data base is not existent, then please provide details on how the data are stored.

III. Data management, data products, QC procedures applied, classifications, assessments

1. Please provide information on availability of Black Sea data base(s) in your organization

***Note**: if you have more than one data base, please insert rows and describe each of them in separate.*

Name of the data base (if any)	Link (if any) [a]	Year of launch [b]	Type of data base [c]	Is the data base linked to models? [d]	Terms of access

[a] ***Note** – if the data base is not on-line, please specify it and provide brief information on how the data base is replenished.*

[b] ***Note** – when the data base became operational? If the data are kept in Excel sheets or similar (not organised in a data base through specialised software), please specify the first year when an initial data have been stored electronically (e.g. not on hard copy in Protocols only).*

[c] ***Note** – specify how the data base is organised (Excel, DBF, ACCESS, Microsoft SQL Server (2008-R2 or other), ORACLE, etc.)*

[d] ***Note** – if yes, please specify in separate what kind of models and what these models are used to simulate.*

A. Please list the parameters in the database.

B. Please describe how often the data base is replenished with data/information and how QC[11] is organised.

2. Black Sea data products

A. Please list what indicators are automatically calculated or produced with query in the data base (***Note**: not the initial data but the derivatives of them*).

Indicator (unit)	Regularly produced (Yes/No[12])	Statistical method applied (if any)	Type of representation (Data Product automatically delivered) [a]

[a] ***Note** – the indicator can be derived from the data base in Table and Figures, or distribution/classification (quality classes), maps/GIS.*

[11] E.g.: Is there automatic check for outliers in the database? Who is responsible for the quality of data in the database? What is the qualification of people replenishing the database with data/information – are they experts in the data they upload?

[12] If No, please specify the reason and frequency/period with which the indicator is available.

B. Please list what kind of statistical software/s is used in your organization. Which you would recommend to use?

C. Please list what kind of software/s is used in your organization to prepare data products. Which you would recommend to use?

3. QC (Quality assessment and Quality flagging) procedures (in data management (DQC)

A. Please provide References of major guiding documents in DQC used in your organization and where possible internet links.

B. Please specify the needs of your organization to improve QC in data management.

4. Please specify what are the major gaps in data management in your organization

5. Please specify what classification/s you use in your organization for water quality and good environmental status identification

***Note**: In case you have a developed or adopted methodology, please attach it as an Annex to this Questionnaire or give reference/link.*

6. Please list what kind of Black Sea-related assessments are regularly prepared by your organization

A. In case your organization participates in national reporting related to Conventions and/or national environmental legislation, please fill in the Table below. If not, please go to the next Table (Other reports).

Type of reporting[13] and Name of Report	Frequency and since when	Related Convention and or National Legal Act	Submitted to (Convention Secretariat, Ministry, authorities)	Where published (link, if any)

[13] National Reports, National statistics, Public information, etc.

B. Other reports

Name of assessment/Report	Frequency and since when	Assessment model (if any)[14]	To whom the report is delivered	Where published (link, if any)

7. Please specify what you would recommend to improve the assessments prepared by your organization

IV. Training

1. Please specify what kind of trainings is regularly conducted in your organization.

2. Please specify what trainings have been organised by your organization during the last 5 years.

3. Please specify what trainings have been attended by experts of your organization during the last 5 years (other than those specified above).

Name of training	Year	Organised by

4. Please specify what kind of trainings you would recommend to be organised to increase the monitoring (including QA/QC) and data management capacity in your organization.

Reminder: Part II of this Questionnaire will be distributed in September 2013. It will be in two different versions – one for the organizations dealing with Black Sea drivers and pressures monitoring/data collection, the other one for those which deal with state/impacts/recovery of the Black Sea.

[14] E.g. DPSIRR (drivers/pressures/state/impact/response/recovery) model, DPIVR (drivers/pressures/impact/vulnerability/response), etc.

EC/UNDP Black Sea Project:

"Improving Environmental Monitoring in the Black Sea", Acronym: EMBLAS

Диагностический отчет

для руководства улучшениями мониторинга Черного моря и управления данными

Анкета, Часть I

EC/UNDP Black Sea Project:

"Improving Environmental Monitoring in the Black Sea", Acronym: EMBLAS

Анкета

Настоящая анкета была подготовлена в рамках проекта Европейского Союза / Программы ООН по развитию (UNDP), носящего сокращенное название EMBLAS[1]. Цель этой анкеты состоит в том, чтобы определить информационные возможности Вашей организации по сбору и управлению информацией / данными, **которые относятся к Черному морю**, и выполнить соответствующую оценку. На основании полученных от вас заполненных анкет мы должны будем ответить в специальном документе, который называется «Диагностический отчет», на следующие вопросы:

1. Каковы законодательная база и политическая структура для сбора данных/информации о Черном море в Вашей стране; какого рода изменения / прогресс в этой структуре должен быть рекомендован для обеспечения устойчивого сбора данных/информации в поддержку управления охраной окружающей среды Черного моря в Вашей стране, основанного на экосистемном подходе?
2. Какова институциональная структура сбора данных/информации в Вашей стране, и какие изменения в ней должны быть предложены для улучшения охраны окружающей среды Черного моря в Вашей стране?
3. Каков нынешний мониторинг Черного моря и каким он будет на ближайшие 5-6 лет; какие новые параметры и методы будет разумным внедрить в существующие программы мониторинга? Какое оборудование для этого потребуется?
4. Каков уровень развития оперативного мониторинга и что мы должны рекомендовать для обеспечения его дальнейшей интеграции в программы текущего мониторинга, относящегося к Черному морю, в Вашей стране?
5. Каково наличие и доступность данных по Черному морю в Вашей стране, и что мы должны порекомендовать для улучшения и того, и другого?
6. Что нам следует предложить для интеграции мониторинга нагрузок (антропогенных и связанных с климатом) с мониторингом воздействий/уязвимости, наблюдаемых в Черном море?
7. Какие виды инструментов для хранения и управления данными используются в Вашей стране в настоящее время, и какие улучшения нам следует предложить?
8. Годятся ли данные о Черном море, имеющиеся в Вашей стране, для вычисления индикаторов, и достаточны ли они для того, чтобы принимать решения по вопросам охраны Черного моря, основанные на знаниях?
9. Какая система Обеспечения качества и Контроля качества (QA/QC) используется в настоящее время в области мониторинга и управления данными, и какие улучшения нам следует предложить?
10. Какова доступность оборудования, и что нам следует порекомендовать для более эффективного использования имеющихся инфраструктуры, оборудования и судов?
11. Какие оценки Черного моря выполняются, какие инструменты используются и что мы должны порекомендовать для улучшения и гармонизации оценок и инструментов в Вашей стране и в черноморском регионе?
12. Каковы потребности Вашей страны в наращивании возможностей так, чтобы такое наращивание возможностей улучшило охрану окружающей среды Черного моря и, в частности, связанные с этим сбор и управление данными/информацией?
13. Как Вы определяете/классифицируете качество воды и, в целом, хороший экологический статус? Что мы должны порекомендовать для гармонизации подходов?
14. Каковы потребности в гармонизации в сфере мониторинга/сбора данных по Черному морю?

Поскольку вопросов много, настоящая Анкета разделена на две части. Ниже представлена **Часть I**, касающаяся состояния мониторинга Черного моря и сбора данных о Черном море, классификаций и оценок, а также соответствующих потребностей в наращивании возможностей. **Часть II** этой Анкеты будет распространена в сентябре 2013 и будет касаться наличия данных, потребностей в оборудовании и приоритетов в гармонизации.

[1] EMBLAS – двухлетний проект (2013-2014), финансируется Европейской Комиссией (EC, http://ec.europa.eu/europeaid/index_en.htm) и Программой ООН по окружающей среде (UNDP, http://www.undp.org/content/undp/en/home.html); он направлен на улучшение мониторинга Черного моря и управления данными с тем, чтобы обеспечить принятие решений, основанное на знаниях, что будет способствовать адаптивному управлению охраной окружающей среды Черного моря. EMBLAS оказывает поддержку Комиссии по защите Черного моря от загрязнения (Бухарестская Конвенция, www.blacksea-commission.org) и трем из стран-участниц Бухарестской Конвенции (Грузии, Российской Федерации и Украине) для достижения важных целей управления (менеджмента), указанных в региональном Стратегическом Плане действий по Черному морю (http://www.blacksea-commission.org/_bssap2009.asp).

EC/UNDP Black Sea Project:

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I. Общая информация

Наименование организации	Почтовый адрес/веб-сайт	Контактное лицо (имя, адрес, тел./факс, e-mail, skype)	Имя лица, заполняющего Анкету, и его контактные данные

Каков тип Вашей организации?

☐ Государственная ☐ Негосударственная ☐ Частная ☐ Другая (просьба указать здесь)

Какова сфера деятельности Вашей организации:

☐ Мониторинг ☐ Сбор данных об окружающей среде ☐ Сбор социально-экономических данных

☐ Управление охраной окружающей среды ☐ другая (просьба указать здесь)

Является ли Ваша организация частью национальной системы мониторинга? ☐ Да ☐ Нет

Если «да», просьба уточнить/описать.

В какие еще национальные или международные сети, связанные с мониторингом, входит Ваша организация?

***Примечание**: чтобы добавить дополнительные строки для ответа на предыдущий вопрос, нажмите «Enter».*

Является ли Ваша организация частью какой-либо национальной системы сбора данных?

☐ Да ☐ Нет

Если «да», просьба уточнить/описать.

Входит ли Ваша организация в SeaDataNet? ☐ Да ☐ Нет

В какие еще национальные и международные сети, связанные со сбором данных, входит Ваша организация?

***Примечание**: чтобы добавить дополнительные строки для ответа на предыдущий вопрос, нажмите «Enter».*

Относится ли Ваша организация к какому-либо министерству, Академии или другой организации?

☐ Да ☐ Нет

Если «да», просьба уточнить.

Укажите, относятся ли собираемые вами данные к какой-либо еще сфере человеческой деятельности, кроме охраны окружающей среды (просьба указать «да» или «нет» в соответствующих ячейках в таблице).

***Примечание**: здесь указывается, каковы главные сферы применения данных/оценок Вашей организации.*

Виды деятельности	Да/Нет	
Здравоохранение	☐ Да	☐ Нет
Развитие прибрежных зон и градостроение	☐ Да	☐ Нет
Морские и речные перевозки	☐ Да	☐ Нет
Рыбное хозяйство и аквакультура	☐ Да	☐ Нет
Туризм и рекреация	☐ Да	☐ Нет
Разработка морских месторождений нефти и газа	☐ Да	☐ Нет
Сельское хозяйство и фермерство	☐ Да	☐ Нет
Различные отрасли промышленности	☐ Да	☐ Нет
Деятельность вооруженных сил	☐ Да	☐ Нет
Другая деятельность (просьба указать) *Примечание: чтобы добавить дополнительные строки нажмите «Enter».*		

II. Мониторинг Черного моря и сбор данных

1. Юридические/политические инструменты и институциональная структура (***Примечание**: просьба добавлять в **таблицы** столько строк, сколько вам потребуется*)

A. *Международное природоохранное законодательство (конвенции, много- и двусторонние соглашения, имеющие отношение к мониторингу/сбору данных Вашей организацией)*

N	Название Конвенции или соглашения	Координирующее учреждение в вашей стране, веб-сайт	Контактное лицо/Фокал-поинт (Имя, контактная информация)	Участвует ли Ваша организация в выполнении (Да/Нет)

B. *Национальное природоохранное законодательство (просьба указать законы, указы, другие законодательные акты, имеющие отношение к мониторингу/сбору данных Вашей организацией; укажите даты вступления в силу этих инструментов для того, чтобы отследить прогресс, достигнутый за последние годы)*

N	Название национального законодательного акта	дд.мм.гг	Участвует ли Ваша организация во внедрении (Да/Нет)

C. Административные инструменты (*постановления, резолюции, положения министерства, национальные стандарты, руководства, научные программы и т.д., связанные с мониторингом/ сбором данных Вашей организацией, включая инструменты суб-национального уровня). Где возможно, просьба приводить даты публикации и ссылки.*

D. Финансирующие учреждения (*предоставляющие финансирование для сбора данных, выполняемого Вашей организацией, и утверждающие программы, по которым Вы работаете*)

Название организации	Почтовый адрес/веб-сайт	Контактное лицо (адрес, тел./факс, e-mail, skype)	Уровень организации[a]

[a] ***Примечание:*** Уровень означает: центральные, местные, собственные ресурсы и т.д. *Если организация не отвечает за охрану окружающей среды, просьба это указать.*

E. Просьба указать те пробелы, которые Вы видите в законодательстве/политике и институциональной структуре, и которые препятствуют устойчивости и дальнейшему развитию мониторинга/сбора данных, проводимого Вашей организацией. Перечислите документы, которые Вы бы рекомендовали пересмотреть, укажите, какие новые политики должны быть разработаны?

F. Просьба кратко указать или продемонстрировать на схеме те изменения, которые Вы бы порекомендовали в институциональной структуре мониторинга/сбора данных, связанных с Черным морем.

2. Тип мониторинга, который ведет Ваша организация, станции, параметры, частота

Тип монито-ринга [a]	Регулярный ли мониторинг (Да/Нет)[2]	Географический охват	Временной период (годы с-по)	Частота отборов проб в год (с-по)	Число станций за год (с-по)	Число параметров за экспедицию (с-по)

[a] ***Примечание:*** *например, Комплексный мониторинг окружающей среды; Качество воды; Экотоксикологический мониторинг; Контрольный мониторинг[3]; Мониторинг соответствия[4]; Оперативный мониторинг (на базе наблюдений в реальном времени[5]), ихтиологические исследования и сопоставление данных о рыболовстве),мониторинг биоразнообразия, мониторинг морских птиц, мониторинг местообитаний и т.д.*

Просьба предоставить:

A. Карту станций отбора проб (в соответствующем разрешении) и список координат в нижеприведенной таблице"

Название станции (или код)	Координаты	Район/название разреза [a]	Тип станции [b]
	Долгота: 45.1333 Широта: 29. 2765		

[a] ***Примечание:*** *в случае, если станция относится к разрезу.*

[b] ***Примечание:*** *переходные, прибрежные или морские воды, если в Вашей организации существуют такие характеристики; просьба указать, какие станции являются Эталонными.*

[2] Если «Нет», просьба объяснить после таблицы причины, а также модель выполнения мониторинга.

[3] **Контрольный мониторинг** – это обычно мониторинг окружающей среды для выявления трендов (комплексный и текущий мониторинг);

[4] **Мониторинг соответствия** – это мониторинг, проверяющий соответствие качества воды и уровня сбросов определенным нормам (установленным на государственном уровне);

[5] **Оперативный мониторинг** – мониторинг в режиме реального времени (с использованием спутников, радаров, любого автоматического оборудования для сбора данных в режиме реального времени).

B. Перечень параметров[6] (биоразнообразия, эвтрофикации, загрязнения, коммерческих видов рыб, морского мусора, подводного шума и т.д.) с частотой наблюдений.

Параметр	Аналитический метод[7]	Частота отборов в месяц/в год				
		Вода (указать Поверхность/глубина/слой)	Дно	Донные отложения	Биота	Береговые [a]

[a] ***Примечание:*** *береговые – означает мониторинг береговых точечных или пространственно-распределенных (диффузных) источников (например, сбросов с очистных сооружений, рек и т.д.)*

C. Предусматривает ли Ваш мониторинг долговременные тренды? Если да, просьба указать, по каким параметрам тренды регулярно обновляются (в настоящее время).

Параметр	Тренд (Да/Нет)				
	Вода (указать Поверхность/Глубина/Слой)	Дно	Донные отложения	Биота	Береговые [a]

[a] ***Примечание:*** *береговые – означает мониторинг береговых точечных или пространственно-распределенных (диффузных) источников (например, сбросов с очистных сооружений, рек и т.д.)*

D. Просьба указать, какие параметры охватываются данными в режиме реального времени, и какое оборудование применяется для каждого из параметров.

Параметр	Оборудование	Период (с какого времени или с - до)

E. Просьба указать главные пробелы в мониторинге, который ведет Ваша организация.

3. Процедуры Оценки качества /Контроля качества (QA/QC) в полевых и лабораторных условиях

A. Просьба предоставить ссылки на главные руководящие документы и, где возможно, интернет-ссылки.

B. Просьба перечислить проверки квалификации/мероприятия (сличения, интеркалибрации и т.д.), в которых принимает участие Ваша организация, и частоту их проведения.

[6] Следует использовать перечень SeaDataNet (http://seadatanet.maris2.nl/v_bodc_vocab/welcome.aspx)
[7] Просьба приводить ссылки, а не описания методик.

C. Просьба указать, каковы потребности Вашей организации в улучшении QA/QC в полевых и лабораторных условиях.

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4. Отчетность о данных по Черному морю (перед кем вы отчитываетесь, какие форматы используются)

Примечание: Если вы передаете данные (не оценки, а первичные данные и/или индикаторы), пожалуйста, укажите, кому.

Название учреждения, перед которым отчитывается ваша организация	**Почтовый адрес или веб-сайт и контактное лицо**	**Частота**	**Соответствующая Конвенция и/или национальный законодательный акт (если такой имеется)**	**Какие данные[8]**	**Ссылки на Базу Данных, в которой эти данные хранятся[9]**	**Для чего эти данные используются?**

Примечание: *Просьба указать ссылки на форматы, которые Вы используете, если таковые имеются (например, форматы Черноморской Комиссии (BSC), SeaDataNet и т.д. доступны онлайн), или привести сами форматы там, где это возможно (как Приложение к Анкете).*

5. Просьба дать рекомендации, как улучшить использование данных, собранных Вашей организацией

6. Проекты, выполняющиеся в настоящее время (национальные и международные), содержащие черноморский компонент, в которых Ваша организация принимает участие (***Примечание****: проекты, которые выполняются сейчас, вне зависимости от даты начала*)

Просьба вместе с названием проекта указывать его веб-сайт, длительность, очень краткую аннотацию для национальных проектов (цели проекта), и для каждого проекта указывать:

A. Запланированные исследовательские рейсы, расписание, станции, параметры (просьба описать запланированные исследовательские рейсы по каждому проекту)

Название проекта/Рейсы, запланированные в проекте.	**Расписание**	**Географический охват**	**Число станций**	**Параметры (перечислить по порядку)**

[8] Например, Загрязнение воздуха, Биоразнообразие, Береговые источники загрязнения, Химия, Биология и т.д.
[9] Если такой базы данных не существует, просьба сообщить детали о том, как хранятся эти данные.

B. Собранные данные

Название проекта	Период, в течение которого ведется сбор данных	Географический охват	Параметры (перечислить по порядку)

C. Отчетность перед проектом (какие данные, и как Вы отчитываетесь о данных, где храните их) – краткая информация; если есть база данных проекта, просьба указать и дать ссылку.

Название проекта	Первичные данные (да/нет)	Индикаторы или другие результаты обработки данных (да/нет)	База данных (название, если есть, и ссылка)	Список параметров, хранящихся в базе данных проекта

III. Управление данными, устройства обработки и передачи данных, применяемые процедуры контроля качества (QC), классификации, оценки

1. Просьба предоставить информацию о наличии баз(ы) данных по Черному морю в Вашей организации

***Примечание**: если у Вас более чем одна база данных, просьба добавить для описания каждой отдельную строку.*

Название базы данных (если есть)	Ссылка (если есть) [a]	Год запуска [b]	Тип базы данных [c]	Связана ли база данных с моделями? [d]	Условия доступа

[a] ***Примечание** – если база данных не on-line, просьба указать это и дать краткую информацию о том, как эта база данных пополняется.*

[b] ***Примечание** – когда эта база данных заработала? Если данные хранятся в таблицах Excel или подобным образом (не организованы в базу данных при помощи специальных программ), просьба указать, в каком году первоначальные данные начали хранить в электронном виде (например, не только в виде жесткой копии Протоколов).*

[c] ***Примечание** – укажите, как организована база данных (Excel, DBF, ACCESS, Microsoft SQL Server (2008-R2 или другое), ORACLE и т.д.)*

[d] ***Примечание** – если да, просьба отдельно указать, какие виды моделей и для моделирования чего именно они используются.*

A. Просьба перечислить параметры в базе данных.

B. Просьба описать, как часто база данных пополняется данными/информацией и как организован Контроль качества (QC)[10] .

2. Результаты обработки данных по Черному морю

A. Просьба указать, какие показатели (индикаторы) рассчитываются автоматически в базе данных или предоставляются базой данных по запросу (***Примечание**: не первичные данные, а их производные*).

Индикаторы (единицы)	**Рассчитывается регулярно (Да/Нет[11])**	**Используемый статистический метод (если есть)**	**Тип представления (автоматически выдаваемый результат обработки данных)** [a]

[a] ***Примечание** – индикатор может выводиться из базы данных в таблицах и цифрах или распределения/классификации (классов качества), карт/ГИС.*

B. Просьба перечислить статистическое программное обеспечение, которое используется в Вашей организации, и указать, что бы Вы рекомендовали использовать.

C. Просьба перечислить, какое программное обеспечение используется в Вашей организации для обработки данных. Что бы вы порекомендовали использовать?

3. Процедуры QC (ОЦЕНКИ И МАРКИРОВКИ КАЧЕСТВА) в управлении данными (DQC – контроль качества данных)

A. Просьба предоставить ссылки на главные руководящие документы по контролю качества данных (DQC), которые применяются в Вашей организации, и, где возможно, интернет - ссылки.

B. Просьба указать потребность Вашей организации по улучшению контроля качества в управлении данными.

4. Просьба указать главные пробелы в управлении данными у Вашей организации

[10] Например, имеется ли в базе данных автоматическая проверка выпадающих значений? Кто отвечает за качество данных в базе? Какова квалификация людей, вносящих в базу данные и информацию – являются ли они экспертами по тем данным, которые вносят?

[11] Если «нет», просьба указать причину и частоту / период, с которым этот индикатор доступен.

5. Просьба указать, какую классификацию Ваша организация применяет для качества воды и определения хорошего экологического статуса

***Примечание**: В случае если у вас есть разработанная или принятая методика, просьба приложить ее в качестве Приложения к настоящей Анкете или дать ссылку.*

6. Перечислите оценки, относящиеся к Черному морю, которые регулярно делает Ваша организация

A. В случае, если Ваша организация принимает участие в подготовке национальной отчетности по Конвенциям и/или национальному природоохранному законодательству, просьба заполнит Таблицу ниже. Если нет, переходите к следующей Таблице (Другие отчеты).

Тип отчетности[12] и название отчета	**Как часто и с каких пор выполняется**	**Соответствующая Конвенция и/или Национальный законодательный акт**	**Кому направляется (в секретариат конвенции, должностным лицам в министерстве)**	**Где публикуется (если есть, ссылка)**

B. Другие отчеты

Название оценки/отчета	**Как часто и с каких пор выполняется**	**Модель оценки (если есть)[13]**	**Кому направляется отчет**	**Где публикуется (если есть, привести ссылку)**

7. Просьба указать, что бы вы рекомендовали для улучшения оценок, которые готовит Ваша организация

[12] Национальные отчеты, национальная статистика, информация для общественности и т.д.
[13] Например, модель DPSIRR (drivers/pressures/state/impact/response/recovery – движущие силы/нагрузки/состояние/воздействия/реакция/восстановление), модель DPIVR (drivers/pressures/impact/vulnerability/response – движущие силы/нагрузки/воздействия/уязвимость/реакция) и т.д.

IV. Тренинг

1. Просьба указать, какие виды тренингов регулярно проводятся в Вашей организации.

2. Просьба указать, какие тренинги были организованы Вашей организацией за последние 5 лет.

3. Просьба указать, на каких тренингах побывали эксперты из Вашей организации за последние 5 лет (кроме тех, что были упомянуты выше).

Название тренинга	Год	Кем организован

4. Просьба указать, какие виды тренингов вы бы рекомендовали организовать для укрепления возможностей мониторинга (в т.ч. QA/QC[14]) и управления данными в Вашей организации.

Памятка: Часть II настоящей Анкеты будет разослан в сентябре 2013. Она будет подготовлена в двух разных вариантах – один для тех организаций, которые занимаются мониторингом/сбором данных о факторах и нагрузках на Черное море, другой – для тех, кто занимается состоянием/воздействиями/восстановлением Черного моря.

[14] QA/QC – Оценка качества/контроль качества

Annex 2: Questionnaire Part II (English and Russian version)

EC/UNDP Black Sea Project:

"Improving Environmental Monitoring in the Black Sea", Acronym: EMBLAS

Diagnostic Report

guiding improvements in the Black Sea monitoring/data collection and data management

Questionnaire Part II

EMBLAS
Environmental Monitoring in the Black sea

The Questionnaire

You have received already **Part I** of this Questionnaire[1], where the following questions were asked:

1. What is the legislation/policy framework of the Black Sea-related monitoring and/or data/information collection in your country and what kind of change/advancement in national legislation/policy shall be recommended to ensure sustainability of a complex monitoring/data collection in support of ecosystem-based management of the Black Sea environment protection in your country?
2. What is the institutional framework of monitoring and/or data/information collection in your country and what changes in it shall be proposed to improve the Black Sea environment protection in your country[2]?
3. What is the present Black Sea monitoring like and for the next 5-6 years what kind of new parameters and methods shall be seen feasible to incorporate in the existing monitoring programmes? And what kind of equipment shall be needed for that?
4. What is the level of operational monitoring development and what shall we recommend ensuring its wider integration into the routine monitoring programmes related to the Black Sea in your country?
5. What kinds of data storage and management tools are presently used in your country and what improvements we should suggest?
6. What is the system of Quality Assurance and Quality Control (QA/QC) presently used in the field of monitoring/data collection and data management, and what improvements we should suggest?
7. What Black Sea assessments are produced, which tools are used, and what shall we recommend to harmonise and improve them in your country and in the Black Sea region?
8. How do you identify/classify water quality and good environmental status, in general? What shall we recommend to harmonise the approaches?
9. What are the capacity building needs in your country which would improve the Black Sea environment protection and specifically the related monitoring and data/information collection and their management?

In this **Part II** of the Questionnaire, based on your feedback the following questions will be answered:

1. What are the Black Sea data availability and accessibility in your country and what shall we recommend for improving them both?
2. Are the Black Sea-related data available in your country suitable to calculate indicators and sufficient to make knowledge-based decisions on Black Sea environment protection?
3. What we would propose to integrate the monitoring of pressures (anthropogenic and climate-related) with that of impacts/vulnerability observed in the Black Sea?
4. What is the equipment availability and what shall we recommend to more efficiently using the available infrastructure, equipment and vessels?
5. What new equipment you would need to further develop the monitoring using best available practices and techniques?
6. What are the harmonization needs in the field of the Black Sea monitoring/data collection and data management?

Thus, **Part II** of the Questionnaire deals with Black Sea data availability, infrastructure/vessels/equipment needs and priorities in harmonization.

[1] As mentioned in Part I, the purpose of this questionnaire, prepared in the frame of the EC/UNDP Project EMBLAS[1], is to identify your organization's observational and informational capacity in the area of **Black Sea-related** monitoring (drivers, pressures, state, impacts, vulnerability/sensitivity, response, and recovery), data collection and management, and consequent assessments.
[2] Among others to ensure a complex monitoring implementation in the most optimal way (cost-efficient and time-saving) in your country, for instance.

I. General

Name of organization	Postal address/webpage	Contact person (name, address, tel/fax, e-mail, skype)	Name of the person who fills in the Questionnaire and contact details

II. Laboratory infrastructure, equipment, vessels

1. Please specify major units in your organization infrastructure;

2. Please list major laboratory equipment and specify the terms of sharing with other laboratories in the country and outside of it where applicable;

Equipment name	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
			Inside the country	Outside the country

3. Please list major field equipment*, including underwater vehicles**, and specify the terms of sharing with other organizations in the country and outside of it where applicable);

Equipment name	Vessel class*** required for the use of the equipment (if any)	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
				Inside the country	Outside the country

Note: Field equipment is the equipment which can be used without a vessel or transported to any other vessel for use.

****Note***: The **underwater vehicles** are classified as follows:
ROV: Remote operated underwater vehicles
AUV: Autonomous unmanned vehicles
MS: Manned submersibles
USV: Unmanned surface vehicle

Large exchangeable vessel equipment: e.g. multibeam and side scan sonars, echosounders, underwater video cameras, CTDs, etc.

*** ***Note***: The **classification of the research vessels** proposed is according to the US Research Vessel fleet classification, namely:

> 65 m: **Global vessels** are large and currently operate on an at least multi-Ocean scale;
55 m < L < 65 m: **Ocean vessels** are large enough to currently operate on an Ocean scale;
35 m < L < 55 m: **Regional vessels** currently operate generally on a European Regional scale;
10 m < L < 35 m: **Local and/or coastal vessels** for research only;
L < 10 m: **Coastal.**

4. Please specify availability of vessels and characteristics of the vessel/s, and terms of rent;

Research vessel name	Vessel's class	Length	Year	Other characteristics*	Rent per day (Euro)	Contact person for renting (name, e-mail, tel/fax)

Note: For Other characteristics please follow the listing given below:

Draft (m) 3.96; **Gross Tons** 750.0; **Fuel Capacity** (m^3) 88.3; **Area Wetlab** (m^2) 40.0; **Water Capacity** (m^3) 106.0; **Free Deck Area** (m^2) 140.0; **Range** (n mi) 2400.0; **Speed Cruise** (kt) 11.0; **Speed Max** (kt) 12.0; **Endurance** (days) 25.0; **Accommodation:** Crew 18, Scientists 12; **Air Cond**; **Data Processing Equipment**: Computers/printers; **Navigational equipment**: Radars (Sperry, MK 10-3 and Furuno, 2010), Gyrocompass: Sperry MK 227, SeisNet Integrated navigation System; **Communications**: SSB Radio (Sailor, HF SSB RE2100 Radiotelephony), Navtex (SHIPMATE RS6100), Telefax, Mobile Telephone; **Research Equipment**: Core Grab KAHLSICO Type 214WB250, Echosounder, 210kHz 33kHz;……etc.

III. Data availability[3]

This part of the Questionnaire aims at identifying the data availability for marine/uses activities, pressures/impacts and state of the Black Sea environment, so that to meet the requirements of the DPSIRR framework in assessments, which are the knowledge needed for informed decision-making and adaptive management.

The target period is 2006-2012. The frequency of observations is meant from monthly to annual, depending on the parameter discussed. The geographical coverage meant is the Exclusive Economic Zone of your country. In the column 'Your organization' of the Tables below, please write 'Yes' or 'No', where necessary you may wish to include Notes to specify better the data availability.

Please specify which of these are studied by your organization.

Table 1. Biological elements

Species	Your organization (Yes or No)
Bacteria	
Phytoplankton	
Protozoa	
Macroalgae	
Mesozooplankton	
Macrozooplankton	
Meiobenthos	
Macrozoobenthos	
Ichthyoplankton	
Fish	
Mammals	
Birds	
Others	

[3] Requirements of European Directives (Water Framework and Marine Strategy Framework) are taken into consideration so that to ensure harmonization in the Black Sea region. However, the DPSIRR model, which is especially behind the MSFD, is not an invention of the European Union or used only in assessments conducted by the European Environment Agency. The DPSIRR model has a long history, dating back to the 1970s, when it initially appeared as a Pressure-State-Response model (Rapport, D., and A. Friend. 1979. *Towards a comprehensive framework for environmental statistics: a stress-response approach*). The model is used in UN assessments both for state of the environment reports and for transboundary diagnostic analysis.

Table 2. Characteristics of the state of the Sea

Characteristic	Component	Criteria	Your Organization (Yes or No)
Physical and chemical features	Bathymetry and topography		
	Temperature and salinity regime, ice cover, sea level, fresh water input, circulation and current velocity, stratification (CIL[4]), upwelling, wave	Seasonal variability, spatial distribution, trends	
	pH, pCO, H_2S profiles, nutrients, pollutants		
Biological features at the level of functional groups	Seabirds	Diversity, abundance, spatial and temporal distribution, migrations, trends	
	Mammals		

In the Table below, please check whether you have data/information to describe the human activities exercised in your national waters and on coast. In the column 'Description of marine use/activity' please specify what kind of indicators you use in your country to describe human activities.

Table 3. Description of human activities

Activity Theme	List of Human Activities	**Description of marine use/activity** (***Note***: Please list what kind of technical, socio-economic or other indicators are used in your organization to describe each of the human uses)
Extraction of living resources	Fisheries incl. recreational fishing (fish & shellfish)	
	Seaweed and other sea-based food harvesting	
	Extraction of genetic resources/ bioprospecting/ maerl	
Food production	Aquaculture (fin-fish & shellfish)	
Man-made structures (incl. in construction)	Land claim, coastal defence	
	Port operations	
	Placement & operation of offshore structures (other than for energy production)	
	Submarine cable & pipeline operations	
Extraction of non-living	Marine mining (sand, gravel, rock)	

[4] Cold Intermediate Layer

Activity Theme	List of Human Activities	**Description of marine use/activity** (***Note***: Please list what kind of technical, socio-economic or other indicators are used in your organization to describe each of the human uses)
resources	Dredging	
	Desalination/water abstraction	
Energy production	Marine-based renewable energy generation (wind, wave & tidal power)	
	Marine hydrocarbon extraction (oil & gas)	
Transport	Shipping	
Waste disposal	Solid waste disposal incl. dredge material	
	Storage of gases	
Tourism and recreation	Tourism & recreation incl. yachting	
Research and survey	Marine research, survey & educational activities	
Military	Defence recurrent operations	
	Dumping of munitions	
Land-based activities (coastal, riverine and atmospheric)	Urban (municipal waste water discharge)	
	Industry (discharges, emissions)	
	Agriculture & forestry (run-off, emissions)	
Other marine uses and activities		

In the Table below, please cross-check whether for each human activity you have data/information to describe the pressures exercised on the Black Sea. In the **shaded boxes** please indicate 'Yes' or 'No' considering level of input/load (where appropriate) and/or level of pressure in the environment.

Table 4. Human activities and pressures (cross-check) (ML – marine litter)

Activity Theme	List of Human Activities	*PRESSURES*											
		Physical loss (area, extent[5])	***Physical damage (area, extent)***	***Interference with hydrological processes***	***Other physical disturbance (areas, extent)***		***Contamination by hazardous substances (load)***	***Systematic and/or intentional release of substances (load)***	***Nutrient and organic matter enrichment (load)***	***Biological disturbances***			***Acidification***
		Smothering Sealing	Siltation Abrasion Extraction (e.g. sand)	Thermal and salinity regime change	Noise (trends in level)	ML (trends in amount on coast and in sea)	Synthetic compounds Non-synthetic substances Radionuclides	e.g. produced water, carbon storage	Fertilizers and other nutrient-rich substances.	Extraction of species, including non-target[6]	Invasives, translocations[7]	Microbial pathogens	Decrease in pH
Extraction of living resources	Fisheries incl. recreational fishing (fish & shellfish)												
	Seaweed and other sea-based food harvesting												
	Extraction of genetic resources/ bioprospecting/ maerl												
Food production	Aquaculture (fin-fish & shellfish)												
Man-made structures (incl. in construction)	Land claim, coastal defence												
	Port operations												
	Placement & operation of offshore structures (other than for energy production)												

[5] Area and extent, where mentioned, are meant for different types of affected substrates.
[6] The Pressure can be described by number of vessels, fishing effort, frequency trawled, etc.
[7] The pressure can be described by vectors of introduction, risk areas, number of new species identified per year, number of established species per decade, etc.

Activity Theme	List of Human Activities	PRESSURES											
		Physical loss (area, extent[5])	*Physical damage (area, extent)*	*Interference with hydrological processes*	*Other physical disturbance (areas, extent)*		*Contamination by hazardous substances (load)*	*Systematic and/or intentional release of substances (load)*	*Nutrient and organic matter enrichment (load)*	*Biological disturbances*			*Acidification*
		Smothering Sealing	Siltation Abrasion Extraction (e.g. sand)	Thermal and salinity regime change	Noise (trends in level)	ML (trends in amount on coast and in sea)	Synthetic compounds Non-synthetic substances Radionuclides	e.g. produced water, carbon storage	Fertilizers and other nutrient-rich substances.	Extraction of species, including non-target[6]	Invasives, translocations[7]	Microbial pathogens	Decrease in pH
	Submarine cable & pipeline operations												
Extraction of non-living resources	Marine mining (sand, gravel, rock)												
	Dredging												
	Desalination/water abstraction												
Energy production	Marine-based renewable energy generation (wind, wave & tidal power)												
	Marine hydrocarbon extraction (oil & gas)												
Transport	Shipping												
Waste disposal	Solid waste disposal incl. dredge material												
	Storage of gases												
Tourism and recreation	Tourism & recreation incl. yachting												
Research and survey	Marine research, survey & educational activities												
Military	Defence recurrent operations												
	Dumping of munitions												

Activity Theme	List of Human Activities	PRESSURES											
		Physical loss (area, extent[5])	*Physical damage (area, extent)*	*Interference with hydrological processes*	*Other physical disturbance (areas, extent)*		*Contamination by hazardous substances (load)*	*Systematic and/or intentional release of substances (load)*	*Nutrient and organic matter enrichment (load)*	*Biological disturbances*			*Acidification*
		Smothering Sealing	Siltation Abrasion Extraction (e.g. sand)	Thermal and salinity regime change	Noise (trends in level)	ML (trends in amount on coast and in sea)	Synthetic compounds Non-synthetic substances Radionuclides	e.g. produced water, carbon storage	Fertilizers and other nutrient-rich substances.	Extraction of species, including non-target[6]	Invasives, translocations[7]	Microbial pathogens	Decrease in pH
Land-based activities (coastal, riverine and atmospheric)	Urban (municipal waste water discharge)												
	Industry (discharges, emissions)												
	Agriculture & forestry (run-off, emissions)												
Other marine uses and activities													

In the Table below, please cross-check for each pressure do you have the data/information to describe the impacts. Please indicate 'Yes' or 'No'.

Table 5. Pressures and impacts (cross-check)

Pressure theme	Pressure	Impact on	Yes/No
Physical loss	Smothering	Seabed Habitats	
	Sealing		
Physical damage	Siltation		
	Abrasion		
	Extraction		
Other physical disturbance	Underwater noise	Functional groups and habitats (water column and seabed)	
	Marine litter		
Interference with hydrological processes	Thermal regime change	Functional groups and habitats (water column and seabed)	
	Salinity regime change		
Contamination by hazardous substances	Synthetic compounds	Seabed habitats, functional groups, seafood	
	Non-synthetic substances		
	Radionuclides		
Systematic and/or intentional release of substances	Other substances	Seabed habitats, functional groups	
Nutrient and organic matter enrichment	Nutrients	Water column and seabed habitats, species, functional groups, ecosystems	
	Organic matter		
Biological disturbance	Microbial pathogens	Safety of food (fish and other seafood), bathing water quality	
	Non-native species and translocations	Water column and seabed habitats, species, functional groups, ecosystems	
	Extraction of selected species incl. non-target catches	Water column and seabed habitats, species, functional groups, ecosystems	
Others			

A. Please specify what kind of climate change-related data your organization collects:

Further, the Questionnaire investigates the availability of data in your organization to calculate indicators which could be used to assess the state of the Black Sea.

1. Biological diversity (quality and occurrence of habitats and distribution and abundance of species)

At species level

Please specify what species are investigated by your organization for distribution, population size and population condition.

1.1. Species distribution

Indicators	Your organization (Yes or No)
1.1.1. Distributional range	0.1
1.1.2. Distributional pattern within the range of distribution, where appropriate	0.5
1.1.3. Area covered by the species (for sessile/benthic species)	0.5

1.2. Population Size

Indicators	Your organization (Yes or No)
1.2.1. Population abundance and/or biomass, as appropriate	0.5

1.3. Population condition

Indicators	Your organization (Yes or No)
1.3.1. Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/ mortality rates)	0.5
1.3.2. Population genetic structure, where appropriate	0

At habitats/communities level

Please specify what habitat types are studied by your organization:

Note: As a general rule, the habitat and its associated community are to be treated together.

1.4. Habitat distribution

Indicators	Your organization (Yes or No)
1.4.1. Distributional range	0.2
1.4.2. Distributional pattern	0.2

1.5. Habitat extent

Indicators	Your organization (Yes or No)
1.5.1. Habitat area	0.2
1.5.2. Habitat volume, where relevant	0

1.6. Habitat condition

Indicators	Your organization (Yes or No)
1.6.1. Condition of the typical species and communities	0.2
1.6.2. Relative abundance and/or biomass, as appropriate	1
1.6.3. Physical, hydrological and chemical conditions	0.5

Ecosystem level

Note: Assessment at the level of species and habitat/community state provides the basis for assessment at the level of the ecosystem, in particular the ecosystem structure and ecosystem processes and functions. The regions and sub-regions, or appropriate subdivisions, provide suitable scales for this assessment.

Please specify what ecosystems are investigated by your organization:

1.7. Ecosystem structure

Indicators	Your organization (Yes or No)
1.7.1. Composition and relative proportions of ecosystem components (habitats and species)	0.2
1.7.2. Ecosystem processes and functions: Interactions between the structural components of the ecosystem	0.2

2. *Non-indigenous species introduced by human activities*

Please list what non-native species are investigated by your organization:

2.1. Abundance and spreading of non-indigenous species, in particular invasive species

Indicators	Your organization (Yes or No)
2.1.1.Trends in abundance, temporal occurrence and spatial distribution in the wild of non-indigenous species, particularly invasive non-indigenous species, notably in risk areas, in relation to the main vectors and pathways of spreading of such species	0.8
2.1.2. Vectors of introduction	0.5

2.2. Environmental impact of non-indigenous species

Indicators	Your organization (Yes or No)
2.2.1. Ratio between non-indigenous species and native species in some well-studied taxonomic groups, e.g. fish, macroalgae, molluscs	0
2.2.2. Magnitude of the impacts of non-indigenous species, in particular invasive species, on native communities, habitats and ecosystem functioning	0.2
2.2.3. The Biopollution Level (BPL) (index)	0

3. *Populations* of commercially exploited fish and shellfish

Please list which commercially exploited species are investigated by your organization:

3.1. Level of pressure of the fishing activity

Note: **The primary indicator** is *Fishing mortality (F).* Good environmental status requires that F values are equal to or lower than the level capable of producing Maximum Sustainable Yield (MSY) over the long term (F_{MSY}).

Indicators	Your organization (Yes or No)
3.1.1. Fishing mortality (F)	1
3.1.2. Fishing mortality (F) related to a reference value	0.5

Note: The biomass index is ideally taken from sources independent from the commercial fishing activity (e.g. catch rates from bottom trawl surveys, biomass estimates from acoustic surveys, or from egg-surveys).

Please specify how the biomass of commercially exploited species is estimated:

Indicators	Your organization (Yes or No)
3.1.3. Catch/biomass ratio	0.8
3.1.4. Maximum Sustainable Yield	0.5
3.1.5. Trends in catches / biomass	0.5

3.2. Reproductive capacity of the stock

Indicators	Your organization (Yes or No)
3.2.1. Spawning Stock Biomass related to a reference value	0.5
3.2.2. Biomass or abundance indices (for the fraction of the population that is sexually mature)	0.5

3.3. Population age and size distribution.

Indicators	Your organization (Yes or No)
3.3.1. The proportion of fish larger than a given length, e.g. the length at which 100% of the females are mature	0.5
3.3.2. The mean maximum length across all species found in research vessel surveys	0.8
3.3.3. The 95% percentile of the fish length distribution observed in research vessel surveys	
3.3.4. Size at full sexual maturation, which may reflect the extent of undesirable genetic effects of exploitation	0.5

4. Marine food webs

The species composition of food webs varies according to habitat and region, but the principles of energy transfer from sunlight and plants through successive trophic levels are the same. The indicators enlisted are in relation to major attributes.

4.1. Productivity (production per unit biomass) of key species or trophic groups

Please list which key species or trophic groups are studied for productivity:

Indicators	Your organization (Yes or No)
*4.1.1. Performance of key predator species using their production per unit biomass (productivity)**	0.2
4.1.2. Production per unit biomass	0.5
4.1.3. Marine Trophic Index	0.1
4.1.4. Trophic Levels (Functional feeding groups)	0.5
4.1.5. Diet composition	0.5

4.2. Proportion of selected species at the top of food webs

Please list which selected species are meant for the indicators 4.2.1 and 4.2.2.:

Indicators	Your organization (Yes or No)
4.2.1. % Large fish (by weight)	0.5
4.2.2. Body size (length, weight) of valuable/target species in selected functional groups	0.8

4.3. Abundance/distribution of key groups/species

Note: Particularly relevant for the indicators 4.3.1. and 4.3.2. are the groups/species:

(i) biological groups with fast turnover rates (e.g. phytoplankton, zooplankton, jellyfish, short-living pelagic fish, and bacteria) that will respond quickly to ecosystem change and are useful as early warning indicators;
(ii) groups/species that are targeted by human activities;
(iii) habitat-defining groups/species (e.g. benthic fauna);
(iv) groups/species at the top of the food web (which may accumulate harmful substances or respond to cascading effects from ecosystem changes);
(v) groups/species that are tightly linked to other groups/species at another trophic level.

Please specify which groups/species are meant for the indicators 4.3.1 and 4.3.2.:

Indicators	Your organization (Yes or No)
4.3.1. Abundance trends	0.6
4.3.2. Change in spatial distribution of species (e.g. northward movement of species due to climate change)	0.1

4.4. Energy flows in food webs: Ratio of production or biomass between different trophic levels

Note: The indicators below aim at measuring the degree of energy flow between different trophic levels.

Indicators	Your organization (Yes or No)
Ratio of pelagic to demersal fish biomass and/or production	1
Ratio of macrobenthos invertebrate to demersal fish production or biomass	0
Ratio zooplankton production required/ zooplankton production	0
Ratio benthic production required/benthic production	0

5. Cultural eutrophication

Indicators	Your organization (Yes or No)
Nutrient loads	1

If Yes, please specify loads from which sources are studied by your organization.

5.1. Nutrient level

Indicators	Your organization (Yes or No)
5.1.1. Nutrients concentration in the water column	1
5.1.2. Nutrients ratio: Deviate from normal proportion of nutrient ratios (Si:N:P) (e.g. Si is reduced in relation to other nutrients)	1

5.2. Primary symptoms or directs effects of eutrophication

Indicators	Your organization (Yes or No)
5.2.1. Chlorophyll (concentration, spatial areas of high concentrations)	0.5
5.2.2. Water transparency due to increase in suspended algae	1
5.2.3. Algal community structure - Abundance/Increase of opportunistic macroalgae (e.g. can form blankets over the natural flora and suffocate benthic animals	1
5.2.4. Species shift in floristic composition (e.g. diatom:flagellate ratio, benthic to pelagic shifts, indicator species, and harmful algae blooms). Annual bloom events of nuisance/toxic algal blooms. Annual to multi-year changes in frequency and/or duration of blooms. Changes in balance of diatoms/flagellates/cyanobacteria	1
5.2.5. Primary production	0
5.2.6. Nuisance / toxic algal blooms	0.5
5.2.7. Submerged aquatic vegetation - spatial coverage and density of beds	1

5.3. Secondary symptoms or indirect effects of eutrophication

Indicators	Your organization (Yes or No)
5.3.1. Abundance/Decrease in perennial seaweeds and seagrasses	1
5.3.2. Dissolved oxygen	1
5.3.3. Benthos - diversity and proportion of sensitive vs. non-sensitive species (e.g. P-R model)	1
5.3.4. Benthos / fish kills	0.5

6. *Sea-floor integrity*

Indicators	Your organization (Yes or No)
6.1. Physical damage, having regard to substrate characteristics	0
6.2. Type, abundance, biomass and areal extent of relevant biogenic substrate	0
6.3. Extent of the seabed significantly affected by human activities for the different substrate types	0
6.4. Condition of benthic community	0.5
6.5. Structure of benthic habitats	0.5
6.6. Abundance of bio-engineering species	0.5
6.7. Diversity and richness indices also taking into account species -area relationships	1
6.8. Proportion of biomass or number of individuals in the macrobenthos above some specified length/size	0.5
6.9. Biomass size spectrum	0.5
6.10. Shape of cumulative abundance curves of numbers of individuals by size group	0.5
6.11. Secondary production	0
6.12. Opportunistic-sensitive species proportion (e.g. AMBI, P-R-model)	0.5
6.13. Parameters describing the characteristics (shape, slope and intercept) of the size spectrum of the benthic community	0
6.14. Presence of particularly sensitive and or tolerant species	1

7. *Permanent alteration of hydrographical conditions*

Permanent alteration of hydrographical conditions can derive from activities such as constructions at sea, landfills and land claim, barrages, windmill farms and other renewable energy constructions, oil and gas platforms and bridges, dredging and deposition in the sea, but also from constructions on land with outlets into the sea e.g. power plants outfalls. Permanent alterations of the hydrographical conditions can consist in changes in current or wave action, salinity and temperature characteristics, water clarity, which can affect marine ecosystems.

Indicators/pressures	Your organization (Yes/No)*
Data/information on constructions at sea, landfills and land claim, barrages, windmill farms and other renewable energy constructions, oil and gas platforms and bridges, dredging and deposition in the sea, constructions on land with outlets into the sea e.g. power plants outfalls	0.5

- If 'Yes', please specify for which human activity/use are the data/information belonging to your organization.

The impacts are considered through the following indicators:

Indicators	Your organization (Yes or No)
7.1. Spatial characterisation of permanent alterations	**0**
7.1.1. Extent of area affected by permanent alterations	**0**
7.1.2. Changes in sedimentation	**0.5**
7.2. Impact of permanent hydrographical changes	**0**
7.2.1. Spatial extent of benthic habitat affected by the permanent alteration	0
7.2.2. Changes in benthic communities and or biomass production	0.5
7.2.3. Extent of area with spatial or temporal hypoxia/anoxia	0.5
7.2.4. Presence of benthic communities associated with low oxygen conditions	0.5
7.2.5.. Diversity and richness indices, based on species number and relative abundance in the benthic community	0.5
7.2.6.. Presence of particularly sensitive or tolerant species	1
7.2.7. Changes in habitat functions due to altered hydrographical conditions (e.g. changes in areas for fish/mammals reproduction (spawning areas, breeding), nursery and feeding areas and migration routes of fish, birds and mammals)	0.3

8. Concentrations of contaminants

Please specify which contaminants are studied by your organization:

Indicators	Your organization (Yes or No)
8.1 Concentrations in water, sediments and biota (measured, where relevant, in the same matrix)*	0.3
8.2. Biological effects on the elements of concerned ecosystems	0
8.3. Occurrence and extent of acute pollution events (e.g. slicks from oil and oil products) and impact on biota physically affected by this pollution	0.5

9. Contaminants in fish and other seafood for human consumption

Is there list of contaminants to be considered which has been developed based on existing national regulations? If yes, please specify which contaminants are agreed and what organisms are studied.

Levels, number and frequency of substances:

Indicators	Your organization (Yes or No)
9.1. Frequency of levels exceeding regulatory levels (*)	0
9.2. Actual levels detected	0
9.3 Numbers of contaminants for which exceeding levels have been detected	0
9.4. Origin of contaminants (geological versus anthropogenic; local versus long distance)	0.5

10. Properties and quantities of marine litter

The indicators need data on amount, composition and sources of litter, as well as on its impacts.

Indicators	Your organization (Yes or No)
10.1. ML washed ashore and/or deposited on coastlines	0.2
10.2. ML in the water column, including floating and suspended litter on the sea floor	0
10.3. ML ingested by marine animals/birds	0
10.4. Microparticles (mainly mircroplastics) derived from degradation of litter	0
10.5. Impact rates of degraded litter on organisms	0
10.6. Potential chemical pollution resulting from degraded litter (plastic)	0

11. Introduction of energy, including underwater noise

As well as underwater noise, other forms of energy inputs can be distinguished such as electromagnetic fields from electricity cables and light at the surface.

Organisms that are exposed to sounds can be adversely affected over a short time-scale (acute effect) or a long time-scale (permanent or chronic effects). Adverse effects can be subtle (e.g. temporary harm to hearing, behavioural effects) or obvious (e.g. death in the worst case).

Indicators	Your organization (Yes or No)
11.1.Distribution in time and place of loud, low and mid frequency impulsive sounds (Proportion of days and their distribution within a calendar year over areas of a determined surface, as well as their spatial distribution, in which anthropogenic sound sources exceed levels that are likely to entail significant impact on marine animals measured as Sound Exposure Level (in dB re 1µPa 2 .s) or as peak sound pressure level (in dB re 1µPa peak) at one metre, measured over the frequency band 10 Hz to 10 kHz (11.1.1))	0
11.2. Continuous low frequency sound (Trends in the ambient noise level within the 1/3 octave bands 63 and 125 Hz (centre frequency) (re 1µPa RMS; average noise level in these octave bands over a year) measured by observation stations and/or with the use of models if appropriate (11.2.1))	0
11.3. Electromagnetic fields	

V. Needs in harmonization

Please specify your opinion on the needs in harmonization in your country and in the Black Sea region in the following categories:

1. **Sampling strategy (equipment, frequency, sampling area coverage)**

A. National level

B. Regional level

2. **Data analysis**

A. National level

B. Regional level

3. **Indicators development**

A. National level

B. Regional level

4. **GES (good environmental status) assessment**

A. National level

B. Regional level

EC/UNDP Black Sea Project:

"Improving Environmental Monitoring in the Black Sea", Acronym: EMBLAS

Диагностический отчет

для руководства улучшениями мониторинга Черного моря и управления данными

Анкета, часть II

EMBLAS
Environmental Monitoring in the Black sea

EC/UNDP Black Sea Project:

"Improving Environmental Monitoring in the Black Sea", Acronym: EMBLAS

Анкета

Вы уже получили первую часть Анкеты[1], в которой вам были заданы следующие вопросы:

1. Каковы законодательная база и политическая структура для мониторинга и/или сбора данных/информации о Черном море в вашей стране; какого рода изменения / прогресс в этой структуре должен быть рекомендован для обеспечения устойчивого сбора данных/информации в поддержку управления охраной окружающей среды Черного моря в вашей стране, основанного на экосистемном подходе?
2. Какова институциональная структура мониторинга и/или сбора данных/информации в вашей стране, и какие изменения в ней должны быть предложены для улучшения охраны окружающей среды Черного моря в вашей стране[2]?
3. Каков нынешний мониторинг моря и каким он будет на ближайшие 5-6 лет; какие новые параметры и методы будет разумным внедрить в существующие программы мониторинга? Какое оборудование для этого потребуется?
4. Каков нынешний уровень развития оперативного мониторинга и что мы должны порекомендовать для обеспечения его более широкой интеграции в программы текущего мониторинга, относящиеся к Черному морю, в вашей стране?
5. Какие инструменты для хранения и управления данными используются в вашей стране в настоящее время, и какие улучшения мы могли бы порекомендовать?
6. Какая система Обеспечения качества и Контроля качества (QA/QC) используется в настоящее время в области мониторинга и управления данными, и какие улучшения нам следует предложить?
7. Какие оценки Черного моря выполняются, какие инструменты используются и что мы должны порекомендовать для улучшения и гармонизации оценок и инструментов в вашей стране и в черноморском регионе?
8. Как вы определяете/классифицируете качество воды и, в целом, хороший экологический статус? Что мы должны порекомендовать для гармонизации подходов?
9. Каковы потребности вашей страны в наращивании возможностей так, чтобы такое наращивание возможностей улучшило охрану окружающей среды Черного моря и, в частности, связанные с этим сбор и управление данными/информацией?

В этой **Части II** Анкеты, основанной на присланных вами ответах, мы должны ответить на следующие вопросы:

1. Каково наличие и доступность данных по Черному морю в вашей стране, и что мы должны порекомендовать для улучшения и того, и другого?
2. Годятся ли данные о Черном море, имеющиеся в вашей стране, для вычисления индикаторов, и достаточны ли они для того, чтобы принимать решения по вопросам охраны Черного моря, основанные на знаниях?
3. Что нам следует предложить для интеграции мониторинга нагрузок (антропогенных и связанных с климатом) с мониторингом воздействий/уязвимости, наблюдаемых в Черном море?
4. Какова доступность оборудования, и что нам следует порекомендовать для более эффективного использования имеющихся инфраструктуры, оборудования и судов?
5. Какое новое оборудование вам понадобится для дальнейшего развития мониторинга с использованием наилучшие доступные практики и методы?
6. Каковы потребности в гармонизации в сфере мониторинга/сбора данных по Черному морю?

Таким образом, **Часть II** настоящей Анкеты касается наличия данных о Черном море, потребности в инфраструктуре/судах/оборудовании и приоритетов в сфере гармонизации.

[1] Как упоминалось в Части I, целью этой Анкеты, подготовленной в рамках проекта EMBLAS, финансируемого EC/UNDP[1], является определение возможностей ваших организаций по наблюдению и сбору информации в мониторинге, **относящемся к Черному морю** (движущие силы, нагрузки, состояние, воздействия, реакция, восстановление), сбору и управлению данными и дальнейшей оценке.

[2] Кроме прочего, например, для обеспечения внедрения комплексного мониторинга наиболее оптимальным образом (экономически эффективно и экономя время) в вашей стране.

I. Общая информация

Наименование организации	Почтовый адрес/веб-сайт	Контактное лицо (имя, адрес, тел./факс, e-mail, skype)	Имя лица, заполняющего Анкету, и его контактные данные

II. Лабораторная инфраструктура, оборудование, суда

1. Просьба указать главные подразделения в инфраструктуре вашей организации;

2. Просьба перечислить основное лабораторное оборудование и указать условия совместного использования его с другими лабораториями в вашей стране или за рубежом там, где это применимо;

Название оборудования	Используется совместно с другими организациями в стране (Да/Нет)	Используется совместно с другими странами (Да/Нет)	Условия совместного пользования	
			В стране	За пределами страны

3. Просьба перечислить основное полевое оборудование *, в т. ч. подводные аппараты **, и укажите условия их совместного использования вместе с организациями в вашей стране и за границей (где это применимо);

Название оборудования	Класс судна ***, необходимый для использования оборудования (если есть)	Используется совместно с другими организациями в стране (Да/Нет)	Используется совместно с другими странами (Да/Нет)	**Условия совместного пользования**	
				В стране	За пределами страны

***Примечание**: Полевое оборудование – это оборудование, которое может использоваться без судна или быть транспортировано на любое судно для использования.

****Примечание**: Классификация **подводных аппаратов** такова:
ROV: Дистанционно управляемые подводные аппараты (**R**emote **O**perated underwater **V**ehicles)
AUV: Автономные «беспилотные» аппараты (Autonomous unmanned vehicles)
MS: Обитаемый подводный аппарат (Manned submersibles)
USV: Дистанционно управляемое надводное судно (Unmanned surface vehicle)

Большое съемное судовое оборудование: например, многолучевой эхолот и сонары (гидролокаторы) бокового обзора, эхолоты, подводные видеокамеры, термосолезонды и т.д.

*** ***Примечание***: Предлагается **классификация научно-исследовательских судов (НИС)** в соответствии с Классификацией научно-исследовательского флота США, а именно:
> 65 m: **С неограниченным районом плавания –** большие суда, в настоящее время для работы в масштабе как минимум двух океанов;
55 m < L < 65 m: **Океанские суда –** суда, достаточно крупные, чтобы в настоящее время использоваться в масштабе океана;
35 m < L < 55 m: **Региональные суда –** в настоящее время используются главным образом в европейском региональном масштабе;
10 m < L < 35 m: **Местные и/или прибрежные суда –** только для доставки (чтобы достичь места работ);
L < 10 m: **Прибрежные.**

4. Просьба указать наличие судна / судов и привести их характеристики и условия аренды;

Название НИС	Класс судна	Длина	Год	Другие характеристики *	Стоимость аренды в день (Евро)	Контактное лицо по вопросу аренды (имя, e-mail, тел./факс)

*__Примечание__: Указывая «другие характеристики» просьба следовать нижеприведенному перечню:

Осадка (м) 3.96; **валовая регистровая вместимость, т** 750.0; **вместимость топливных цистерн** ($м^3$) 88.3; **площадь влажной лаборатории** ($м^2$) 40.0; **вместимость цистерн пресной воды** ($м^3$) 106.0; **свободная площадь палубы** ($м^2$) 140.0; **дальность плавания** (мор. мили) 2400.0; **скорость экономическая** (узлов) 11.0; **скорость макс.** (узлов) 12.0; **продолжительность автономного плавания** (суток) 25.0; **жилые помещения:** экипаж 18, научных работников 12; **кондиционирование воздуха**; **оборудование для обработки данных**: компьютеры/принтеры; **навигационное оборудование**: радары (Sperry, MK 10-3 и Furuno, 2010), Гирокомпас: Sperry MK 227, Комплексная навигационная система «SeisNet»; **Коммуникационное оборудование**: Радиостанция SSB (Радиотелефон Sailor, HF SSB RE2100), Навигационный приемник Navtex (SHIPMATE RS6100), телефакс, мобильный телефон; **научно-исследовательское оборудование**: грунтоотборник KAHLSICO, тип 214WB250, эхолоты 210 кГц 33 кГц;…….и т.д.

III. Наличие данных[3]

Эта часть Анкеты направлена на то, чтобы определить наличие данных по видам морепользования/морской деятельности, нагрузкам/воздействиям и состоянию окружающей среды Черного моря для выполнения требований структуры DPSIRR по оценкам – знаний, необходимых для принятия решений на основе информации, а также для адаптивного менеджмента охраны окружающей среды Черного моря.

Целевой период - 2006-2012. Предполагаемая частота наблюдений – от ежемесячных до ежегодных, в зависимости от параметра. Географический район – Исключительная экономическая зона вашей страны. Просьба в **Таблице 1**, в колонке «Ваша организация» указывать «да»/«нет». Там, где необходимо, вы можете включить **«Примечания»,** чтобы лучше определить наличие данных.

Укажите, что из перечисленного изучает ваша организация.

[3] Были учтены требования Европейских Директив (Водной Рамочной Директивы и Рамочной Директивы морской стратегии) для обеспечения гармонизации в Черноморском регионе. Однако, модель DPSIRR, которая стоит за Директивой морской стратегии (MSFD), не является изобретением Европейского Союза и используется не только для оценок, проводимых Европейским Агентством Окружающей Среды. Модель DPSIRR имеет долгую историю, которая началась в 70-х гг. прошлого века, когда она появилась впервые как модель «Нагрузка-состояние-реакция» (Раппорт, Д. и А.Фриенд, 1979. *Towards a comprehensive framework for environmental statistics: a stress-response approach*). Эта модель используется ООН как оценки состояния отчетов об окружающей среде, так и для трансграничных диагностических анализов.

Таблица 1. Биологические элементы

Виды	Ваша организация (Да или Нет)
Бактерии	
Фитопланктон	
Простейшие	
Макроводоросли	
Мезозоопланктон	
Макрозоопланктон	
Мейобентос	
Макрозообентос	
Ихтиопланктон	
Рыба	
Млекопитающие	
Птицы	
Прочее	

Таблица 2. Характеристики состояния моря

Характеристика	Компонент	Критерии	Ваша организация\ (Да или Нет)
Физические и химические свойства	Батиметрия и топография		
	Температурный и солёностный режимы, ледовое покрытие, уровень моря, поступление пресной воды, циркуляция и скорость течения, стратификация (CIL[4]), апвеллинг, волнение	Сезонная изменчивость, пространственное распределение, тренды	
	Профили pH, pCO, H2S, биогены, загрязняющие вещества		
Биологические свойства на уровне функциональных групп	Морские птицы	Разнообразие, численность, пространственное и временное распределение, миграции, тренды	
	Млекопитающие		

Просьба в Таблице 3 проверить, есть ли у вас данные/информация для описания видов человеческой деятельности в ваших национальных водах и на побережье. В графе «Описание морепользования/морской деятельности» просьба указать, какие индикаторы вы используете в вашей стране для описания человеческой деятельности.

[4] Cold Intermediate Layer – Холодный промежуточный слой

Таблица 3. Описание человеческой деятельности

Сфера деятельности	Список видов деятельности	**Описание морепользования/морской деятельности** (***Примечание***: Просьба перечислить, какие технические, социально-экономические или прочие индикаторы использует ваша организация для описания каждого из видов использования)
Добыча живых ресурсов	Рыбная ловля, в т.ч. любительская (рыбы и моллюсков)	
	Добыча водорослей и других морских пищевых продуктов	
	Добыча генетических ресурсов / биопиратство / водоросли maerl	
Производство пищевых продуктов	Аквакультура (рыба и моллюски)	
Искусственные сооружения (в т.ч. строительство)	Освоение земель, защита берегов	
	Портовые операции	
	Установка и эксплуатация морских сооружений (кроме сооружений для производства электроэнергии)	
	Эксплуатация подводных кабелей и трубопроводов	
Добыча не-живых ресурсов	Морские разработки (песка, гравия, камня)	
	Дноуглубительные работы	
	Опреснение/забор воды	
Производство электроэнергии	Морское производство возобновляемой энергии (ветровой, волновой, приливной)	
	Добыча углеводородов в море (нефть и газ)	
Транспорт	Судоходство	
Удаление отходов	Размещение твердых отходов, в т.ч. материалов дноуглубления	
	Хранение газов	
Туризм и рекреация	Туризм и рекреация, в т.ч. яхтенный спорт	
Исследования и съемки	Морские исследования, съемки и образовательная деятельность	
Военные	Повторяющиеся оборонительные мероприятия	
	Сброс военного имущества	
Береговая деятельность (морская, речная, атмосферная)	Городская (сброс бытовых сточных вод)	
	Промышленная (сбросы, выбросы)	
	Сельское и лесное хозяйство (сток, выбросы)	
Другие виды морепользования/морской деятельности		

Просьба перепроверить в Таблице 4 ниже, для каждого ли вида человеческой деятельности у вас есть данные/информация для описания нагрузок на Черное море. В **ячейках, отмеченных серым цветом,** укажите «Да» или «Нет», учитывая уровень поступления/нагрузки (где это уместно) и/или уровень давления на окружающую среду.

Таблица 4. Человеческая деятельность и нагрузки (перекрестная проверка) (ML – морской мусор)

Сфера деятельности	**Список видов деятельности**	***НАГРУЗКИ***												
		Физическая потеря (площадь, степень [5])	***Физический ущерб (площадь, степень)***	***Вмешательство в гидрологические процессы***	***Другое физическое беспокойство (площадь, степень)***		***Загрязнение опасными веществами (нагрузка)***	***Систематический и/или умышленный сброс веществ (нагрузка)***	***Обогащение биогенами и органическим веществом (нагрузка)***	***Биологическое беспокойство***			***Окисление***
		Удушение Запечатывание (Sealing)	Заиление Абразия Добыча (напр., песка)	Изменения температурного и солёностного режимов	Шум (тренды уровня)	ML (тренды количества на берегу и в море)	Синтетические соединения Не-синтетические вещества Радионуклиды	Напр., промысловые воды, хранение CO2	Удобрения и другие вещества, богатые биогенами	Изъятие видов, в т.ч. не-целевых [6]	Перенос инвазивных видов	Патогенные микроорганизмы	Снижение pH
Добыча живых ресурсов	Рыбная ловля, в т.ч. любительская (рыбы и моллюсков)												
	Добыча водорослей и других морских пищевых продуктов												
	Добыча генетических ресурсов / биопиратство / водоросли maerl												
Производ-ство пищевых продуктов	Аквакультура (рыба и моллюски)												
Искусственные сооружения (в т.ч. строительство)	Освоение земель, защита берегов												
	Портовые операции												
	Установка и эксплуатация												

[5] Площадь и степень, там, где они упоминаются, относятся к разным типам затронутых субстратов.
[6] Нагрузка может быть описана как количество судов, число рейсов и т.д.

Сфера деятельности	Список видов деятельности	НАГРУЗКИ											
		Физическая потеря (площадь, степень [5])	*Физический ущерб (площадь, степень)*	*Вмешательство в гидрологические процессы*	*Другое физическое беспокойство (площадь, степень)*		*Загрязнение опасными веществами (нагрузка)*	*Систематический и/или умышленный сброс веществ (нагрузка)*	*Обогащение биогенами и органическим веществом (нагрузка)*	*Биологическое беспокойство*			*Окисление*
		Удушение Запечатывание (Sealing)	Заиление Абразия Добыча (напр., песка)	Изменения температурного и солёностного режимов	Шум (тренды уровня)	ML (тренды количества на берегу и в море)	Синтетические соединения Не-синтетические вещества Радионуклиды	Напр., промысловые воды, хранение CO2	Удобрения и другие вещества, богатые биогенами	Изъятие видов, в т.ч. не-целевых [6]	Перенос инвазивных видов	Патогенные микроорганизмы	Снижение pH
	морских сооружений (кроме сооружений для производства электроэнергии)												
	Эксплуатация подводных кабелей и трубопроводов												
Добыча не-живых ресурсов	Морские разработки (песка, гравия, камня)												
	Дноуглубительные работы												
	Опреснение/забор воды												
Производство электроэнергии	Морское производство возобновляемой энергии (ветровой, волновой, приливной)												
	Добыча углеводородов в море (нефть и газ)												
Транспорт	Судоходство												
Удаление отходов	Размещение твердых отходов, в т.ч. материалов дноуглубления												
	Хранение газов												
Туризм и рекреация	Туризм и рекреация, в т.ч. яхтенный спорт												

Сфера деятельности	Список видов деятельности	НАГРУЗКИ											
		Физическая потеря (площадь, степень [5])	*Физический ущерб (площадь, степень)*	*Вмешательство в гидрологические процессы*	*Другое физическое беспокойство (площадь, степень)*		*Загрязнение опасными веществами (нагрузка)*	*Систематический и/или умышленный сброс веществ (нагрузка)*	*Обогащение биогенами и органическим веществом (нагрузка)*	*Биологическое беспокойство*			*Окисление*
		Удушение Запечатывание (Sealing)	Заиление Абразия Добыча (напр., песка)	Изменения температурного и солёностного режимов	Шум (тренды уровня)	ML (тренды количества на берегу и в море)	Синтетические соединения Не-синтетические вещества Радионуклиды	Напр., промысловые воды, хранение CO2	Удобрения и другие вещества, богатые биогенами	Изъятие видов, в т.ч. не-целевых [6]	Перенос инвазивных видов	Патогенные микроорганизмы	Снижение pH
Исследования и съемки	Морские исследования, съемки и образовательная деятельность												
Военные	Повторяющиеся оборонительные мероприятия												
	Сброс военного имущества												
Береговая деятельность (морская, речная, атмосферная)	Городская (сброс бытовых сточных вод)												
	Промышленная (сбросы, выбросы)												
	Сельское и лесное хозяйство (сток, выбросы)												
Другие виды морепользования / морской деятельности													

Таблица 5 предназначена для перекрестной проверки того, по всем ли нагрузкам у вас есть данные/информация для описания воздействия. Просьба указывать «Да» или «Нет».

Таблица 5. Нагрузки и воздействия (перекрестная проверка)[7]

Вид нагрузки	Нагрузка	Воздействие на	Да/Нет
Физическая потеря	Удушение	Донные местообитания	
	Запечатывание		
Физический ущерб	Заиление		
	Абразия		
	Добыча		
Другие виды физического беспокойства	Подводный шум	Функциональные группы и местообитания (в толще воды и на дне)	
	Морской мусор		
Вмешательство в гидрологические процессы	Изменение температурного режима	Функциональные группы и местообитания (в толще воды и на дне)	
	Изменение солёностного режима		
Загрязнение опасными веществами	Синтетические соединения	Донные местообитания, функциональные группы, морепродукты	
	Не-синтетические вещества		
	Радионуклиды		
Систематический и/или умышленный выброс веществ	Другие вещества	Донные местообитания, функциональные группы	
Обогащение биогенами и органическим веществом	Биогены	Местообитания, виды, функциональные группы, экосистемы в толще воды и на дне	
	Органическое вещество		
Биологическое беспокойство	Патогенные микроорганизмы	Пищевая безопасность (рыбы и других морепродуктов), качество воды для купания	
	Неаборигенные виды и перенос	Местообитания, виды, функциональные группы, экосистемы в толще воды и на дне	
	Добыча выбранных видов, включая не-целевой вылов	Местообитания, виды, функциональные группы, экосистемы в толще воды и на дне	
Прочее			

A. Просьба указать, какие данные, связанные с изменением климата, собирает ваша организация:

[7] Эта Таблица похожа на Таблицу 2 в документе ЕС **«Guidance for 2012 reporting under the Marine Strategy Framework Directive» (Руководство по отчетности 2012 согласно Рамочной Директиве Морской Стратегии),** однако, включает более широкомасштабные воздействия определенных нагрузок, которые представляются возможными в Черном море.

Далее в Анкете исследуется наличие в вашей организации данных для расчета индикаторов, которые можно было бы использовать для оценки состояния Черного моря.

1. Биологическое разнообразие (качество и встречаемость местообитаний, распространение и численность видов)

На уровне видов

Просьба перечислить, какие виды исследует ваша организация – их распространение, размер популяции и состояние популяции.

1.1. Распространение видов

Индикаторы	Ваша организация («Да» или «Нет»)
1.1.1. Ареал распространения	
1.1.2. Характер распространения по ареалу, где уместно	
1.1.3. Площадь, занимаемая видом (для прикрепленных/бентических видов)	

1.2. Величина популяции

Индикаторы	Ваша организация («Да» или «Нет»)
1.2.1. Численность и/или биомасса популяции, что больше подходит	

1.3. Состояние популяции

Индикаторы	Ваша организация («Да» или «Нет»)
1.3.1. Демографические характеристики популяции (например, структура размерности или возрастных классов, соотношение полов, плодовитость, соотношение выживаемости/смертности)	
1.3.2. Генетическая структура популяции – где уместно	

На уровне местообитаний/сообществ

Просьба указать, какие виды местообитаний исследует ваша организация:

Примечание: Обычно местообитание и связанное с ним сообщество должны рассматриваться вместе.

1.4. Распределение местообитаний

Индикаторы	Ваша организация («Да» или «Нет»)
1.4.1. Ареал распространения	
1.4.2. Характер распределения	

1.5. Размеры местообитания

Индикаторы	Ваша организация («Да» или «Нет»)
1.5.1. Площадь местообитания	
1.5.2. Объем местообитания, где уместно	

1.6. Состояние местообитания

Индикаторы	Ваша организация («Да» или «Нет»)
1.6.1. Состояние типичных видов и сообществ	
1.6.2. Относительная численность и/или биомасса, где уместно	
1.6.3. Физические, гидрологические и химические условия	

Уровень экосистемы

Примечание: Оценка состояния на уровне вида и местообитания / сообществ дает основание для оценки на уровне экосистемы, в частности структуры экосистемы и процессов и функций экосистемы. Регионы и суб-регионы, или соответствующие подразделы обеспечивают соответствующие масштабы для этой оценки.

Просьба указать, какие экосистемы исследует ваша организация:

1.7. Структура экосистемы

Индикаторы	Ваша организация («Да» или «Нет»)
1.7.1. Состав и относительное соотношение компонентов экосистемы (местообитаний и видов)	
1.7.2. Процессы и функции экосистемы: Взаимодействие между структурными компонентами экосистемы	

2. *Неаборигенные виды, появившиеся в результате человеческой деятельности*

Просьба перечислить неаборигенные виды, которые изучает ваша организация:

2.1. Численность и распространение неаборигенных видов, в частности, инвазивных

Индикаторы	Ваша организация («Да» или «Нет»)
2.1.1.Тенденции численности, временной встречаемости и пространственного распределения в природе неаборигенных видов, в частности, инвазивных видов, особенно в зонах риска, в связи с главными векторами и путями распространения таких видов	
2.1.2. Векторы интродукции	

2.2. Воздействие неаборигенных видов на окружающую среду

Индикаторы	Ваша организация («Да» или «Нет»)
2.2.1. Соотношение неаборигенных и аборигенных видов в некоторых хорошо изученных таксономических группах, например, макроводорослях, моллюсках	
2.2.2. Величина воздействия неаборигенных видов, в частности, инвазивных, на аборигенные сообщества, местообитания и функционирование экосистемы	
2.2.3. Уровень биологического загрязнения - Biopollution Level (BPL) (индекс)	

3. *Популяции* промысловых видов рыб и моллюсков

Просьба перечислить, какие промысловые виды исследует ваша организация:

3.1. Уровень нагрузки в результате рыболовства

Примечание: **Первичным индикатором является** *Промысловая смертность (F). Для хорошего экологического статуса значение* F должно равняться или быть ниже, чем уровень, способный обеспечить максимальный устойчивый вылов (Maximum Sustainable Yield, MSY) в течение длительного времени (F_{MSY}).

Индикаторы	Ваша организация («Да» или «Нет»)
3.1.1. Промысловая смертность (F)	
3.1.2. Промысловая смертность (F) относительно эталонного значения	

Примечание: В идеале индекс биомассы должен быть взят из источника, независимого от промыслового рыболовства (например, интенсивность рыболовства – из донных траловых съемок, оценка биомассы – из акустических обследований или съемок отложенной икры).

Просьба указать, как оценивается биомасса промысловых видов:

Индикаторы	Ваша организация («Да» или «Нет»)
3.1.3. Соотношение «вылов/биомасса»	
3.1.4. Максимальный устойчивый вылов	
3.1.5. Тренды вылова/биомассы	

3.2. Репродуктивная способность запасов

Индикаторы	Ваша организация («Да» или «Нет»)
3.2.1. Биомасса нерестового запаса относительно с эталонного значения	
3.2.2. Индексы биомассы или численности (для половозрелой части популяции)	

3.3. Возрастное и половое соотношение.

Индикаторы	Ваша организация («Да» или «Нет»)
3.3.1. Пропорция рыб, чья длина превышает заданную величину, например, длину, при которой 100% женских особей являются половозрелыми	
3.3.2. Средняя максимальная длина для всех видов, обнаруженных во время научных рейсов	
3.3.3. 95% процентиль распределения длины рыб, наблюдавшейся в ходе научных рейсов	
3.3.4. Размер при полной половой зрелости, который может отражать степень нежелательных генетических воздействий от промысла	

4. Морские пищевые цепочки

Видовой состав пищевых цепочек варьирует в зависимости от местообитания и региона, но принципы передачи энергии солнечного света и растений через последовательные трофические уровни остаются одними и теми же. Перечисленные индикаторы относятся к основным свойствам.

4.1. Продуктивность (продуктивность на единицу биомассы) ключевых видов или трофических групп

Просьба перечислить, какие ключевые виды или трофические группы исследуются на продуктивность:

Индикаторы	Ваша организация («Да» или «Нет»)
*4.1.1. Продуктивность ключевых хищных видов с использованием их продукции на единицу биомассы (продуктивность)**	
4.1.2. Продукция на единицу биомассы	
4.1.3. Морской Трофический Индекс	
4.1.4. Трофические уровни (функциональные кормовые группы)	
4.1.5. Пищевой рацион	

4.2. Пропорция выбранных видов, находящихся вверху пищевых цепочек

Просьба перечислить, какие выбранные виды предназначены для индикаторов 4.2.1 и 4.2.2.:

Индикаторы	Ваша организация («Да» или «Нет»)
4.2.1. % крупных рыб (по весу)	
4.2.2. Размеры (длина, вес) ценных/целевых видов в выбранных функциональных группах	

4.3. Численность / распространение ключевых групп / видов

Примечание: Особенно важны для индикаторов 4.3.1. и 4.3.2. группы/виды:

(i) биологические группы с большой интенсивностью круговорота (например, фитопланктон, зоопланктон, медузы, короткоживущие пелагические рыбы и бактерии), которые быстро реагируют на изменения экосистемы и полезны в качестве индикаторов раннего предупреждения;
(ii) группы/виды, на которые направлена человеческая деятельность;
(iii) группы/виды, являющиеся определяющими для местообитаний (например, бентическая фауна);
(iv) группы/виды, находящиеся вверху пищевой цепочки (могущие аккумулировать вредные вещества или реагировать на последовательное воздействие (каскадный эффект) изменений экосистемы);
(v) группы/виды, тесно связанные с другими группами/видами на другом трофическом уровне.

Просьба указать, какие группы/виды предназначены в качестве индикаторов 4.3.1 и 4.3.2.:

Индикаторы	Ваша организация («Да» или «Нет»)
4.3.1. Тренды численности	
4.3.2. Изменение пространственного распределения видов (например, перемещение видов к северу в связи с климатическими изменениями)	

4.4. Потоки энергии в пищевых цепочках: Соотношение продукции или биомассы между разными трофическими уровнями

Примечание: Ниже обсуждаемые индикаторы предназначены для измерения степени потока энергии между разными трофическими уровнями.

Индикаторы	Ваша организация («Да» или «Нет»)
Соотношение биомассы и/или продукции пелагических и демерсальных рыб	
Соотношение продукции или биомассы беспозвоночных макробентоса и демерсальных рыб	
Соотношение потребной продукции зоопланктона / продукции зоопланктона	
Соотношение потребной продукции бентоса / продукции бентоса	

5. Антропогенная эвтрофикация

Индикаторы	Ваша организация («Да» или «Нет»)
Нагрузка биогенных веществ	

Если «Да», просьба указать, нагрузки из каких источников исследует ваша организация.

5.1. Уровень биогенных веществ

Индикаторы	Ваша организация («Да» или «Нет»)
5.1.1. Концентрация биогенов в толще воды	
5.1.2. Соотношение биогенов: отклонения от нормальной пропорции в соотношении биогенов (Si:N:P) (например, содержание Si пониженное относительно других биогенов)	

5.2. Первичные симптомы прямого воздействия эвтрофикации

Индикаторы	Ваша организация («Да» или «Нет»)
5.2.1. Хлорофилл (концентрация, пространственные области высоких концентраций)	
5.2.2. Прозрачность воды в связи с увеличением количества взвешенных водорослей	
5.2.3. Структура сообществ водорослей – численность / рост численности условно-патогенных микроводорослей (например, они могут образовывать массы над естественной флорой, в результате чего бентические организмы гибнут от удушья)	
5.2.4. Изменение флористического состава видов (например, соотношение диатомовые: жгутиковые, смещение от бентических к пелагическим, индикаторные виды, вредные цветения водорослей). Ежегодные цветения вредных / токсичных водорослей. Ежегодные и многолетние изменения частоты и/или длительности цветений. Изменения баланса диатомовых/ жгутиковых / цианобактерий	
5.2.5. Первичная продукция	
5.2.6. Цветения вредных / токсичных водорослей	
5.2.7. Погруженная водная растительность – пространственное покрытие и плотность зарослей	

5.3. Вторичные симптомы или косвенные воздействия эвтрофикации

Индикаторы	Ваша организация («Да» или «Нет»)
5.3.1. Численность/Уменьшение многолетних макрофитов и морских трав	
5.3.2. Растворенный кислород	
5.3.3. Бентос – разнообразие и пропорция уязвимых и нечувствительных видов, например, модель. P-R (нагрузка-реакция)	
5.3.4. Заморы рыбы/бентоса	

6. Целостность морского дна

Индикаторы	Ваша организация («Да» или «Нет»)
6.1. Физическое повреждение, имеющее отношение к характеристикам субстрата	
6.2. Тип, численность, биомасса и площадь распространения соответствующего биогенного субстрата	
6.3. Протяженность участка морского дна, на который серьезно влияет человеческая деятельность для разных типов субстратов	
6.4. Состояние бентического сообщества	
6.5. Структура бентических местообитаний	
6.6. Численность видов – результатов биоинженерии	
6.7. Индексы разнообразия и богатства, принимая также во внимание отношения «виды – ареал»	
6.8. Пропорция биомассы или численности особей в	

Индикаторы	Ваша организация («Да» или «Нет»)
макробентосе свыше определенных длины/размера	
6.9. Спектр размеров биомассы	
6.10. Форма кривых кумулятивной численности количества особей по размерным группам	
6.11. Вторичная продукция	
6.12. Соотношение условно-патогенных и чувствительных видов (Например, AMBI, модель «Нагрузка-реакция»)	
6.13. Параметры, описывающие характеристики (форму, наклон и прямой участок) размерного ряда бентического сообщества	
6.14. Присутствие особо чувствительных и/или толерантных видов	

7. Постоянные изменения гидрографических условий

Постоянное изменение гидрографических условий может быть результатом таких видов деятельности как строительство в море, свалки и намыв участков, дамбы, поля ветряков и другие конструкции для получения возобновляемой энергии, нефтяные и газовые платформы и мосты, дноуглубление и дампинг, а также наземное строительство со сбросами в море, например, водосбросы электростанций. Постоянное изменение гидрографических условий может состоять в изменении течения или волновой активности, соленостных и температурных характеристик, прозрачности воды, что может повлиять на морские экосистемы.

Индикаторы	Ваша организация («Да» или «Нет»)
Данные / информация о строительстве в море, свалках и намыве, дамбах, полях ветряков и др. сооружениях для получения возобновляемой энергии, нефтегазовых платформах и мостах, дноуглублении и дампинге, наземном строительстве со сбросами в море, например, водосбросы электростанций	

- Если «Да», просьба указать, данные/информация по каким видам человеческой деятельности/использованиям принадлежит вашей организации.

Воздействия рассматриваются через следующие индикаторы:

Индикаторы	Ваша организация («Да» или «Нет»)
7.1. Пространственный характер постоянных изменений	
7.1.1. Размер района, затронутого постоянными изменениями	
7.1.2. Изменение седиментации	
7.2. Воздействие постоянных гидрографических изменений	
7.2.1. Пространственная протяженность бентических местообитаний, на которые воздействуют постоянные изменения	
7.2.2. Изменения в бентических сообществах и/или продукции биомассы	

Индикаторы	Ваша организация («Да» или «Нет»)
7.2.3. Протяженность районов с пространственной или темпоральной гипоксией/аноксией	
7.2.4. Наличие бентических сообществ, связанных с условиями низкого содержания кислорода	
7.2.5. Индексы разнообразия и богатства, основанные на количестве видов и сравнительной численности в бентическом сообществе	
7.2.6.. Наличие особо чувствительных или толерантных видов	
7.2.7. Изменения функций местообитаний из-за изменений гидрографических условий (например, изменение мест воспроизводства рыб/млекопитающих (нерестилищ, гнездовий), мест нагула/кормовых участков и миграционных путей рыб, птиц и млекопитающих)	

8. Концентрация загрязняющих веществ

Просьба указать, какие загрязняющие вещества (ЗВ) исследует ваша организация:

Индикаторы	Ваша организация («Да» или «Нет»)
8.1 Концентрации в воде, донных осадках и биоте (измеряемые, где уместно, по одной матрице)*	
8.2. Биологическое воздействие на элементы рассматриваемых экосистем	
8.3. Встречаемость и масштабы случаев острого загрязнения (например, нефтяные пленки и пленки нефтепродуктов) и воздействие на биоту, физически затронутую этим загрязнением	

9. Загрязняющие вещества в рыбе и других продуктах моря, предназначенных для человеческого потребления

Имеется ли список ЗВ, составленный на основе действующих национальных нормативов? Если да, просьба указать, какие ЗВ согласованы и какие организмы исследуются.

Уровни, число и частота обнаружения веществ:

Индикаторы	Ваша организация («Да» или «Нет»)
9.1. Частота обнаружения уровней, превышающих нормативные (*)	
9.2. Реальные выявленные уровни	
9.3 Число ЗВ, по которым выявлено превышение уровней	
9.4. Источник загрязнения (геологические против антропогенных; местные против дальнего переноса)	

10. Свойства и количества морского мусора

Для этих индикаторов необходимы данные об объемах, составе и источниках мусора, а также о его воздействиях.

Индикаторы	Ваша организация («Да» или «Нет»)
10.1. Морской мусор, выброшенный на берег и/или накапливающийся на побережье	
10.2. Морской мусор в толще воды, включая плавающий, взвешенный и лежащий на дне	
10.3. Морской мусор, заглатываемый морскими животными/птицами	
10.4. Микрочастицы (в основном микропластиков), образующиеся в результате разложения мусора	
10.5. Степень воздействия разложившегося мусора на организмы	
10.6. Потенциальное химическое загрязнение в результате разложения мусора (пластика)	

11: Воздействие энергии, включая подводный шум

Наряду с подводным шумом, можно выделить и другие виды воздействия энергии, такие как электромагнитные поля от подводных кабелей и свет на поверхности .

Организмы, подвергающиеся воздействию звука, могут испытывать вредное влияние после короткого промежутка времени (острый эффект) или длительного (постоянный или хронический эффект). Вредное воздействие может быть малозаметным (например, временный вред для слуха, поведенческий эффект) или явным (например, гибель – в худшем случае).

Индикаторы	Ваша организация («Да» или «Нет»)
11.1. Распределение по времени и месту громких, низко- и среднечастотных звуковых импульсов (число дней и их распределение в рамках календарного года в районах с установленной площадью, в которых антропогенные источники звука превышают уровни, способные повлечь за собой значительное воздействие на морских животных, измеряемые как Уровень Звукового Воздействия (в dB re 1µPa 2 .s) или пиковый уровень звукового давления (в dB re 1µPa peak) на расстоянии одного метра в диапазоне частот 10 Гц - 10 кГц (11.1.1))	
11.2. Непрерывный звук низкой частоты (Тенденции уровня внешнего шума от диапазона 1/3 октавы 63 и 125 Гц (центральная частота) (re 1µPa RMS; средний уровень шума в этих октавных диапазонах за год) измеренный станциями наблюдений и/или с использованием моделей, если уместно (11.2.1))	
11.3. Электромагнитные поля	

V. Потребности в гармонизации

Просьба сообщить ваше мнение о потребности в гармонизации в вашей стране и в Черноморском регионе по следующим категориям:

1. **Стратегия отбора проб (оборудование, частота, размер района отбора**

A. Национальный уровень

B. Региональный уровень

2. **Анализ данных**

A. Национальный уровень

B. Региональный уровень

3. **Разработка индикаторов**

A. Национальный уровень

B. Региональный уровень

4. **Оценка Хорошего Экологического Состояния (GES, Good Environmental Status)**

A. Национальный уровень

B. Региональный уровень

Annex 3: Questionnaire Part I+II (English and Russian versions)

EC/UNDP Black Sea Project:

"Improving Environmental Monitoring in the Black Sea", Acronym: EMBLAS

Diagnostic Report

guiding improvements in the Black Sea monitoring/data collection and data management

Questionnaire

Part I / Part II

EMBLAS
Environmental Monitoring in the Black sea

EC/UNDP Black Sea Project:

"Improving Environmental Monitoring in the Black Sea", Acronym: EMBLAS

The Questionnaire

The purpose of this questionnaire, prepared in the frame of the EC/UNDP Project EMBLAS[1], is to identify your organization's informational capacity in the area of **Black Sea-related** data/information collection and management, and consequent assessments prepared. Based on your feedback, the following questions shall be answered in a special report, named Diagnostic Report:

1. What is the legislation/policy framework of Black Sea-related data/information collection in your country and what kind of change/advancement in this framework shall be recommended to ensure sustainability of data/information collection in support of ecosystem-based management of the Black Sea environment protection in your country?
2. What is the institutional framework of data/information collection your country and what changes in it shall be proposed to improve the Black Sea environment protection in your country?
5. What are the Black Sea-related data/information availability and accessibility in your country and what shall we recommend for improving them both?
6. Are the Black Sea-related data available in your country suitable to calculate indicators and sufficient to make knowledge-based decisions on Black Sea environment protection?
7. What kinds of data management tools are presently used in your country and what improvements we should suggest?
8 How do you identify/classify water quality and good environmental status, in general? What shall we recommend to harmonise the approaches in your country and in the Black Sea region?
9 What Black Sea assessments are produced, which tools are used, and what shall we recommend to harmonise and improve them in your country and in the Black Sea region?
10. What are the capacity building needs in your country which would improve the Black Sea environment protection and specifically the related data/information collection and management

[1] EMBLAS is a two-year project (2013-2014), financed by the European Commission (EC, http://ec.europa.eu/europeaid/index_en.htm) and by the United Nations Environment Programme (UNDP, http://www.undp.org/content/undp/en/home.html), aiming at improving of Black Sea monitoring and data management so that to ensure knowledge-based decision-making and adaptive management of the Black Sea environment protection. EMBLAS supports the Commission on the Protection of the Black Sea Against Pollution (Bucharest Convention, www.blacksea-commission.org) and three of the contracting parties to the Bucharest Convention (Georgia, Russian Federation and Ukraine) to achieve important management targets, specified in the regional Black Sea Strategic Action Plan (http://www.blacksea-commission.org/_bssap2009.asp).

EC/UNDP Black Sea Project:

"Improving Environmental Monitoring in the Black Sea", Acronym: EMBLAS

I. General

Name of organization	Postal address/webpage	Contact person (name, address, tel/fax, e-mail, skype)	Name of the person who fills in the Questionnaire and contact details

What type is your organization?

☐ Governmental ☐ NGO ☐ Private ☐ other (please specify here)

Please specify your organization's field:

☐ Environment data collection ☐ Socio-economy data collection ☐ Environment protection management

☐ other (please specify here)

Is your organization part of a national data collection system? ☐ Yes ☐ No

If Yes, please specify/describe.

What other national and international networks related to data collection is your organization part of?

***Note**: Please press the enter key in the field above in order to add more lines*.

Is your organization affiliated to a Ministry, Academy or other organization? ☐ Yes ☐ No

If Yes, please specify.

Specify relevance of your data collection to other human activities beyond the sphere of environmental protection (please click on YES or NO in the appropriate cells of the table).

***Note**: this is to identify which are the main application areas of your organization data/assessments.*

Human activity	Yes/No
Public health	☐ Yes ☐ No
Coastal and urban development	☐ Yes ☐ No
Marine and riverine traffic	☐ Yes ☐ No
Fishery and aquaculture	☐ Yes ☐ No
Tourism and recreation	☐ Yes ☐ No
Offshore gas and oil exploitation	☐ Yes ☐ No
Agriculture and farming	☐ Yes ☐ No
Various branches of industry	☐ Yes ☐ No
Military activities	☐ Yes ☐ No
Other activities (please specify) (*Note: Please press the enter key in the field above in order to add more lines*)	

II. Legal and institutional framework of data/information collection

1. Legal/policy instruments and institutional framework (***Note**: please add to the Tables as many lines as you need*)

A. *International environmental legislation (conventions, multi- and bilateral agreements relevant to the data collection performed by your organization)*

N	Title of Convention or Agreement	Coordinating Institution in your country, webpage	Contact person/Focal point (name, contact details)	Is your organization involved in implementation (Y/N)

B. *National environmental legislation (please specify laws, decrees, other legal acts related to the data collection performed by your organization; print dates when these instruments have been entered into force to trace the progress during the last years)*

N	Title of National Legal Act	dd.mm.yy	Is your organization involved in implementation (Y/N)

C. Administrative instruments (*statements, resolutions, ministerial regulations, national standards, guidelines, scientific programmes, etc. related to the data collection performed by your organization, including sub-national level instruments). Please, where possible give dates of publishing and links.*

D. Financing institutions (*those which provide the budget for the data collection carried out by your organization and approve the programs you work under*)

Name of organization	Postal address/webpage	Contact person (address, tel/fax, e-mail, skype)	Level of the organization[a]

[a] ***Note:*** Level means: central, local, own resources, etc. *If the responsibility of the organization is not environment protection, please specify it also.*

E. Please specify the gaps you see in the legislation/policy and institutional frameworks which prevent you to sustain and/or further develop the data collection conducted by your organization. List the documents which you would recommend for revision or what new policies should be developed?

F. Please specify shortly or demonstrate in a chart the changes you would recommend in the institutional framework of Black Sea-related data/information collection.

III. Data management, data products, QC procedures applied, classifications, assessments

1. Please provide information on availability of Black Sea data base(s) in your organization

***Note**: if you have more than one data base, please insert rows and describe each of them in separate.*

Name of the data base (if any)	Link (if any) [a]	Year of launch [b]	Type of data base [c]	Is the data base linked to models? [d]	Terms of access

[a] ***Note** – if the data base is not on-line, please specify it and provide brief information on how the data base is replenished.*

[b] ***Note** – when the data base became operational? If the data are kept in Excel sheets or similar (not organised in a data base through specialised software), please specify the first year when an initial data have been stored electronically (e.g. not on hard copy in Protocols only).*

[c] ***Note** – specify how the data base is organised (Excel, DBF, ACCESS, Microsoft SQL Server (2008-R2 or other), ORACLE, etc.)*

[d] ***Note** – if yes, please specify in separate what kind of models and what these models are used to simulate.*

2. Black Sea data products

A. Please list what indicators are automatically calculated or produced with query in the data base of your organization (***Note**: not the initial data but the derivatives of them*).

Indicator (unit)	Regularly produced (Yes/No[2])	Statistical method applied (if any)	Type of representation (Data Product automatically delivered) [a]

[a] ***Note** – the indicator can be derived from the data base in Table and Figures, or distribution/classification (quality classes), maps/GIS.*

B. Please list what kind of statistical software/s is used in your organization and what you would recommend to be used.

C. Please list what kind of software/s is used in your organization to prepare data products. What would you recommend to be used?

3. QC (ASSESSMENT AND FLAGGING OF QUALITY) procedures in data management (DQC)

A. Please provide References of major guiding documents in DQC used in your organization and where possible internet links.

[2] If No, please specify the reason and frequency/period with which the indicator is available.

B. Please specify the needs of your organization to improve QC in data management.

4. Please specify what are the major gaps in data management in your organization

5. Please specify what classifications you use in your organization for water quality and good environmental status identification

***Note**: In case you have a developed or adopted methodology, please attach it as an Annex to this Questionnaire or give reference/link.*

6. Please describe what kind of Black Sea-related assessments are regularly prepared by your organization

A. National reporting

In case your organization participates in national reporting related to Conventions and/or national environmental legislation, please fill in the Table below. If not, please go to the next Table (Other reports).

Type of reporting[3] and Name of Report	Frequency and since when	Related Convention and or National Legal Act	Submitted to (Convention Secretariat, Ministry, authorities)	Where published (link, if any)

B. Other reports

Name of assessment/Report	Frequency and since when	Assessment model (if any)[4]	To whom the report is delivered	Where published (link, if any)

7. Please specify what you would recommend to improve the assessments prepared by your organization

[3] National Reports, National statistics, Public information, etc.
[4] E.g. DPSIRR (drivers/pressures/state/impact/response/recovery) model, DPIVR (drivers/pressures/impact/vulnerability/response), etc.

8. Reporting of Black Sea data (to whom, kind of formats used)

Note: If the data are reported (not the assessments but raw data and/or indicators), please specify to whom.

Name of institution to which your organization reports	Postal address or webpage and contact person	Frequency	Related Convention and/or National Legal Act (if any)	What data[5]	Link to the Data Base where the data are stored[6]	What the data are used for?

Note: *Please provide links to formats used (if any), (e.g. the BSC, SeaDataNet, etc. formats are available online) or the Formats themselves where possible (as Annex to this Questionnaire).*

9. Please recommend how to improve the use of data collected by your organization

10. On-going projects (national and international) with Black Sea component in which your organization takes part (***Note****: the projects which are currently implemented regardless the starting date*)

Please provide the name of the project and link to its website, duration, very brief annotation for the national projects (objectives of the project) and for each project specify:

A. Data collected

Name of the Project	Time period for which the data are collected	Geographical coverage	Parameters (list them one after another)

B. Reporting to the projects (what data and how the data are reported, where stored) –short information; if there are project databases, please specify and give link.

Name of the project	Raw Data (Y/N)	Indicators or other data products (Y/N)	Data Base (Name if any and Link)	List of parameters stored in the project data base

[5] E.g. Air pollution, Biodiversity, Land-based sources of pollution, Chemistry, Biology, etc.
[6] If such data base is not existent, then please provide details on how the data are stored.

IV. Data availability[7]

This part of the Questionnaire aims at identifying the data availability for marine/uses activities, pressures/impacts and state of the Black Sea environment, so that to meet the requirements of the DPSIRR framework in assessments, which are the knowledge needed for informed decision-making and adaptive management of the Black Sea environment protection.

The target period is 2006-2012. The frequency of observations is meant from monthly to annual, depending on the parameter discussed. The geographical coverage meant is the Exclusive Economic Zone of your country. In the column 'Your organization' of the Tables below, please write 'Yes' or 'No', where necessary you may wish to include ***Notes*** to better specify the data availability.

Please specify which of these are studied by your organization.

Table 1. Biological elements

Species	Your organization (Yes or No)
Bacteria	
Phytoplankton	
Protozoa	
Macroalgae	
Mesozooplankton	
Macrozooplankton	
Meiobenthos	
Macrozoobenthos	
Ichthyoplankton	
Fish	
Mammals	
Birds	
Others	

Table 2. Characteristics of the state of the Sea

Characteristic	Component	Criteria	Your Organization (Yes or No)
Physical and chemical features	Bathymetry and topography		
	Temperature and salinity regime, ice cover, sea level, fresh water input, circulation and current velocity, stratification (CIL[8]), upwelling, wave	Seasonal variability, spatial distribution, trends	
	pH, pCO, H_2S profiles, nutrients, pollutants		
Biological features at the level of functional groups	Seabirds	Diversity, abundance, spatial and temporal distribution, migrations, trends	
	Mammals		

[7] Requirements of European Directives (Water Framework and Marine Strategy Framework) are taken into consideration so that to ensure harmonization in the Black Sea region. However, the DPSIRR model, which is especially behind the MSFD, is not an invention of the European Union or used only in assessments conducted by the European Environment Agency. The DPSIRR model has a long history, dating back to the 1970s, when it initially appeared as a Pressure-State-Response model (Rapport, D., and A. Friend. 1979. *Towards a comprehensive framework for environmental statistics: a stress-response approach*). The model is used in UN (United Nations) assessments both for state of the environment reports and for transboundary diagnostic analysis.

[8] Cold Intermediate Layer

In the Table below, please check whether you have data/information to describe the human activities exercised in your national waters and on coast. In the column 'Description of marine use/activity' please specify what kind of indicators you use in your country to describe human activities.

Table 3. Description of human activities

Activity Theme	List of Human Activities	**Description of marine use/activity** (***Note***: Please list what kind of technical, socio-economic or other indicators are used in your organization to describe each of the human uses)
Extraction of living resources	Fisheries incl. recreational fishing (fish & shellfish)	
	Seaweed and other sea-based food harvesting	
	Extraction of genetic resources/ bioprospecting/ maerl	
Food production	Aquaculture (fin-fish & shellfish)	
Man-made structures (incl. in construction)	Land claim, coastal defence	
	Port operations	
	Placement & operation of offshore structures (other than for energy production)	
	Submarine cable & pipeline operations	
Extraction of non-living resources	Marine mining (sand, gravel, rock)	
	Dredging	
	Desalination/water abstraction	
Energy production	Marine-based renewable energy generation (wind, wave & tidal power)	
	Marine hydrocarbon extraction (oil & gas)	
Transport	Shipping	
Waste disposal	Solid waste disposal incl. dredge material	
	Storage of gases	
Tourism and recreation	Tourism & recreation incl. yachting	
Research and survey	Marine research, survey & educational activities	
Military	Defence recurrent operations	
	Dumping of munitions	
Land-based activities (coastal, riverine and atmospheric)	Urban (municipal waste water discharge)	
	Industry (discharges, emissions)	
	Agriculture & forestry (run-off, emissions)	
Other marine uses and activities		

In the Table below, please cross-check whether for each human activity you have data/information to describe the pressures exercised on the Black Sea. In the **shaded boxes** please indicate 'Yes' or 'No' considering level of input/load (where appropriate) and/or level of pressure in the environment.

Table 4. Human activities and pressures (cross-check) (ML – marine litter)

Activity Theme	List of Human Activities	***PRESSURES***											
		Physical loss (area, extent[9])	***Physical damage (area, extent)***	***Interference with hydrological processes***	***Other physical disturbance (areas, extent)***		***Contamination by hazardous substances (load)***	***Systematic and/or intentional release of substances (load)***	***Nutrient and organic matter enrichment (load)***	***Biological disturbances***			***Acidification***
		Smothering Sealing	Siltation Abrasion Extraction (e.g. sand)	Thermal and salinity regime change	Noise (trends in level)	ML (trends in amount on coast and in sea)	Synthetic compounds Non-synthetic substances Radionuclides	e.g. produced water, carbon storage	Fertilizers and other nutrient-rich substances.	Extraction of species, including non-target[10]	Invasives, translocations[11]	Microbial pathogens	Decrease in pH
Extraction of living resources	Fisheries incl. recreational fishing (fish & shellfish)												
	Seaweed and other sea-based food harvesting												
	Extraction of genetic resources/ bioprospecting/ maerl												
Food production	Aquaculture (fin-fish & shellfish)												
Man-made structures (incl. in construction)	Land claim, coastal defence												
	Port operations												

[9] Area and extent, where mentioned, are meant for different types of affected substrates.
[10] The Pressure can be described by number of vessels, fishing effort, frequency trawled, etc.
[11] The pressure can be described by vectors of introduction, risk areas, number of new species identified per year, number of established species per decade, etc.

Activity Theme	List of Human Activities	PRESSURES											
		Physical loss (area, extent[9])	*Physical damage (area, extent)*	*Interference with hydrological processes*	*Other physical disturbance (areas, extent)*		*Contamination by hazardous substances (load)*	*Systematic and/or intentional release of substances (load)*	*Nutrient and organic matter enrichment (load)*	*Biological disturbances*			*Acidification*
		Smothering Sealing	Siltation Abrasion Extraction (e.g. sand)	Thermal and salinity regime change	Noise (trends in level)	ML (trends in amount on coast and in sea)	Synthetic compounds Non-synthetic substances Radionuclides	e.g. produced water, carbon storage	Fertilizers and other nutrient-rich substances.	Extraction of species, including non-target[10]	Invasives, translocations[11]	Microbial pathogens	Decrease in pH
	Placement & operation of offshore structures (other than for energy production)												
	Submarine cable & pipeline operations												
Extraction of non-living resources	Marine mining (sand, gravel, rock)												
	Dredging												
	Desalination/water abstraction												
Energy production	Marine-based renewable energy generation (wind, wave & tidal power)												
	Marine hydrocarbon extraction (oil & gas)												
Transport	Shipping												
Waste disposal	Solid waste disposal incl. dredge material												
	Storage of gases												

Activity Theme	List of Human Activities	PRESSURES											
		Physical loss (area, extent[9])	*Physical damage (area, extent)*	*Interference with hydrological processes*	*Other physical disturbance (areas, extent)*		*Contamination by hazardous substances (load)*	*Systematic and/or intentional release of substances (load)*	*Nutrient and organic matter enrichment (load)*	*Biological disturbances*			*Acidification*
		Smothering Sealing	Siltation Abrasion Extraction (e.g. sand)	Thermal and salinity regime change	Noise (trends in level)	ML (trends in amount on coast and in sea)	Synthetic compounds Non-synthetic substances Radionuclides	e.g. produced water, carbon storage	Fertilizers and other nutrient-rich substances.	Extraction of species, including non-target[10]	Invasives, translocations[11]	Microbial pathogens	Decrease in pH
Tourism and recreation	Tourism & recreation incl. yachting												
Research and survey	Marine research, survey & educational activities												
Military	Defence recurrent operations												
	Dumping of munitions												
Land-based activities (coastal, riverine and atmospheric)	Urban (municipal waste water discharge)												
	Industry (discharges, emissions)												
	Agriculture & forestry (run-off, emissions)												
Other marine uses and activities													

In the Table below, please cross-check for each pressure whether you have the data/information to describe the impacts. Please indicate 'Yes' or 'No'.

Table 5. Pressures and impacts (cross-check)[12]

Pressure theme	Pressure	Impact on	Yes/No
Physical loss	Smothering	Seabed Habitats	
	Sealing		
Physical damage	Siltation		
	Abrasion		
	Extraction		
Other physical disturbance	Underwater noise	Functional groups and habitats (water column and seabed)	
	Marine litter		
Interference with hydrological processes	Thermal regime change	Functional groups and habitats (water column and seabed)	
	Salinity regime change		
Contamination by hazardous substances	Synthetic compounds	Seabed habitats, functional groups, seafood	
	Non-synthetic substances		
	Radionuclides		
Systematic and/or intentional release of substances	Other substances	Seabed habitats, functional groups	
Nutrient and organic matter enrichment	Nutrients	Water column and seabed habitats, species, functional groups, ecosystems	
	Organic matter		
Biological disturbance	Microbial pathogens	Safety of food (fish and other seafood), bathing water quality	
	Non-native species and translocations	Water column and seabed habitats, species, functional groups, ecosystems	
	Extraction of selected species incl. non-target catches	Water column and seabed habitats, species, functional groups, ecosystems	
Others			

A. Please specify what kind of climate change-related data your organization collects:

[12] The Table is similar to Table 2 from the EC document: **Guidance for 2012 reporting under the Marine Strategy Framework Directive**, however covers broader scale impacts under certain pressures as seen being possible in the Black Sea.

IV. Needs in harmonization

Please specify your opinion on the needs in harmonization as per the MSFD:

1. National level

2. Regional level

Please specify the needs in harmonization in the following categories (examples):

a. Data analysis
b. Indicators development
c. GES assessment

IV. Training and needs

1. Please specify what kind of trainings is regularly conducted in your organization.

2. Please specify what trainings have been organised by your organization during the last 5 years.

3. Please specify what trainings have been attended by experts of your organization during the last 5 years (other than those specified above).

Name of training	Year	Organised by

4. Please specify what kind of trainings you would recommend to be organised to increase the monitoring (including QA/QC) and data management capacity in your organization.

EC/UNDP Black Sea Project:

"Improving Environmental Monitoring in the Black Sea", Acronym: EMBLAS

Диагностический отчет

для руководства улучшениями мониторинга Черного моря и управления данными

Анкета

Часть I / Часть II

EMBLAS
Environmental Monitoring in the Black sea

Анкета

Настоящая анкета была подготовлена в рамках проекта Европейского Союза / Программы ООН по развитию (UNDP), носящего сокращенное название EMBLAS[1]. Цель этой анкеты состоит в том, чтобы определить информационные возможности Вашей организации по сбору и управлению информацией / данными, **которые относятся к Черному морю**, и выполнить соответствующую оценку. На основании полученных от вас заполненных анкет мы должны будем ответить в специальном документе, который называется «Диагностический отчет», на следующие вопросы:

1. Каковы законодательная база и политическая структура для сбора данных/информации о Черном море в Вашей стране; какого рода изменения / прогресс в этой структуре должен быть рекомендован для обеспечения устойчивого сбора данных/информации в поддержку управления охраной окружающей среды Черного моря в Вашей стране, основанного на экосистемном подходе?
2. Какова институциональная структура сбора данных/информации в Вашей стране и какие изменения в ней должны быть предложены для улучшения охраны окружающей среды Черного моря в Вашей стране?
3. Имеются ли в Вашей стране данные/информация, связанные с Черным морем, насколько они доступны и что мы можем порекомендовать для улучшения данных/информации и доступа к ним?
4. Годятся ли данные/информация о Черном море, имеющиеся в Вашей стране, для вычисления индикаторов и достаточны ли они для того, чтобы принимать решения по вопросам охраны Черного моря, основанные на знаниях?
5. Какие инструменты для управления данными используются в Вашей стране в настоящее время, и какие улучшения мы могли бы порекомендовать?
6. Как вы определяете/классифицируете качество воды и, в целом, хороший экологический статус? Что мы должны порекомендовать для гармонизации подходов между Вашей страной и черноморским регионом?
7. Какие оценки Черного моря выполняются, какие инструменты используются и что мы должны порекомендовать для улучшения и гармонизации оценок и инструментов в Вашей стране и в черноморском регионе?
8. Каковы потребности Вашей страны в наращивании возможностей так, чтобы такое наращивание возможностей улучшило охрану окружающей среды Черного моря и, в частности, связанные с этим сбор и управление данными/информацией.

[1] EMBLAS – двухлетний проект (2013-2014), финансируется Европейской Комиссией (EC, http://ec.europa.eu/europeaid/index_en.htm) и Программой ООН по окружающей среде (UNDP, http://www.undp.org/content/undp/en/home.html); он направлен на улучшение мониторинга Черного моря и управления данными с тем, чтобы обеспечить принятие решений, основанное на знаниях, что будет способствовать адаптивному управлению охраной окружающей среды Черного моря. EMBLAS оказывает поддержку Комиссии по защите Черного моря от загрязнения (Бухарестская Конвенция, www.blacksea-commission.org) и трем из стран-участниц Бухарестской Конвенции (Грузии, Российской Федерации и Украине) для достижения важных целей управления (менеджмента), указанных в региональном Стратегическом Плане действий по Черному морю (http://www.blacksea-commission.org/_bssap2009.asp).

I. Общая информация

Наименование организации	Почтовый адрес/веб-сайт	Контактное лицо (имя, адрес, тел./факс, e-mail, skype)	Имя лица, заполняющего Анкету, и его контактные данные

Каков тип Вашей организации?

☐ Государственная ☐ Негосударственная ☐ Частная ☐ Другая (просьба указать здесь)

Какова сфера деятельности Вашей организации:

☐ Сбор данных об окр.среде ☐ Сбор социоэкономич. данных ☐ Управление охраной окр.среды ☐ другая (просьба указать здесь)

Является ли Ваша организация частью национальной системы сбора данных? ☐ Да ☐ Нет

Если «да», просьба уточнить/описать.

В какие еще национальные или международные сети, связанные со сбором данных, входит Ваша организация?

***Примечание**: чтобы добавить дополнительные строки для ответа на предыдущий вопрос, нажмите «Enter».*

Относится ли Ваша организация к какому-либо министерству, Академии или другой организации?

☐ Да ☐ Нет

Если «да», просьба уточнить.

Укажите, относятся ли собираемые вами данные к какой-либо еще сфере человеческой деятельности, кроме охраны окружающей среды (просьба указать «да» или «нет» в соответствующих ячейках в таблице).

***Примечание**: здесь указывается, каковы главные сферы применения данных/оценок Вашей организации.*

Виды деятельности	Да/Нет	
Здравоохранение	☐ Да	☐ Нет
Развитие прибрежных зон и градостроение	☐ Да	☐ Нет
Морские и речные перевозки	☐ Да	☐ Нет
Рыбное хозяйство и аквакультура	☐ Да	☐ Нет
Туризм и рекреация	☐ Да	☐ Нет
Разработка морских месторождений нефти и газа	☐ Да	☐ Нет
Сельское хозяйство и фермерство	☐ Да	☐ Нет
Различные отрасли промышленности	☐ Да	☐ Нет
Деятельность вооруженных сил	☐ Да	☐ Нет
Другая деятельность (просьба указать) ***Примечание:** чтобы добавить дополнительные строки нажмите «Enter».*		

II. Законодательная база и институциональная структура сбора данных/информации

1. Юридические/политические инструменты и институциональная структура
(***Примечание**: просьба добавлять в **таблицы** столько строк, сколько вам потребуется*)

A. *Международное природоохранное законодательство (конвенции, много- и двусторонние соглашения, имеющие отношение к сбору данных Вашей организацией; укажите даты вступления в силу этих инструментов в Вашей стране)*

N	Название Конвенции или соглашения	Координирующая организация в стране, уеб-страница	Контактное лицо (адрес, тел./факс, e-mail, skype)	Участвует ли Ваша организация во внедрении (Да/Нет)

B. *Национальное природоохранное законодательство (просьба указать законы, указы, другие законодательные акты, имеющие отношение к сбору данных Вашей организацией; укажите даты вступления в силу этих инструментов. Даты помогут проследит прогрес.)*

N	Название национального законодательного акта	дд.мм.гг	Участвует ли Ваша организация во внедрении (Да/Нет)

C. Административные инструменты (*постановления, резолюции, положения министерства, национальные стандарты, руководства, научные программы и т.д., связанные со сбором данных Вашей организацией, включая инструменты суб-национального уровня)*

N	Название документа	дд.мм.гг/либо уеб страница

D. Ответственные организации (*предоставляющие финансирование для сбора данных, выполняемого Вашей организацией, и утверждающие программы, по которым Вы работаете*)

Название организации	Почтовый адрес/веб-сайт	Контактное лицо (адрес, тел./факс, e-mail, skype)	Уровень организации[a]

[a] ***Примечание:*** Уровень означает: центральные, местные, собственные ресурсы и т.д. *Если организация не отвечает за охрану окружающей среды, просьба это указать.*

E. Просьба указать те пробелы, которые Вы видите в законодательстве/политике и институциональной структуре и которые препятствуют устойчивости и дальнейшему развитию сбора данных, проводимого Вашей организацией. Перечислите документы, которые Вы бы рекомендовали пересмотреть, укажите, какие новые политики должны быть разработаны

F. Просьба кратко указать или продемонстрировать на схеме те изменения, которые Вы бы порекомендовали в институциональной структуре сбора данных/информации, связанных с Черным морем.

III. Управление данными, устройства обработки и передачи данных, применяемые процедуры контроля качества (QC), классификации, оценки

1. Просьба предоставить информацию о наличии баз(ы) данных по Черному морю в Вашей организации

***Примечание**: если у Вас более чем одна база данных, просьба добавить для описания каждой отдельную строку:*

Название базы данных (если есть)	Ссылка (если есть) [a]	Год запуска [b]	Тип базы данных [c]	Связана ли база данных с моделями? [d]	Условия доступа

[a] ***Примечание** – если база данных не on-line, просьба указать это и дать краткую информацию о том, как эта база данных пополняется.*

[b] ***Примечание** – когда эта база данных заработала? Если данные хранятся в таблицах Excel или подобным образом (не организованы в базу данных при помощи специальных программ), просьба указать, в каком году первоначальные данные начали хранить в электронном виде (например, не только в виде жесткой копии Протоколов).*

[c] ***Примечание** – укажите, как организована база данных (Excel, DBF, ACCESS, Microsoft SQL Server (2008-R2 или другое), ORACLE и т.д.)*

[d] ***Примечание** – если да, просьба отдельно указать, какие виды моделей и для моделирования чего именно они используются.*

2. Результаты обработки данных по Черному морю

A. Просьба перечислить индикаторы, которые вычисляются автоматически или через запрос в базу данных (***Примечание**: не первичные данные, а производные от них*).

Индикатор (единицы)	Вычисляется регулярно (Да/Нет[2])	Применяемый статистический метод (если применяется)	Вид представления (Результат обработки данных, выдаваемый автоматически) [a]

[a] ***Примечание** – индикатор может выводиться из базы данных в таблицах и цифрах или распределения/классификации (классов качества), карт/ГИС.*

B. Просьба перечислить статистическое программное обеспечение, которое используется в Вашей организации, и указать, что бы вы рекомендовали использовать.

C. Просьба перечислить, какое программное обеспечение используется в Вашей организации для обработки данных. Что бы вы порекомендовали использовать?

[2] Если «нет», просьба указать частоту / период с которым этот индикатор доступен.

3. Процедуры QC (ОЦЕНКИ И МАРКИРОВКИ КАЧЕСТВА) в управлении данными (DQC – контроль качества данных)

   A. Просьба указать главные руководящие документы по контролю качества данных (DQC), которые применяются в Вашей организации, и, где возможно, интернет - ссылки.

   B. Просьба указать потребность Вашей организации по улучшению контроля качества в управлении данными.

4. Просьба указать главные пробелы в управлении данными у Вашей организации

5. Просьба указать, какую классификацию Ваша организация применяет для качества воды и определения хорошего экологического статуса

***Примечание**: В случае если у вас есть разработанная или принятая методика, просьба приложить ее в качестве Приложения к настоящей Анкете или дать ссылку /link.*

6. Перечислите оценки, относящиеся к Черному морю, которые регулярно делает Ваша организация

A. Национальные *отчеты*

Если Ваша организация производит национальные *отчеты , по линии внедрения международных соглашений и/или национального законодательства, то пожалйста заполните Таблицу под пунктом А.*

Тип и/или название Отчета	**С какой частотой, и с каких пор выполняется**	**К внедрению какого правого документа относится? (**напр. Конвенция, национальный закон, и т.д.*)*	**Кому предоставляется отчет**	**Где публикуется (если есть, ссылку)**

Примечание: Тип отчета может быть и только статистика, или докладывание индикаторов, или анализ данных, и т.д.

Б. Другие отчеты

Название оценки/Отчета	**С какой частотой, и с каких пор выполняется**	**Модель для оценки (если таковая имеется)**[3]	**Кому предоставляется отчет**	**Где публикуется (если есть, ссылку)**

[3] Например, модель DPSIRR (drivers/pressures/state/impact/response/recovery – движущие силы/нагрузки/состояние/воздействия/реакция/восстановление), модель DPIVR (drivers/pressures/impact/vulnerability/response – движущие силы/нагрузки/воздействия/уязвимость/реакция) и т.д.

7. Просьба указать, что бы Вы рекомендовали для улучшения оценок, которые выполняет Ваша организация

8. Предоставление данных о Черном море (кому, какие используются форматы)

Примечание: Если вы предоставляете данные (а не оценки), просьба указать, кому.

Название организации которой Вы докладуете	**Почтовый адрес/веб-сайт, контактное лицо (тел./факс, e-mail, skype)**	**Частота**	**К внедрению какого правого документа относится?** (напр. Конвенция, национальный закон, и т.д.)	**Какие данные**[4]	**Link к базе данных, где сохраняются данные/информация**[5]	**Для чего исполь зуется база данных?**

Примечание: *Просьба указать ссылки на форматы, которые Вы используете, если таковые имеются (например, форматы Черноморской Комиссии (BSC), SeaDataNet и т.д. доступны онлайн), или привести сами форматы там, где это возможно (как Приложение к Анкете).*

9. Пожалуйста дайте мнение каким образом можно улучшить сбор данных Вашей организации.

10. Проекты, выполняющиеся в настоящее время (национальные и международные), содержащие черноморский компонент, в которых Ваша организация принимает участие (***Примечание***: *проекты, которые выполняются сейчас, вне зависимости от даты начала*)

Просьба вместе с названием проекта указывать его веб-сайт, длительность, очень краткую аннотацию для национальных проектов (цели проекта), и для каждого проекта указывать:

A. Собранные данные

Название проекта	**Период, в течение которого ведется сбор данных**	**Географический охват**	**Параметры (перечислить)**

B. Отчетность перед проектом (какие данные, и как вы отчитываетесь о данных, где храните их) – краткая информация; если есть база данных проекта, просьба указать и дать ссылку.

Название проекта	**Первичные данные (да/нет)**	**Индикаторы или другие результаты обработки данных (да/нет)**	**База данных (название, если есть, и ссылка)**	**Список параметров, хранящихся в базе данных проекта**

[4] Напр., Загряснение воздуха, Биоразнообразие, Химия, Биология, Наземньие иссточники загрязнения, и т.д..
[5] Если нет такой базы данны х, то пожалуйста уточните как сохраняются данны е.

IV. Наличие данных[6]

Эта часть Анкеты направлена на то, чтобы определить наличие данных по видам морепользования/морской деятельности, нагрузкам/воздействиям и состоянию окружающей среды Черного моря для выполнения требований структуры DPSIRR по оценкам – знаний, необходимых для принятия решений на основе информации, а также для адаптивного менеджмента охраны окружающей среды Черного моря.

Целевой период - 2006-2012. Предполагаемая частота наблюдений – от ежемесячных до ежегодных, в зависимости от параметра. Географический район – Исключительная экономическая зона Вашей страны. Просьба в **Таблице 1**, в колонке «Ваша организация» указывать «да»/«нет». Там, где необходимо, вы можете включить **«Примечания»,** чтобы лучше определить наличие данных.

Укажите, что из перечисленного изучает Ваша организация.

Таблица 1. Биологические элементы

Виды	Ваша организация (Да или Нет)
Бактерии	
Фитопланктон	
Простейшие	
Макроводоросли	
Мезозоопланктон	
Макрозоопланктон	
Мейобентос	
Макрозообентос	
Ихтиопланктон	
Рыба	
Млекопитающие	
Птицы	
Прочее	

[6] Были учтены требования Европейских Директив (Водной Рамочной Директивы и Рамочной Директивы морской стратегии) для обеспечения гармонизации в Черноморском регионе. Однако, модель DPSIRR, которая стоит за Директивой морской стратегии (MSFD), не является изобретением Европейского Союза и используется не только для оценок, проводимых Европейским Агентством Окружающей Среды. Модель DPSIRR имеет долгую историю, которая началась в 70-х гг. прошлого века, когда она появилась впервые как модель «Нагрузка-состояние-реакция» (Раппорт, Д. и А.Фриенд, 1979. *Towards a comprehensive framework for environmental statistics: a stress-response approach*). Эта модель используется ООН как оценки состояния отчетов об окружающей среде, так и для трансграничных диагностических анализов.

Таблица 2. Характеристики состояния моря

Характеристика	Компонент	Критерии	Ваша организация (Да или Нет)
Физические и химические свойства	Батиметрия и топография		
	Температурный и солёностный режимы, ледовое покрытие, уровень моря, поступление пресной воды, циркуляция и скорость течения, стратификация (CIL[7]), апвеллинг, волнение	Сезонная изменчивость, пространственное распределение, тренды	
	Профили pH, pCO, H_2S, биогены, загрязняющие вещества		
Биологические свойства на уровне функциональных групп	Морские птицы	Разнообразие, численность, пространственное и временное распределение, миграции, тренды	
	Млекопитающие		

Просьба в Таблице 3 проверить, есть ли у вас данные/информация для описания видов человеческой деятельности в Ваших национальных водах и на побережье. В графе «Описание морепользования/морской деятельности» просьба указать, какие индикаторы Вы используете в Вашей стране для описания человеческой деятельности.

Таблица 3. Описание человеческой деятельности

Сфера деятельности	Список видов деятельности	**Описание морепользования/морской деятельности** (***Примечание***: Просьба перечислить, какие технические, социально-экономические или прочие индикаторы использует Ваша организация для описания каждого из видов использования)
Добыча живых ресурсов	Рыбная ловля, в т.ч. любительская (рыбы и моллюсков)	
	Добыча водорослей и других морских пищевых продуктов	
	Добыча генетических ресурсов / биопиратство / водоросли maerl	
Производство пищевых продуктов	Аквакультура (рыба и моллюски)	
Искусственные сооружения (в т.ч. строительство)	Освоение земель, защита берегов	
	Портовые операции	
	Установка и эксплуатация морских сооружений (кроме	

[7] Cold Intermediate Layer – Холодный промежуточный слой

Сфера деятельности	Список видов деятельности	**Описание морепользования/морской деятельности** (***Примечание***: Просьба перечислить, какие технические, социально-экономические или прочие индикаторы использует Ваша организация для описания каждого из видов использования)
	сооружений для производства электроэнергии)	
	Эксплуатация подводных кабелей и трубопроводов	
Добыча неживых ресурсов	Морские разработки (песка, гравия, камня)	
	Дноуглубительные работы	
	Опреснение/забор воды	
Производство электроэнергии	Морское производство возобновляемой энергии (ветровой, волновой, приливной)	
	Добыча углеводородов в море (нефть и газ)	
Транспорт	Судоходство	
Удаление отходов	Размещение твердых отходов, в т.ч. материалов дноуглубления	
	Хранение газов	
Туризм и рекреация	Туризм и рекреация, в т.ч. яхтенный спорт	
Исследования и съемки	Морские исследования, съемки и образовательная деятельность	
Военные	Повторяющиеся оборонительные мероприятия	
	Сброс военного имущества	
Береговая деятельность (морская, речная, атмосферная)	Городская (сброс бытовых сточных вод)	
	Промышленная (сбросы, выбросы)	
	Сельское и лесное хозяйство (сток, выбросы)	
Другие виды морепользования/морской деятельности		

Просьба перепроверить в Таблице 4 ниже, для каждого ли вида человеческой деятельности у вас есть данные/информация для описания нагрузок на Черное море. В **ячейках, отмеченных серым цветом,** укажите «Да» или «Нет», учитывая уровень поступления/нагрузки (где это уместно) и/или уровень давления на окружающую среду.

Таблица 4. Человеческая деятельность и нагрузки (перекрестная проверка) (ML – морской мусор)

Сфера деятельности	**Список видов деятельности**	***НАГРУЗКИ***											
		Физическая потеря (площадь, степень[8])	***Физический ущерб (площадь, степень)***	***Вмешательство в гидрологические процессы***	***Другое физическое беспокойство (площадь, степень)***		***Загрязнение опасными веществами (нагрузка)***	***Систематический и/или умышленный сброс веществ (нагрузка)***	***Обогащение биогенами и органическим веществом (нагрузка)***	***Биологическое беспокойство***			***Окисление***
		Удушение Запечатывание (Sealing)	Заиление Абразия Добыча (напр., песка)	Изменения температурного и солёностного режимов	Шум (тренды уровня)	ML (тренды количества на берегу и в море)	Синтетические соединения Не-синтетические вещества Радионуклиды	Напр.,промысловые воды, хранение CO2	Удобрения и другие вещества, богатые биогенами	Изъятие видов, в т.ч. не-целевых[9]	Перенос инвазивных видов	Патогенные микроорганизмы	Снижение pH
Добыча живых ресурсов	Рыбная ловля, в т.ч. любительская (рыбы и моллюсков)												
	Добыча водорослей и других морских пищевых продуктов												
	Добыча генетических ресурсов / биопиратство / водоросли maerl												
Производство пищевых продуктов	Аквакультура (рыба и моллюски)												
Искусственные сооружения (в т.ч.	Освоение земель, защита берегов												
	Портовые операции												

[8] Площадь и степень, там, где они упоминаются, относятся к разным типам затронутых субстратов.

[9] Нагрузка может быть описана как количество судов, число рейсов и т.д.

Сфера деятельности	Список видов деятельности	НАГРУЗКИ											
		Физическая потеря (площадь, степень[8])	*Физический ущерб (площадь, степень)*	*Вмешательство в гидрологические процессы*	*Другое физическое беспокойство (площадь, степень)*		*Загрязнение опасными веществами (нагрузка)*	*Систематический и/или умышленный сброс веществ (нагрузка)*	*Обогащение биогенами и органическим веществом (нагрузка)*	*Биологическое беспокойство*			*Окисление*
		Удушение Запечатывание (Sealing)	Заиление Абразия Добыча (напр., песка)	Изменения температурного и солёностного режимов	Шум (тренды уровня)	ML (тренды количества на берегу и в море)	Синтетические соединения Не-синтетические вещества Радионуклиды	Напр.,промысловые воды, хранение CO2	Удобрения и другие вещества, богатые биогенами	Изъятие видов, в т.ч. не-целевых[9]	Перенос инвазивных видов	Патогенные микроорганизмы	Снижение pH
строительство)	Установка и эксплуатация морских сооружений (кроме сооружений для производства электроэнергии)												
	Эксплуатация подводных кабелей и трубопроводов												
Добыча неживых ресурсов	Морские разработки (песка, гравия, камня)												
	Дноуглубительные работы												
	Опреснение/забор воды												
Производство электроэнергии	Морское производство возобновляемой энергии (ветровой, волновой, приливной)												
	Добыча углеводородов в море (нефть и газ)												
Транспорт	Судоходство												
Удаление отходов	Размещение твердых отходов, в т.ч. материалов дноуглубления												

Сфера деятельности	Список видов деятельности	НАГРУЗКИ											
		Физическая потеря (площадь, степень[8])	*Физический ущерб (площадь, степень)*	*Вмешательство в гидрологические процессы*	*Другое физическое беспокойство (площадь, степень)*		*Загрязнение опасными веществами (нагрузка)*	*Систематический и/или умышленный сброс веществ (нагрузка)*	*Обогащение биогенами и органическим веществом (нагрузка)*	*Биологическое беспокойство*			*Окисление*
		Удушение Запечатывание (Sealing)	Заиление Абразия Добыча (напр., песка)	Изменения температурного и солёностного режимов	Шум (тренды уровня)	ML (тренды количества на берегу и в море)	Синтетические соединения Не-синтетические вещества Радионуклиды	Напр.,промысловые воды, хранение CO2	Удобрения и другие вещества, богатые биогенами	Изъятие видов, в т.ч. не-целевых[9]	Перенос инвазивных видов	Патогенные микроорганизмы	Снижение pH
	Хранение газов												
Туризм и рекреация	Туризм и рекреация, в т.ч. яхтенный спорт												
Исследования и съемки	Морские исследования, съемки и образовательная деятельность												
Военные	Повторяющиеся оборонительные мероприятия												
	Сброс военного имущества												
Береговая деятельность (морская, речная, атмосферная)	Городская (сброс бытовых сточных вод)												
	Промышленная (сбросы, выбросы)												
	Сельское и лесное хозяйство (сток, выбросы)												
Другие виды морепользования / морской деятельности													

Таблица 5 предназначена для перекрестной проверки того, по всем ли нагрузкам у вас есть данные/информация для описания воздействия. Просьба указывать «Да» или «Нет».

Таблица 5. Нагрузки и воздействия (перекрестная проверка)[10]

Вид нагрузки	Нагрузка	Воздействие на	Да/Нет
Физическая потеря	Удушение	Донные местообитания	
	Запечатывание		
Физический ущерб	Заиление		
	Абразия		
	Добыча		
Другие виды физического беспокойства	Подводный шум	Функциональные группы и местообитания (в толще воды и на дне)	
	Морской мусор		
Вмешательство в гидрологические процессы	Изменение температурного режима	Функциональные группы и местообитания (в толще воды и на дне)	
	Изменение солёностного режима		
Загрязнение опасными веществами	Синтетические соединения	Донные местообитания, функциональные группы, морепродукты	
	Не-синтетические вещества		
	Радионуклиды		
Систематический и/или умышленный выброс веществ	Другие вещества	Донные местообитания, функциональные группы	
Обогащение биогенами и органическим веществом	Биогены	Местообитания, виды, функциональные группы, экосистемы в толще воды и на дне	
	Органическое вещество		
Биологическое беспокойство	Патогенные микроорганизмы	Пищевая безопасность (рыбы и других морепродуктов), качество воды для купания	
	Неаборигенные виды и перенос	Местообитания, виды, функциональные группы, экосистемы в толще воды и на дне	
	Добыча выбранных видов, включая нецелевой вылов	Местообитания, виды, функциональные группы, экосистемы в толще воды и на дне	
Прочее			

A. Просьба указать, какие данные, связанные с изменением климата, собирает Ваша организация:

[10] Эта Таблица похожа на Таблицу 2 в документе ЕС **«Guidance for 2012 reporting under the Marine Strategy Framework Directive» (Руководство по отчетности 2012 согласно Рамочной Директиве Морской Стратегии),** однако, включает более широкомасштабные воздействия определенных нагрузок, которые представляются возможными в Черном море.

IV. Потребности в гармонизации

Просьба указать Ваше мнение о потребностях в гармонизации в рамках Рамочной Директивы Морской Стратегии (MSFD):

1. Национальный уровень

2. Региональный уровень

Просьба определить потребности в гармонизации по следующим категориям (с примерами):

a. Анализ данных
b. Разработка индикаторов
c. Оценка Хорошего Экологического Состояния (GES, Good Environmental Status)

IV. Тренинги и потребности

1. Просьба указать, какие виды тренингов регулярно проводятся в Вашей организации.

2. Просьба указать, какие тренинги были организованы Вашей организацией за последние 5 лет.

3. Просьба указать, на каких тренингах побывали эксперты из Вашей организации за последние 5 лет (кроме тех, что были упомянуты выше).

Название тренинга	Год	Кем организован

4. Просьба указать, какие виды тренингов вы бы рекомендовали организовать для укрепления возможностей мониторинга (в т.ч. QA/QC[11]) и управления данными в Вашей организации.

[11] QA/QC – Оценка качества/контроль качества

Annex 4: List of stakeholders Georgia/Russia/Ukraine

List of National Stakeholders

Criteria for Stakeholders

- Participating in Black Sea environment protection (research and management);
- Managing and/or financing Black Sea Monitoring Programmes;
- Implementing Black Sea Monitoring Programmes and Black Sea-related projects with a monitoring component;
- Collecting and/or managingBlack Sea environment data;
- End-users of Black Sea environment data/information.

NATIONAL STAKEHOLDERS of GEORGIA

N	NAME	POSTAL ADDRESS	PHONE	MAIL	WEB	CONTACT PERSON
	MINISTRIES					
1.	Ministry of Environment and Natural Resources Protection of Georgia	6, Gulua str., Tbilisi, 0114, Georgia	(995 32) 272 72 26	m.makarova@moe.gov.ge	moe.gov.ge	Mariam Makarova
2.	Ministry of Economy and Sustainable Development of Georgia	12 Chanturia Str., Tbilisi, 0108, Georgia	(995 32) 299 11 11 (995 32) 299 11 05	ministry@economy.ge	www.economy.gov.ge	
3.	Ajara AR Environmental and Natural Resources Department	124 Vakhtang Gorgasali str. Batumi 6010, Georgia	(995)577252928	khukhunaishvili3@mail.ru	garemo-adjara.gov.ge	Nana Khukhunaishvili
4.	Ministry of Labor Health and Social Affairs of Georgia	44, Ak. Tsereteli Ave. Tbilisi 0119, Georgia	(995 32) 2 51 00 12	info@moh.gov.ge	moh.gov.ge	
5.	Ministry of Agriculture of Georgia	6 Marshal Gelovani Str., Tbilisi, 0159, Georgia	(995 32) 237 66 89	infomoa@moa.gov.ge	moa.gov.ge	
	MUNICIPALITIES					
6.	Batumi City Hall Supervisory Service, Department of Supervision of Environment and Sanitation	L. Asatiani str N25, 6010, Batumi, Georgia	(995)577302606	nugzari73@mail.ru	http://batumi.ge/en	Nugzar Tsetskhladze
7.	Poti Self Governing Territorial Body, Inland section	12 Agmashenebeli str, Poti, 0044, Georgia	(995)597822000	poti.info@gmail.com	http://www.poticity.ge/index.html	ZanaKankia

NATIONAL STAKEHOLDERS of GEORGIA						
N	**NAME**	**POSTAL ADDRESS**	**PHONE**	**MAIL**	**WEB**	**CONTACT PERSON**
8.	Poti, Municipality Nabada	24 Khobi str. Poti, 0044, Georgia	(995)593444271	nabada.poti@mail.ru	http://www.poticity.ge/index.html	RusudanSajaia
9.	Poti Self Governing Public Health Centre	12 Agmashenebeli str, Poti, 0044, Georgia	(995)599494092	nkhukhia@mail.ru	http://www.poticity.ge/index.html	Nana Mkheidze
10.	Poti Self Governing Territorial Body, Maltakva section	59, Guria str., Poti, 0044, Georgia	(995)555571438	maltakva.poti@mail.ru	http://www.poticity.ge/index.html	EkaterineJabua
	RESEARCH INSTITUTES					
11.	Water Ecology and Fisheries Scientific-research Institute	Batumi, Rustaveli 51, 6000	(995)599570503	wefri2006@yahoo.com	www.wefri.ge	Akaki Komakhidze
12.	N. Makhviladze Labor Medicine and Ecology Scientific-Research Institute	60, Agmashenebeli str., Tbilisi, 0107, Georgia	(995)595769843	ingagvineria@yahoo.com		Inga Gvineria
	UNIVERSITIES					
13.	Sh.Rustaveli Batumi State University.	Georgia, Batumi, Ninoshvili str. 35, 6010	(995)577141062	gdumbadze@mail.ru	http://www.bsu.edu.ge/	Guguli Dumbadze
14.	Agricultural University of Georgia	University Campus of Dighomi, David Aghmashenebeli Alley / 13 km	(995) 599 906592	e.jaiani@agruni.edu.ge	www.agruni.edu.ge	EkaJaiani
15.	Ilia State University	KakutsaCholokashvili Ave 3/5 Tbilisi 0162, GEORGIA	(+995 32) 223 10 26 (+995 32) 229 41 97	info@iliauni.edu.ge	www.iliauni.edu.ge	BelaJaphoshvili
16.	Tbilisi State University	1, Chavchavdze Ave., 0179 Tbilisi, Georgia				Kakhaber Bilashvili
	GOVERNMENTAL AGENCIES					
17.	National Environmental Agency	150, Aghmashenebeli Ave. ,0112 Tbilisi, Georgia	(5 99) 69 96 03	m.arabidze@yahoo.com	meteo.gov.ge	Marine Arabidze
18.	Maritime Transport Agency	23, Ninoshvili str., Batumi, 6000, Georgia	+995 (422) 274925 / 26	info@mta.gov.ge	http://mta.gov.ge	
19.	Kolkheti National Park		(995)558468098 (995)577101837	khatuna78@mail.ru	apa.gov.ge	Manana Chikovani
	NGOs, FOUNDATIONS, SOCIETIES					
20.	REC Caucasus	150, Aghmashenebeli Ave. , 7th floor 0112 Tbilisi, Georgia	Tel: +995 32 2253649 /+995 32 2253648	info@rec-caucasus.org	www.rec-caucasus.org	Sophie Akhobadze

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21.	Society of Conservation of wild Nature "Chaobi"	Khevachauri , Ortabatumi, Georgia	(995)593303957	izo.muho@gmx.net		Izolda Machutadze
22.	Scientific Centre of Study of the Black Sea Flora and Fauna		(995)557175155	ggurandukht@gmail.com	www.parkbatumi.ge	Guranda Bagrationi
23.	Georgian Ecological and Biological Monitoring Association		(995)599426003	biomonitoring@gmx.com		Manana Juruli
24.	Greens Movement of Georgia, Poti Branch	19, Batumi str., Poti, Georgia	(995)599610689	info@greens.ge	www.greens.ge	Paata Qiria
25.	Greens Movement of Georgia/Friend of Earth	10 Pekini str, 0171, Tbilisi, Georgia	(995)599514071	nino.chkhobadze@gmail.com	www.greens.ge	Nino Chkhobadze
26.	International Centre for Environmental Researches		(995)599246287	ICFER@ICFER.org	www.icfer.org	GiaAbramia
27.	Global Water Partnership in Georgia		(995)599547931	dgeorge@yandex.ru	www.gwp.org	George Dzamukashvili
28..	Foundation Caucasus Environment		5 99652707	mdevidze@caucasus.net		Manana Devidze
	PRIVATE COMPANIES					
29.	Ltd. Laboratory Research Centre, Poti		(995)599506162	kvleviscentri@mail.ru		Gia Rukhadze
30.	Agribusiness Consulting		(995)599503330	abc@abcgroup.ge	www.abcgroup.ge	Besarion Partsvania
31.	Scientific-Research Firm "Gamma"		(995 32) 233 02 74	gamma@gamma.ge	www.gamma.ge	Gvakharia
32.	Batumi Sea Port Ltd.	3, Gogebashvili str. Batumi 6003, Georgia	+995 (422) 27-62-61	info@batumiport.com	http://www.batumiport.com	
33.	Kulevi Sea Port	Kulevi, Khobi, 5800, Georgia	+995 32 224 38 38	info@bst.socar	http://www.kulevioilterminal.com/	

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1	**MINISTRIES**					
	Ministry of Natural Resources and Environment of the Russian Federation Black+Azov	4/6, Bolshaya Gruzinskaya str., 123995 Moscow, Russia	+7 (499) 254-48-00 Fax: +7(499) 254-43-10, +7 (499) 254-66-10,	admin@cbi-mpr.ru	http://www.mnr.gov.ru	Tretjakova Natalia Borisovna +7-499-254-79-47, nataliat@mnr.gov.ru
	Ministry of Agriculture Black+Azov	Orlikov Lane 1/11, 107139, Moscow, Russia	+7 (495) 607-80-00, 607-64-02, fax +7 (495) 607-83-62	info@mcx.ru	http://www.mcx.ru/	Minister Nikolai Fyodorov
	Federal Agency for Fishery of Ministry of Agriculture (Rosrybolovstvo) Black+Azov	Rozdestvensky boulevard 12, 107996 Moscow, Russia	+7 (495) 628 23 20, fax +7 (495) 987 05 54	harbour@fishcom.ru	http://www.fish.gov.ru/	Head Kraynyi Andrey Anatolyevich
	Ministry of Healthcare Black+Azov	Rakhmanovsky Lane 3, 127994, GSP-4, Moscow, Russia	+7 (495) 628-44-53, +7 (495) 627-29-44		https://www.rosminzdrav.ru	Minister Veronika Skvortsova
	Federal Agency of Marine and River Transport of Mintrans / Black+Azov	Petrovka 3/6, 125993, Moscow, Russia	Tel +7 (495) 626-11-00 Fax +7 (495) 626-15-62		http://www.morflot.ru	
2	**MUNICIPALITIES**					
	Branch of Federal State Enterprise "Marine port Sochi Administration"	Voykov street 1, 354000 Sochi, Krasnodar region, Russian Federation	Tel./fax: (8622) 62-18-89, 62-02-15;	map@sochi.ru	http://www.ampsochi.ru	Marine Safety Service of "Marine port Sochi Administration" (8622) 60-98-09, (8622) 60-98-50
	Tuapse Port Authorities of the Ministry of Transport of Russia	8, Gorky Street, Tuapse 352800, Russia	Tel.: (86167) 76-4-00, Fax: 76-4-03	map@tuapseport.ru	http://www.tuapseport.ru/Eng	Borcheninov Oleg, Harbour Master of Tuapse Port Authorities, Department of Marine safety Borovlev Aleksandr Manager of Department, Tel.: (86167) 76-440, SMB@tuapseport.ru
	Administration of Marine Port Novorossiysk of Ministry of Transport	Sebrjakov embankment, house 2, 353900 Novorossiysk, Russia	Tel./fax (8617) 676-402 / (8617) 676-312	ign@ampnovo.ru	http://ampnovo.ru/	Port Captain Erygin Vladymyr Vladymyrovich, Tel. (8617) 676-303, Ecological control: http://ampnovo.ru/index.php?option=com_content&task=blogcategory&id=108&Itemid=88

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3	**RESEARCH INSTITUTES**					
	Federal State Budgetary Institution "N.N. Zubov's State Oceanographic Institute" ("FSBI «SOI»") Black+Azov	Kropotkinsky Lane 6, 119034 Moscow, RUSSIA	Tel/Fax. +7 499 246 72 88	adm@oceanography.ru	www.oceanography.ru	Korshenko Alexander
	All Russian Research Institute of Hydrometeorological Information - World Data Center (RIHMI-WDC) / Black+Azov	Koroleva 6, Obninsk, Kaluga region, Russia	Tel. +7 (48439) 7-41-81, 6-40-85 fax: +7 (48439) 6-86-11	wdcb@meteo.ru	http://meteo.ru	Director Kopulov Vasily Nikolaevich, Department of oceanographical data Mikhaylov Nikolay Nikolaevich, Head of Lab. Vjazilov Eugeny Dmitrievich
	IGCE: Institute of Global Climate and Ecology of Roshydromet and RAS	Glebovskaya 20B, 107258, Moscow, Russia	Tel: +7(499) 169-24-11, Fax: +7(499) 160-08-31	semenov@igce.ru	http://www.igce.ru/	Director Semenov Sergey Mikhailovich (semenov@igce.ru, факс 8 499 1600831), Head of Department for Environmental Pollution Assessment Chernogaeva Galina Mykhailovna 8 499 1603552, gmchernogaeva@gmail.com
	Research and Production Association 'Typhoon' (RPA Typhoon) of Roshydromet, / Black+Azov	4 Pobeda str., Obninsk, Kaluga Region, 249038 Russia	Tel. +7 48439 7-19-53, fax: +7 (48439) 4-09-10	post@typhoon.obninsk.ru	www.typhoon.obninsk.ru	Director General Shershakov Vyacheslav Mikhailovich
	Hydrochemical Institute of Roshydromet Azov	Stachky boulevard 198, 344090 Rostov-on-Don, Russia	тел. +7 863 2 97 51 36	http://www.ghi.aaanet.ru		Deputy Director Minina Lydia Ivanovna
	AzNIIRKH Azov	Beregovaya 21/2, 344002 Rostov-on-Don, Russia	+7 (863) 262 48 50	riasfp@aaanet.ru	www.azniirkh.ru	Rovnina O.R.
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	South Branch of P.P. Shirshov's Institute of Oceanology RAS / Black	353467 Krasnodar region, Gelendzhik, Prostornaya Str., 1	Tel. +7 8 861 41 282 49	chasovn@mail.ru	http://www.chemlab23.ru/	Director Fedorov D.F., Head of Hydrochemistry Lab. Chasovnikov Valery Kuzmich, head of Lab. Ecology Silkin Vladimir Arsent'evich
	Southern Scientific & Production	20, Krymskaya St., 353461	+7 (86141) 5 62 67 +7	postmaster@ymg.ru	http://www.ymg.ru	General Director Artur Petrovich Pronkin,

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	Association for Marine Geological Operations - YUZHMORGEOLOGIYA Black	Gelendzhik, Russia	(8861) 94 6 21, Fax (86141) 5 62 66			Geological Department Basov Andrey Sergeevich 94 5 44, 8 918 32 73 133, Head of Geological Monitoring Department Burkatsky Oleg Nikolaevich Tel. 86141 94 2 28, Mob. 8 918 361 62 93 burkatsky@ymg.ru
	Southern Scientific Center of Russian Academy of Sciences (SSC RAS) Black+Azov	Chekhova 41, 344006 Rostov-on-Don, Russia	+7 (863) 250-98-29		www.ssc-ras.ru/	Chaiman SSC RAS Gennady Grigorievich MATISHOV, Scientific secretar Berdnikov Sergey Vladymyrovich
	Kuban State Agrarian University, Scientific-Research Institute Applied and Experimental Ecology Black+Azov	13, Kalinin street, 350044, Krasnodar, Russia	+7 (861) 226 02 04	niiecology@mail.ru	http://kubsau.ru/science/sri_ecology http://www.instecology.ru	Director Yarmak Leonid Petrovich
	Meteorological Synthesizing Centre - East (MSC-E, Moscow) - ЕМЕП Black	2nd Roshchinsky proezd 8/5, 115419 Moscow,Russia	no	msce@msceast.org	www.msceast.org	Gusev Alexey Vladymyrovich
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	Space Research Institute (IKI) Russian Academy of Sciences Black+Azov	117997, 84/32 Profsoyuznaya Str, Moscow, Russia	+7(495) 333-52-12	iki@cosmos.ru	http://www.iki.rssi.ru	Lavrova Olga
4	**UNIVERSITIES**					
	Moscow State University, (MSU), Geographical Faculty, Cathedra of Oceanology Black+Azov	119991, Moscow, Leninskie Gori, Geographical Faculty MSU, Cathedra of Oceanology	+7 (495) 939-22-15	info@geogr.msu.ru	http://www.geogr.msu.ru/	Dobrolyubov Sergey Anatolyevich, Kosurev A.N.

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	Biological Faculty of Kuban State University Black+Azov	Stavropolskaya str., 149, 350040 Krasnodar, Krasnodar region, Russia	+7 (861) 219-95-75, 219-95-75	bio@kubsu.ru	http://www.kubsu.ru/University/departments/BIO/	Head Nagalevsky Mikhail Vladymyrovich
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	F.F.Ushakov Marine State University	Lenina 93, 353918 Novorossiysk, Russia	8 (8617) 71-75-25	"Janet Selifonova" selifa@mail.ru	http://www.aumsu.ru/	Selifonova Janna
	GOVERNMENTAL AGENCIES					
5	**Roshydromet MNR**					
5.1	Federal Service for Hydrometeorology and Environmental Monitoring (Roshydromet) Black+Azov	Novovagankovsky per., 12, 123995 Moscow, GSP-5, Russia	+7-499-252-55-04, 252-94-84, 795-24-34	garkina@mcc.mecom.ru	http://meteorf.ru/	Head of Pollution Monitoring Department Peshkov Yury Vladymyrovich, tel. +7 499 252 13 69, +7 499 795 24 03, peshkov@mcc.mecom.ru

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5.2	Special Center on Hydrometeorology and Monitoring of Environment of the Black and Azov Seas (SCHME BAS) of Roshydromet / Black+Azov	354057 Krasnodar Region, Sochi, Sevastopolskaya 25	tel/fax +7-(8622)-61-41-91	pogoda@sochi.com	no	Head Oleg Lusak, Head of Chemistry Lab. Lyubimtsev Andrey Lvovich, +7 989 150 25 29
5.3	North-Caucasus Regional Division of Roshydromet (NC UGMS) Black+Azov	Erevanskaya 1/7, 344025 Rostov-on-Don, Russia	Tel +7 863 251 48 09, fax +7 863 251 59 27	meteo@aaanet.ru, admin@rostugms.mecom.ru, skugms@yugmeteo.donpac.ru	http://www.yugmeteo.donpac.ru/ugms.jsp	Head Baseluk Alexander Anatolyevich
5.4	Krasnodar CHMS of NC UGMS Black+Azov	Rashpileyskaya 36, 350610 Krasnodar, Krasnodar region, Russia	Tel +7 861 262 41 61, 262 50 14	krasnodar@rostugms.mecom.ru, kubmeteo@kubanmeteo.ru	http://www.kubanmeteo.ru/	Bondar Andrey Nikolaevich
5.5	Hydrometeorological Bureau of Tuapse (HMBT) Black	Morskaya 7, 352800 Tuapse, Russia	tel. +7 (861) 672-96-92	avp@kubanmeteo.ru		Head of Bureau Andrey Panchenko
5.6	Estuarian Hydrometeorological Station "Kuban" (Kuban HMS) of Krasnodar Center of Roshydromet Azov	Rosa Luxemburg 60, Temruk, Krasnodar region, Russia		temrhimlab@kubanmeteo.ru		Head of Chemistry Lab. Derbicheva Tamara Ivanovna
5.7	Rostov CHMS of NC UGMS of Roshydromet Azov	Vrubovaya 32, 344023 Rostov-on-Don, Russia	+7 (863) 293-98-10, (863) 235-61-72, (863) 293-01-22,(863) 293-98-09 Fax: +7 (863) 293-06-43	synoptic@rostel.ru		Head Samoletova Natalya Alexeevna
5.8	Don Estuarian Station (DUS) of Rostov Center of Roshydromet Azov	Leningradskaya 33, 346740 Azov, Russia	no	no	no	Head Sulimenko E.A.
6	**Rosvodresources MNR**					
	Federal Agency for Water Resources (Rosvodresources, FAVR) Black+Azov	Kedrova 8/house 1, 117292 Moscow, Russia	Fax +7 (499) 125-22-36	water@favr.ru	http://voda.mnr.gov.ru	

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	AzovInformCenter DBWD	Instrumentalnaya 48, 347923 Taganrog, Rostov region, Russia	+7 (863) 4-36-63-26 Fax: (863) 4-64-35-41	azovsea@itt.net.ru		Head Myronova Nina Alexandrovna
	Kuban Basin Water Directorate Rosvodresources (KDWD) Black+Azov	Krasnaya 180 Aa, 350020 Krasnodar, Krasnodar region, Russia	Tel. +7 (861) 253-73-07, fax +7 (861) 253-73-05	kbvu@mail.kuban.ru, iczm@mail.ru	www.kbvu-fgu.ru	Head Salov Gennady Vyacheslavovich, major specialist Ekaterina Antonidze, chairperson ICZM AG BSC
	Kuban DWD: Water Resources Department for Krasnodar Region Black+Azov	Krasnaya 180 Aa, 350020 Krasnodar, Krasnodar region, Russia	Tel. +7 (861) 253-73-07	kuban_bvu@mail.ru	www.kbvu-fgu.ru	
	Kuban DWD: Water Resources Department for Sochi Black	Southern Plants 2-A, 354340 Adler area, Sochi, Russia	Tel. +7 (928) 292-15-57, +7 (862) 266 71 70	kbvu-sochi@mail.ru	www.kbvu-fgu.ru	
	Kuban Center for Water Monitoring (Kubanmonitoringvod) Azov	Krasnaya 180 Aa, 350020 Krasnodar, Krasnodar region, Russia	Tel/Fax. +7 (861) 253-73-16	fgu@kbvu-fgu.ru	www.kbvu-fgu.ru/fgu	
	Centr for Laboratory Analysis and Technical Measurements on Southern Federal District (TSLATI on SFD) Black+Azov	Zakharova 11, building 2, 350007 Krasnodar, Krasnodar region, Russia	Тел.: (861) 267-78-22 Тел/факс: (861) 299-02-2	ecomonitoring@clati.ru	http://clati.ru/	Head Kim Alexander Vladymyrovich
	Sochi Department of TSLATI on SFD Black	Young Lenintsev 23, 354008 Sochi, Russia, Laboratory: Polytechnical 68	Тел. +7 (862)264-57-11	sochi_lab@mail.ru	clati.ru/ter-departments	Halyi Alexander Nikolaevich, Laboratory Yurchenko Alexander Georgievich, (8622) 53-01-85, 53-17-12
	Tuapse Department of TSLATI on SFD Black	Gagarina 27, 353800 Tuapse, Russia	Тел. +7 (86167) 2-42-03	tuapse_clati@mail.ru	clati.ru/ter-departments	Head Nosko Vitaly Vladymyrovich
	Novorossiysk Department of TSLATI on SFD Black	Rubatskaya 1, 353900 village Alexino, Novorossiysk, Russia	Te. +7 (8617) 30-19-74	novclati@yandex.ru	clati.ru/ter-departments	Head Osypjan Armenak Abelovich

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	Rosprirodnadzor MNR					
	Federal Service for Supervision in the field of Use of Nature (Rosprirodnadzor) Black+Azov	4/6, Bolshaya Gruzinskaya str., 123995 Moscow, Russia	Tel. +7 (499) 254-05-93, Fax. +7 499 254-58-88		www.rpn.gov.ru	Head Kirillov Vladymyr Vladymyrovich, 03-02. Department on supervision of water resources and marine supervision. Head Orlova Anzhela Alexandrovna +7 (499) 254-65-29
	Department on Southern Federal District of Rosprirodnadzor Black+Azov	Stachky avenue, 200/1, building 3, 344090 Rostov-on-Don, Russia; Zelenaya 1a, 344009 Rostov-on-Don, Russia	Tel. +7 (863) 210-16-03, Fax. (863) 210-16-08	rpn@dpryug.ru	http://www.dpryug.ru/	Head Urban Gennady Alexandrovich
	Direction on Krasnodar region and Adygei Republic of Rosprirodnadzor Black+Azov	Krasnaya 19, 350063 Krasnodar, Krasnodar region, Russia	+7 (861) 268-38-49(861) 268-42-70	kalmupr@infotecset.ru	http://www.prirodnadzor-kuban.ru/	Head Moldovanov Roman Alexandrovich
	Black-Azov Seas Directorate on Technical Supervision for the Sea of Rosprirodnadzor(BlackAzovTekhMorDirectorate) Black	Rubatskaya 1, 353900 village Alexino, Novorossiysk, Russia	Тел/факс (8617) 300096, 300097	info@bsatmd.ru	http://bsatmd.ru	
	Azov Department of BlackAzovTekhMorDirectorate / Azov	Gogolevsky Lane 6, 347900 Taganrog, Russia	Тел. +7 (8634) 64 14 51, 31 15 23	taganrog@bsatmd.ru	http://bsatmd.ru	
	Rosnedra MNR					
	Federal Agency for Use of Mineral Resources (Rosnedra), MNR Black+Azov	4/6, Bolshaya Gruzinskaya str., 123995 Moscow, D-242, Russia	Tel. +7 (499) 254-73-29	rosnedra@rosnedra.gov.ru, press@rosnedra.gov.ru	http://www.rosnedra.gov.ru	
	Rosrubolovstvo Minselkhoz					
	Azov-Black Basin Directorate for Fishery and Protection of Biological Water Resources (Azcherrybvod) of Rosrybolovstvo Black+Azov	Filatova 17, 350038 Krasnodar, Russia	+7 (861) 275-73-66, +7 (861) 275-73-02		http://www.azcherrybvod.ru	Head Ivanov Gennady Vladymyrovich
	Adler Industrial-Experimental Salmon Factory (AIESF) of Azcherrybvod Black	Village Monastry, Adler region, Sochi	8-862-243-95-78		http://www.azcherrybvod.ru/struct23.html	Director Markaryan Harry Andranikovich

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	Kyziltash Grouth-Reproduction Grey Mullet Enterprise (KGRGME) of Azcherrybvod Black+Azov	Village Gyginka, Anapa area, Krasnodar region			http://www.azcherrybvod.ru/struct24.html	
	State Natural Reserve "Utrish"	Astrakhanskaya street 80, 353440 Anapa, Krasnodar region, Russia	Tel. 8 901 006 56 96, Fax. 8 8 613 39 00 20	utrishgpz@mail.ru		Director Alexander Krokhmal
	Natural Park "Donsky". State Budgetary Enterprise of Rostov Region "Directorate of State Natural Reserves of regional level" / Azov	Vyatskaya street 45, 344095 Rostov-on-Don, Azov Area, Rostov Region, Russia	Tel. (863) 237 67 33, Fax. (863) 273 81 21	E-mail: goszakaznik@mail.ru		Director Guda Mikhail Nikolaevich
	Federal East Akhtar spawning and breeding farm Azov	Mayakovskogo 26 a/ya 14, 353860 Primorsko-Akhtarsk, Krasnodar Region, Russia	Tel. +7 (86143) 2-14-02		http://fishretail.ru/litecat/details?id=273566	
	FSUE «Grivensky sturgeon hatchery» Azov	353798 Grivenskaya village, Kalilinsky area, Krasnodarsky Region, Russia	Tel. +7 (86163) 577-87, +7 (86163) 577-69		http://fishretail.ru/litecat/grivenskiy-osetrovyy-rybovodnyy-zavod	
	SPK Kurchansky PSK Azov	Kurchansky Fishery Farm 1, 353527 villlage Shining Path, Temryuk district, Krasnodar region, Russia	Tel. +7 (86148) 9-36-07		http://fishretail.ru/litecat/kurchanskiy-psk	
	Yeisk Department of FGU AzCherRubVod Azov	Gorkogo 6a, 353680 Yeisk, Krasnodar region, Russia	Tel. +7 (86132) 4-85-08		http://fishretail.ru/litecat/eyskiy-otdel-fgu-azcherrybvod	
	FGUP Temryuk sturgeon hatchery Azov	Beregovaya 25, 353520, Temryuk, Krasnodar region, Russia	Tel. +7 (86148) 5-35-34, +7 (86148) 5-11-46		http://fishretail.ru/litecat/temryukskiy-osetrovorybovodnyy-zavod	
	FGUP Chernoerkovskoya spawning and breeding farm Azov	Rabochaya 32, 353597 village Verkhny, Slavic district, Krasnodar region, Russia	Tel. +7 (86146) 95-6–85		http://fishretail.ru/litecat/chernoerkovskoya-nerestovo-vyrastnoe-hozyaystvo	
	FGBU Achuevo sturgeon hatchery Azov	Lenina street, 353596 village Achuevo, Slavic district, Krasnodar region, Russia	Tel. 8 (86146) 75528, Fax 8 (86146) 7-55-60	fguaorz@rambler.ru	http://www.rostov-fishcom.ru/podvedomstvennie/kontakty/	Director Ryadintseva Valentina Alexandrovna

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3	Ministry of Health	7 Hrushevskoho str., Kyiv, Ukraine 01601	38(044) 2262205	moz@moz.gov.ua	http://www.moz.gov.ua	
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Annex 5: Outline of the EMBLAS Diagnostic Report

DIAGNOSTIC REPORT II

This document has been prepared with the financial assistance of EC and UNDP. The views expressed herein can in no way be taken to reflect the official opinion of EC and UNDP. The opinions expressed are those of the authors. Any errors or omissions are responsibility of the authors and should be reported to them accordingly.

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Great thanks to all who filled in the EMBLAS Questionnaire…….LIST them

Great thanks also to all other colleagues who worked with the EMBLAS Questionnaires and/or provided information for this report. Their names have not been mentioned in the filled Questionnaires (only the names of organizations' directors or other persons authorised to represent the organization), yet, we should like to gratefully recognize their support and thank for the time spent to help the EMBLAS Project.

TABLE of CONTENTS

DEFINITIONS

State/mandatory - this is the regular monitoring financed by the state, which is related to national or international legislation/policy implementation. Such monitoring can be, of course, regular only on paper, but there exist or should exist a concrete national program which describes this kind of monitoring and substantiates its funding.

Regular non-mandatory - long-term research monitoring, which is financially supported through governmental scientific progarmmes or otherwise.

Irregular non-mandatory - short-term problem-oriented observations, supported by projects, performed in relation to EIA, ordered by private organizations, etc.

Environmental complex monitoring; Water quality; Ecotoxicological monitoring; Surveillance monitoring; Compliance monitoring; Operational monitoring (based on real-time observations), Fisheries surveys (and collation of fisheries data), Biodiversity monitoring, Seabirds Monitoring, Habitats Monitoring, etc.

……

EXECUTIVE SUMMARY

……

Responsible: Violeta

INTRODUCTION

……

Responsible: Violeta

I. Monitoring (state/mandatory, non-mandatory, and operational)

1. Legislation/Policy (national and international instruments), achievements and gaps

1.1. International instruments

(**Note**: Tables to be prepared including all beneficiary countries)

1.1.1. Global level

1.1.2. Regional level, including bilateral agreements

1.2. National instruments

1.2.1. Georgia

……

1.2.2. Russian Federation

……

1.2.3. Ukraine

……

Responsible: Legal expert + Violeta +NFPs

2. Institutional framework of monitoring, achievements and gaps

(**Note**: Here names of organizations, kind of monitoring they fund, addresses and contact persons to appear. Fishery, Bathing waters, etc. Programmes to be also taken into consideration.)

2.1. Georgia

2.1.1. Responsible governmental bodies (those which provide the budget for the national Black Sea monitoring and approve of the programs**)**

(**Note**: Academy of Science also goes into this sub-Chapter, not only state/mandatory monitoring should be reflected.)

Table……..

N	Name of organization	Postal address, web	Contact person	Mandatory monitoring (Y/N)	Non-mandatory monitoring (Y/N)

2.1.2. Organisations participating in monitoring (state/mandatory and non-mandatory monitoring)

……

Table

N	Name of organization	Postal address, web	Contact person	Mandatory/state monitoring (Y/N)	Non-mandatory (Y/N)	
					Regular	Irregular

(**Note**: Where possible Charts of State/mandatory monitoring institutional framework to be given - the NFPs to be asked to help. The Charts might be more than one, as for instance in UA state monitoring goes under the supervision of at least 3 different Ministries and in separate is the Academy of Science, where the budget is also governmental.)

2.2. Russian Federation

……

(the same as above)

2.3. Ukraine

……

(the same as above)

Responsible: ONU + NFPs

3. Organizations participating in Black Sea data collection

(**Note**: Here include those organization which do not monitor or collect samples from markets for fish stock assessments, but only gather/compile data derived from monitoring.)

3.1. Georgia

……

3.2. Russian Federation

……

3.3. Ukraine

……

3.4. International organizations

……

Responsible: ONU + NFPs

4. Types of monitoring, geographical scope, stations maps, parameters, frequency of observations

(**Note**: The coordinates of relatively permanent Black Sea stations to be given in an Annex.)

4.1. Georgia

……

Table . Information on different types of Black Sea-related monitoring in Georgia

Implementing organization		Type of monitoring[1]	Is the monitoring regular (Y/N)	Geographical scope	Time period (years from-to)	Frequency of sampling per year (from-to)	Number of stations per year(from-to)	Number of parameters per sampling campaign (from-to)	Related to human activity
Name	National Monitoring Program[2]								

(**Note**: Following this Table, detail description to be given for stations, media sampled, parameters, and frequency of observations.)

4.2. Russian Federation

……

(the same as above)

4.3. Ukraine

……

(the same as above)

Responsible: ONU + NFPs

[1] Environmental complex monitoring; Water quality; Ecotoxicological monitoring; Surveillance monitoring; Compliance monitoring[1]; Operational monitoring (based on real-time observations), Fisheries surveys (and collation of fisheries data), Biodiversity monitoring, Seabirds Monitoring, Habitats Monitoring, etc.

[2] Is the organization part of a National Monitoring Program? If Yes, under the Table please give the name of this Program and years of it being in force. **Note**: This will help to identify whether the monitoring is mandatory or non-mandatory category.

5. Procedures of QA/QC in monitoring (Field and Laboratory works)

5.1. Georgia

……

5.2. Russian Federation

……

5.3. Ukraine

……

Responsible: MHI

6. Reporting of data (to whom, kind of formats used)

6.1. Georgia

……

6.2. Russian Federation

……

6.3. Ukraine

……

Responsible: ONU + NFPs

7. Operational monitoring

For each beneficiary country:

State (if any) and non-mandatory
Remote and *in situ*
Cost-effectiveness

(**Note**: To be in detail elaborated by the experts of MHI.)

7.1. Georgia

……

7.2. Russian Federation

……

7.3. Ukraine

……

Responsible: MHI

8. Non-mandatory monitoring: on-going projects with monitoring component (national and international)

8.1. Georgia

……

8.2. Russian Federation

……

8.3. Ukraine

……

8.3. International organizations (in case they have such)

(**Note**: Mention also recently closed projects, which had a monitoring component. For each country to include not only large international projects, but also the national ones.)

Responsible: ONU

9. Gaps and problems in National and International monitoring implementation, recommendations for improvements

9.1. Georgia

……

9.2. Russian Federation

……

9.3. Ukraine

……

9.4. International monitoring

……

Responsible: ONU + NFPs. All partners comment and contribute.

II. Data management, data products, data flagging (DQC), assessments

1. Availability of permanent data bases and terms of access

For each beneficiary country to reflect the availability of:

Data bases of organizations

National level data bases

Participation in international data bases

1.1. Georgia

……

1.2. Russian Federation

……

1.3. Ukraine

……

1.4. International organizations

……

Responsible: MHI

2. Data products, indicators calculated, statistical methods used, models developed

2.1. Georgia

……

2.2. Russian Federation

……

2.3. Ukraine

……

2.4. International organizations

……

Responsible: MHI

3. QA/QC procedures in data management

3.1. Georgia

……

3.2. Russian Federation

……

3.3. Ukraine

……

3.4. International organizations

……

Responsible: MHI

4. Regular assessments

4.1. Georgia

……

4.2. Russian Federation

……

4.3. Ukraine

……

4.4. International organizations

……

Responsible: MHI

5. Gaps in data management and assessments preparation, missing requirements, recommendations for improvements

Responsible: MHI. All Partners comment and contribute.

III. Progress in water quality/GES classifications

1. Georgia

……

2. Russian Federation

……

3. Ukraine

……

4. Regional level

Responsible: Violeta+NFPs

IV. Laboratory Infrastructure, Equipment, Vessels, terms of sharing

For each country: availability, needs, terms of sharing.

1. Georgia

1.1. Infrastructure

1.2. Equipment

1.3. Vessels

……

2. Russian Federation

……

(the same as above)

3. Ukraine

……

(the same as above)

Responsible: IBSS (for UA and general compilation of the Chapter), SIO-RAS (for RU in cooperation with SOI), TSU (for GE, in cooperation with NEA)

V. Training

1. Georgia

……

2. Russian Federation

……

3. Ukraine

……

4. Gaps and achievements, recommendations for improvements

Responsible: UkrNCEM+Violeta. On the basis of this Chapter the Training Program shall be developed.

VI. Data/information availability to comply with environmental protection policy/legislation

For each beneficiary country:

1. Check data availability for general description of the state of the Black Sea

2. Check biological data availability

3. Check data availability for calculation of certain indicators

4. Check data availability for description of human activities impacting the Sea

5. Check data availability for description of human pressures impacting the Sea

6. Check data availability for description of pressures/impacts

7. Conclusions on the gaps with demonstration of synthetic analysis, recommendations on improvements

Table . Synthetic analysis of pressures and impacts (example prepared using the PERSEUS Project approach)

	Pressures / Impact on:	1 Changes in fresh water and sediment riverine fluxes	2 Nutrients and organic matter enrichment	3 Contamination by hazardous substances	4 Physical damage of habitats	5 Loss of habitats	6 Introduction of non-indigenous species	7 Marine litter	8 Underwater noise	9 Other pressure (extraction of species)
A	Plankton	*								*
B	Macroalgae			*	*					*
C	Seagrass		*		*					*
D	Zoobenthos		*	*	*	*				
F	Fish	*	*	*	*	*	*			
G	Marine mammals									*
H	Birds	*	*		*		*			

*** Low or very low data/information availability and lack of proper quantified assessments**

Note: For A9, B9 and C9 the impact may be high through trophic cascades, however, proper distinguishing between top-down, bottom-up and wasp-waste control for the Black Sea ecosystem has never been achieved.

Note: For B3, D3 and F3 eco-physiological effects are almost not known, as well as changes in the structures of the communities.

Note: For F9 quantitative assessments are also limited to selected commercial species.

	Intensity of the impact (based on their associated risk for biodiversity conservation)
	High impact
	Significant impact
	Low impact
	No impact
	Existing interaction, but the impact has not been determined even qualitatively
	Misread interaction, impact not determined

Responsible: GE - MHI; **RU -** Violeta; **UA -** ONU

VII. Harmonization process (needs)

For each beneficiary country and the Black Sea region the needs to be outlined.

1. National level

2. International level

Responsible: Violeta+NFPs. All partners comment and contribute.

VIII. Conclusions and Recommendations (overall)

For each country and the Black Sea region.

Responsible: Violeta+ONU+MHI+NFPs. All partners contribute to the recommendations formulation.

ANNEXES

ANNEX I. The Questionnaire/Part I and Part II

ANNEX II. Inventories of Stakeholders

ANNEX III. Coordinates of permanently observed stations in the Black Sea

Responsible: Violeta

Annex 6: Methodology for Joint Black Sea Survey (1st Draft)

Joint Cruise Methodology

Draft prepared by
A. Mikaelyan and T. Shiganova

TABLE OF CONTENTS

1. INTRODUCTION

One of the most prominent features of the Black Sea's general circulation is the basin scale cyclonic boundary current (Rim Current). At normal speed of 15-30 cm s-1, it provides rather rapid transport of water along the Caucasian coast from Georgia to Russia, and then to the southern part of the Crimean coast. Simultaneously jet-like intrusions, mesoscale eddies, filaments, mushroom-like structures play important role in the cross-shelf exchange delivering shelf waters to the deep part of the basin. Hence, the changes in one part of the Caucasian shelf can be reflected in ecosystem response in shelf area lying far away from the initial disturbance. As example, spring runoff of rivers on Georgian coast affect the ecosystem functioning on Russian shelf in early summer. Discharge even a small river near Sochi can be traced up to 80 km offshore in the open waters. The joint cruises covering the vast sea area are needed to detect these teleconnections and understanding of the mechanisms responsible for their existence.

Analysis of the current monitoring observations (see Review of Monitoring Programs) demonstrates that all field studies are going on in the shelf or near coast areas of Ukraine, Russia and Georgia. The list of measured parameters and frequency of observations are seriously differs between countries and between the organizations. In some cases very

important ecosystem parameters are not involved in the monitoring programs. Some of these parameters can not be measured on a regular basis due to necessity of special equipment, disposals, high quality specialists, ship time etc. This problem can be resolved in joint cruise (Cruise) with the special monitoring tasks and field work design.

The current document is aimed to outline the ideology and methodology of the Cruise which permit to provide cost effective, joint monitoring observations in addition to national coastal monitoring programs.

2. OBJECTIVES

The scientific objectives of Joint Cruise Methodology are:

1. To develop of a long-term monitoring strategy based on the identified scientific needs as well as existing capacities
2. To evaluate an areas of joint research, time and frequency of observations and measured parameters
3. To estimate and provide recommendations for cost-efficiency of the Cruise
4. To suggest a scheme of data exchange between the partners based on uniform methodology for processing and data storage in joint data bases.
5. A parallel objective is also to provide a platform for training, education and inter-calibration, which will ensure that the scientific results of monitoring will be translated to all levels of the scientific society.

3. STATE-OF-THE-ART AND LINKS TO OTHER PROJECTS

In the Black Sea, the cooperative COMSBLACK and later the NATO TU-Fisheries, TU-Black Sea and ODBMS, ES SEASAME projects provided multiinstitutional collaboration of Black Sea countries on fisheries, oceanographic and ecosystems analyses that resulted in ecosystem models and joint databases. A number of projects related to biodiversity, climate change, international waters, land degradation, persistent organic pollutants and the protection of the Black Sea's ecosystem have been supported by the GEF (Global Environment Facility) since 1993. Recently, the GEF Black Sea Ecosystem Recovery Project had a goal to carry out a series of research cruises in the western part of the Black Sea. In all of these Projects the joint scientific cruises were fulfilled. The main attention was paid to inter-calibration or process-oriented studies like a) investigation of benthic fauna in the NW shelf of the Black Sea; c) study of mesoscale eddies and general basic circulation; d) completion of a benthic faunal survey, in Bulgarian and Turkish waters west of the Bosphorus; e) survey of the Western Basin (physics, primary production and zooplankton) and others. All these studies were not addressed to elaboration of strategy and methodology of the long-term ecological monitoring.

Two oceanographic experiments (March-April and August - September 2008) were carried out in the project SESAME. During these studies ten (10) oceanographic vessels have been agreed and conducted along selected transects in the Black Sea and the Mediterranean Sea. Major field-activities included: CTD casts, seawater sampling, sediment trap deployment, sediment and aerosol sampling in selected areas as well as biological parameters. SESAME project partly prepared the background for Joint Cruise Experiments in the Black Sea, offering strategy of WOCE (World Ocean Circulation Experiment) - station type on separate transects. However, these experiments were not designed as regular observations.

Currently, several international projects carried out in the Black Sea. In ES PERSEUS Project common coastal cruises and other fieldwork are organized to carry out experiments and data collection. Coordinated field work is accompanied with common sampling protocols and standardization of treatment and analyses processes. In ES COCCONET Project join cruises are planed for the Marine Protected Areas in north-western shelf region. In IRIS-SES Project it is planned to develop joint monitoring programmes in the accounting of MSFD which will be applied in the regional seas. In twin MISIS Project the harmonization of national environmental programmes is planed. All these efforts only indirectly concern methodology of the joint survey.

4. Scientific Background and Methodology

In partners' countries, national routine monitoring provide the flow of data on shelf areas more or less controlling the seasonal and interannual changes in state of marine ecosystem. Meanwhile, the open basin with its key processes in the ecosystem, which are crucial for understanding the long-term climate and anthropogenic impacts, is not included in the monitoring program. The Cruise seems to be the best way for resolving this problem. Long-term monitoring of the deep waters and remote shelf areas of the Black Sea should be the first priority in this joint exploration.

Station locations

Vertical distribution of physical properties in the Black Sea is different between central and peripheral areas. In the central part of the sea in area occupied by two cyclonic gyres the permanent pycnocline (Pycnocline) is located at depths from 60 to 100 m, while on the outskirts it lying at depths from 100 to 180 m and deeper. Position of the Cold Intermediate Layer (CIL) changes respectively. It is considered that the CIL bears a signatures of insensitivity of winter mixing (high or low nutrient concentrations) and variations of nutrient content in this layer as well as in the upper part of Pycnocline could be used for tracing of long-term and interannual changes in the bottom-up flux to the euphotic zone. Monitoring of these processes is extremely important for understanding of ecosystem functioning. Besides, a lot of chemical properties (oxygen, hydrogen sulfide, nutrients, etc) and plankton species (mesozooplankton) distributed vertically according to density profiles. In order to cover all types of vertical distributions of marine properties in the deep basin the best design of the Cruise route should include a series of transects from shore to the sea center. The suggested scheme is presented on fig. 1. These 4 transects cover the main principal zones of the Georgian-Russian-Ukrainian part of the sea. All together they 4 times cross the Rim Current and outskirts of the deep basin. Georgian transect crosses the quasi-stationary Batumi anticyclonic eddy, while Russian and 1st Ukrainian transects end in the Eastern and the Western cyclonic gyres, respectively. 2nd Ukrainian transect covers the NWS of the Black Sea.

Time period

The main strategic goal of the Cruise is to monitor the long-term ecosystem changes in the deep part of the basin. Therefore, it should be conducted at least 1 time per year and it is necessary to detect the proper most efficient time period. From scientific point of view for

accurate comparison of long-term data the Cruise should be fulfilled every year at a same time. Indeed, key ecosystem processes occur in different months. As example, winter convection and formation of the CIL take place in February. Seasonal pycnocline formation and subsequent spring bloom occurs in March. Regular coccolithophorid bloom, mass development of *Noctiluca scintillans* and spring reproduction of mesozooplankton with maxima of copepod eggs production are observed in May-June, summer copepods and cladocerans development in August-September. Development of *Mnemiopsis leidyi* and subsequent appearance of *Beroe ovata* occurs in July-August-September. The autumn peak of phytoplankton biomass which currently is often higher than the spring one, takes place in October- November.

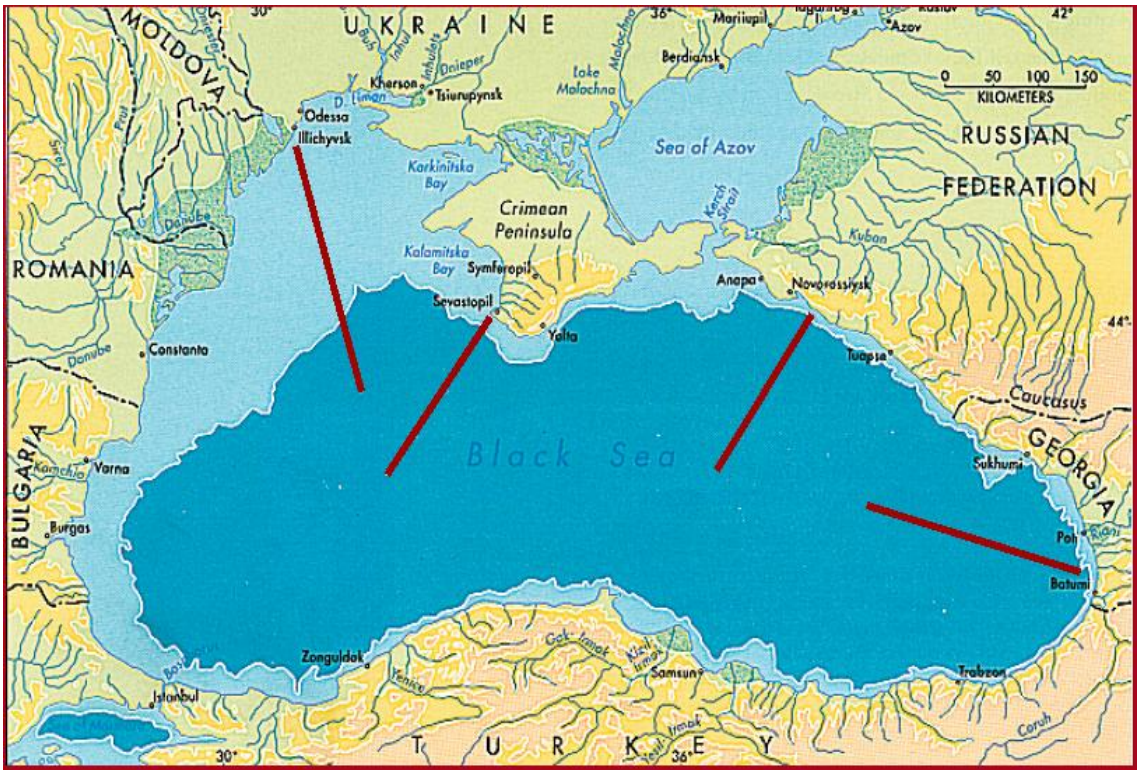


Fig. 1. Scheme of series of offshore transects.
The map and bathymetry of the Black Sea (after Oguz et al., 2001). The light blue zone around the periphery signifies the continental shelf region with depths less than 200 m.

Having analyzed the meaning of various seasons for functioning of the Black Sea ecosystem and an assessment of its Ecological Status, May-June can be offered as the best time for annual deep sea monitoring. The following arguments have been taken into consideration:

- The CIL is still bear a signature of the winter convection in all parts of the deep basin

- Maximum river run-off affects the shelf regions, making terrestrial and anthropogenic impacts on ecosystems most obvious and detectable
- Rim Current becomes less laminar and produces eddies and meanders which increase cross-shelf advection and affect the deep water ecosystem
- The coccolithophorid bloom intensity and taxonomic structure of phytoplankton reflects the preceding bottom-up nutrient fluxes to euphotic zone
- Peak in development of many key mesozooplankton species and heterotrophic dinoflagellate *Noctiluca scintillans* determines the level of top-down control for a further summer season
- Appearance in mass amount of ctenophore *Mnemiopsis leidyi* determines its abundance in the coming months
- In addition, the period May-June is the calmest (fig. 2) which reduces the probability of stormy days during the Cruise.

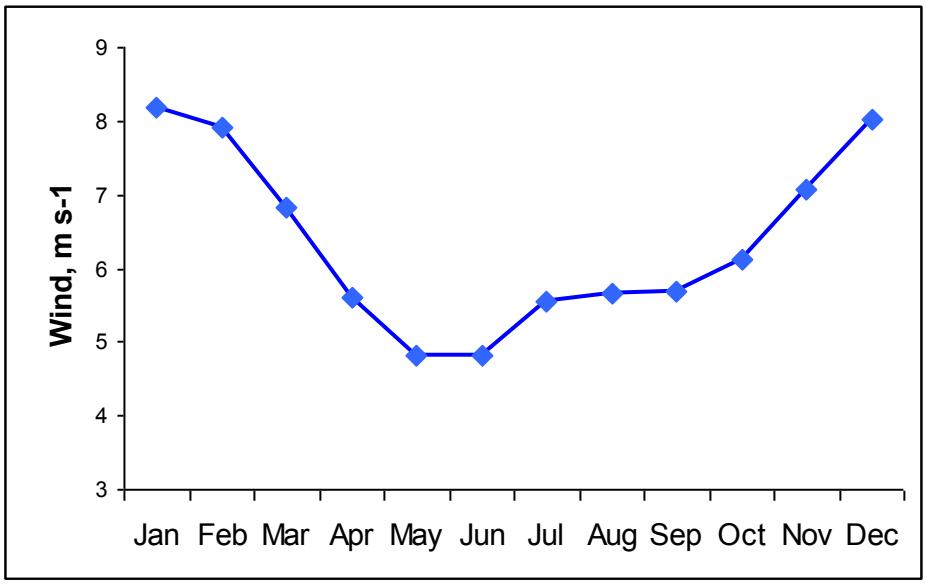


Fig. 2. Monthly average wind speed
Monthly means for the eastern central open waters (data from 2001 to 2012; reanalysis)

Sampling design

Variability of physical properties, chemical and biological parameters in the shelf waters and outskirts of the deep basin is much higher than in the center of the sea. Therefore the distance between stations on transects should be more dense on the shelf (1-5 miles), than on the periphery of the deep waters (5-15 miles) and in the central sea areas (10-20 miles). It

is important that at least 2 stations with proper vertical resolution will be conducted in all principal zones of the deep sea with different vertical distribution of ecosystem properties: 200-1000m, 1000-1500m, 1500-1800m and >1800 m. The special design of station locations should be proposed for NWS region (Odessa transect). It is recommended in addition to vertical series to collect the surface samples more often along the transects (5-10 miles). The proper vertical resolution should be provided. Based on CTD-soundings down to depth of 500 m the main water layers should be defined before sampling. For most chemical and microbiological parameters at least 2 samples should be taken in the Upper Mixed Layer, 2 in the Seasonal pycnocline, 2 in the CIL and 2 in the upper part of the main pycnocline.

Measured parameters

The full list of ecosystem parameters is so wide that it can be measured completely during monitoring. It is reasonable to arrange parameters on priorities.

The **first** priority parameters for ecological monitoring to be measured are:

Abiotic - temperature (T), salinity (S), beam attenuation (BA), fluorescence (F), dissolved oxygen (DO), nutrients (nitrates NO_3, nitrites NO_2, ammonium NH_4, phosphate PO_4, silicates SiO_4), H_2S.

Biotic – bacterioplankton total numbers and biomass (BACT); phytoplankton species composition, numbers and biomass (PHYTO); mesosooplankton species composition, abundance and biomass (ZOO); jelly-fish species composition, abundance and biomass (JELLY)

Second priority parameters include:

Abiotic – PAR irradiance; Disk Sechii transparency; currents; particulate organic carbon (POC), nitrogen (PON) and phosphorus (POP), dissolved organic carbon (DOC), nitrogen (DON) and phosphorus (DOP), pCO2, pH, total alkalinity (TA), dissolved inorganic carbon (DIG), marine floating litter (LIT)

Biotic – chlorophyll-a (Chl-a), heterotrophic zooflagellates and ciliates total numbers and biomass (HETER); ichthyoplankton species composition, total numbers (ICHT); cetacean count (CET)

Third priority parameters are:

Abiotic – heavy metals; oil products, pollutants, aerosols

Biotic – HPLC pigment analysis; bacterial, primary and zooplankton production, and vital rates measurements.

Benthos and sediments sampling should be fulfilled first of all on NWS transect. The final sampling list will be decided during a workshop organized before the Cruise.

Cruise management

There are the two possible strategies to conduct the Cruise: single ship or multi-ship survey. And there are the several arguments to use the last one.

1. The total length of the Cruise route, including 4 transects and the distance between them and the return of the vessel to the port of origin, is more than 2,000 miles. Assuming 5 working days per transect, 7 days for the vessel movements, 3 days for stormy weather, the total duration of the Cruise will make 30 days. Taking into account the ship time cost, which depends on ship scale and capacities (~$ 12000 per day for large vessel) the total freight will be close to $ 360000. Another case is a multi-ship survey. 4 transects can be fulfilled by 4 different vessels for a total of 20 days (5 days per each transect), which would cost $ 240,000, i.e. significantly cheaper.

2. Spring is a very dynamic season. For example, within 2-3 weeks the bloom of coccolithophorids or *Noctiluca scintillans* can be terminated or the maximum zooplankton production may be over, etc. From this point of view, 30-day Cruise is too long for a correct comparison of different parts of the sea. 4 short cruises can be executed almost at the same time and, therefore, yield much more comparable results. Besides, the risk of storm weather is minimal.

3. Logistics is becoming easier and cheaper in case of multiple vessels. No need for travel of scientists to the port of origin and back, transportation of equipment and samples across the borders. Besides, no permission for work in the foreign economic zones is needed.

4. According to preliminary sampling design, 8-10 vertical series are planed for each transect. For phytoplankton (as example) this means 60-75 samples per transects or up to 300 samples in total. Processing such a large number of samples takes a year for a single person. It is too long a period for the purposes of monitoring and hardly feasible. A better and more realistic case when 4 specialists will process 60-75 samples for 3 months and then combine the results.

5. Study spawning target fish with main attention at the Black Sea anchovy –first part of August with special sampling in near shore waters with sampling in upper 100m.

6. Training and inter-calibration exercises can not be arranged during multi-ship survey. In fact, during single vessel it is also impossible as the scientific personnel is limited and occupied by the regular stuff, needed to carry out the monitoring program. Training and intercalibration is more fruitful if conducted in land laboratories with not limited space and equipment. However, sampling for inter-comparisons can be organised for selected parameters.

Sample processing, data storage and availability

An essential element of the Cruise is the comparability of the data collected. Common sampling protocols should be used. The same QC/QA guidelines, recommended for routine monitoring to be used for the Cruise methods of sample collection and treatment.

EMBLAS Cruise data strategy is the integration of collected data in common datasets using the Intranet system located on the Project web site. The next step is to elaborate the joint multidisciplinary database for the Cruise's results applying a truly open data access policy for participants. After a certain period of time (3 years) data will be freely available that will remove barriers and facilitate access of all scientific and operational community.

5. RISKS AND CONTINGENCY

Currently, only 3 vessels equipped for multidisciplinary ecosystem researches are available among partner's countries: two in Ukraine (R/V PROFESSOR VODYANITSKIY, Sevastopol; R/V PARSHIN, Odessa) and one in Russia (R/V RIFT, Novorossiysk). The freight of other vessels is possible, but it demands additional efforts for installation of the appropriate equipment (plankton winch, cable winch etc). All three research vessels are over 30 years old. Thus, the risk of unpredictable repair is high or terms of planned repair are long. In Georgia there are no suitable ships, but some fishing vessels can be chartered and, after some adjustments, are used. In any case, the strategy of multi-ship cruise makes the whole Project less vulnerable because even the part of the carried out transects s will yield good results.

Some risk is lying in political sphere, as very complex relations exist between some countries like Georgia and Russia. Again, multi-ship strategy avoids a lot of problems connected with necessity to obtain the permission for work with foreigners in economic zone, and transportation of equipment.

Potential problems like calibration of devices, methodologies of sampling and data processing can be resolved during the “Planning Workshop”. Some problems may be associated with the need to collect 4 teams of experts in all measured parameters selected. Nevertheless, the fact that the work of these teams is highly distributed, potential consequences of this risk will affect only individual transects, but not all the Cruise. Although it is difficult to operate all these actions, a properly coordinated effort will certainly minimize the risks.

Annex 7: Draft Report on Infrastructure/Equipment/ Vessels (Chapter IV of the Diagnostic report)

DIAGNOSTIC REPORT II

Chapter IV. Laboratory and Field Infrastructure, Equipment, Vessels (IEV)

The purpose of the EMBLAS investigation was not to solely check the infrastructure status and availability of vessels and equipment for monitoring/research activities in the Black Sea but to examine the level of their sharing (national and international usage of existing capacities) and terms of renting. As well as to conclude on the suitability of the IEV to further develop the BS monitoring, using present best available practices and techniques. As a matter of fact, major stakeholders of the EMBLAS beneficiary countries have already posted on their webpages comprehensive information about their infrastructures, some of them have also enlisted herewith the available vessels/equipment (mostly in national languages). However, none of the internet sources or available reports from other projects reflect the level of sharing at the national and international level.

Therein, the EMBLAS Questionnaire was designed to inquire on 'sharing', however, few stakeholders specified it well. The latter meant that 'sharing' was not among the usual practices employed in the Black Sea monitoring. For most of the available vessels the stakeholders have given prices of renting. Yet, it should be kept in mind that during the last decades the research vessels of the beneficiary countries operated in their national waters only. In order to enter the waters of other country, as it could be the case in joint international cruises, the vessels would need additional and lengthy 'paper-work' to receive permission, and in some cases additional payments of the order of 10 000 Euro were mentioned by the stakeholders as required.

In this chapter the following terms have been used:

Infrastructure – specification of major units in each organization, and information on the major activities conducted in the laboratory and field facilities

Laboratory equipment – equipment used in a land-based laboratory;

Field equipment - equipment which can be used without a vessel in the field or transported to a vessel (or from one vessel to another) for use;

Large exchangeable vessel equipment - e.g. multibeam and side scan sonars, echosounders, underwater video cameras, CTDs, etc.

The **classification of the research vessels** proposed in this report is according to the US Research Vessel fleet classification, namely:

> 65 m: **Global vessels** are large and currently operate on an at least multi-Ocean scale;
55 m < L < 65 m: **Ocean vessels** are large enough to currently operate on an Ocean scale;
35 m < L < 55 m: **Regional vessels** currently operate generally on a European Regional scale;
10 m < L < 35 m: **Local and/or coastal vessels** for research only;
L < 10 m: **Coastal.**

The **underwater vehicles** are classified as follows:
ROV: Remote operated underwater vehicles
AUV: Autonomous unmanned vehicles
MS: Manned submersibles
USV: Unmanned surface vehicle

Georgia

In GE, 9 organizations responded to the EMBLAS Questionnaire Part II, which included questions related to availability of Infrastructure/Vessels/Equipment. Among them, the International Center for Environmental Research (ICFER, NGO) deals with data collection only, and hence, it did not specify any available equipment/vessels.

1. General information and major units of Infrastructure in Georgia

National Environmental Agency (NEA) of the Ministry of Environmental Protection and Natural Resources of Georgia

NEA is a legal entity of public law in the system of the Ministry of Environment Protection and Natural Resources of Georgia. It was established on 17-th of December, 2005. The agency represents an independent organization of the public administration and accordingly implements its activities independently under the state control.

Official functions of the National Environmental Agency are: to prepare and spread informational documents, forecasts, warnings regarding to existing and expected hydro-meteorological and geodynamic processes, also environment pollution conditions, existing and expected hydro meteorological forecasting of rivers, water reserves and the Black Sea territorial waters, to asses conditions of geodynamic processes, engineering and geo-ecological conditions of environment and to prepare and spread information on environmental conditions, to manage united state fund information on minerals, to establish and manage informational fund in hydrometerology and geology, to inventor and register industrial and scientific geological activities, to create and renew state balance and database on mineral deposits and exposures, to create environmental information database.

NEA' s scope of work includes preparation and approval of monitoring stations and programs, organizing of expeditions, sampling, chemical, biological and microbiological analyzes, data assessment and reports.

The NEA has well-equipped laboratories in Tbilisi and in its branches in regions for chemical (organic and inorganic), microbiological and biological monitoring and studies.

Since 2005 the NEA has been reequipped by state-of-art sampling and analytical equipments which were provided in the frames of various international projects.

The Laboratory is ready for international accreditation and has implemented ISO 17025 standards with all intended accompanying documents.

The NEA has an extensive experience in environmental monitoring including sampling and laboratory analyses. Thus, the NEA provides environmental sampling; atomic absorption, spectral, spectrophotometric, mass-chromatographic, gas chromatography, ion chromatography, standard chemical and biological analyses; processing and interpretation of obtained data, storage of data in a database and reporting. The functions of the Department of Environment Pollution Monitoring of the NEA are developed in accordance with the regulation **of the Ministry of Environmental and Natural Resources Protection of Georgia** (Order # 21 from 10.05.2013). The functions are as follow:

- Identification of the level of pollution caused by various natural and anthropogenic factors, monitoring over background chemical, biological and microbiological pollution of atmosferic air, water, atmosferic precipitation, the Black Sea and soil by means of observation points and field expeditions, as well as regular monitoring over background radiation and assesment of levels of physical factors (electric magnetic field, noise and vibration);

- Monitoring of biodiversity and biological monitoring over the sea, its coast ecosystems, rivers and reservoirs, research of various components of water ecosystems (bacterium-zoo plancton, macrozoobenthos, ichtiofauna, sea mammals and others) and based on it, ellaboration of conclusions, recommendations and proposals;
- Preparation of environmental pollution information in electronic form and ensure quality control.

Structural units of the National Environmental Agency are as follow:

- Administrative Department
- Department of Environmental Pollution Monitoring
- Department of Environmental Information (incl. spatial information)
- Department of Licenses
- Department of Geology (incl. Geological Hazards and Geological Environment Management)
- Department of Hydrometeorology
- Department of Fishery and Black Sea Monitoring Center

The Environmental Pollution Monitoring Department has a laboratory in Batumi. The FBSMC (see below) is affiliated to the NEA and located in Tbilisi. NEA, also, has a laboratory in the City of Kutaisi, where air and water sample analyses are conducted along with the air pollution monitoring laboratories in the Cities of Rustavi and Zestaphoni.

The Fisheries and Black Sea Monitoring Centre (FBSMC, Batumi, Ajara)

The Center is a branch of the **National Environmental Agency (NEA)** and is located in Batumi.

The sphere of monitoring of the Centre covers:

- Study of the bioresources of marine and inland waters of Georgia;
- Biological monitoring (data of the bacterio-,phyto-and zooplankton, bentho- and ichthyophauna) of the Georgian Black Sea coastline;
- Assessment of the ecological condition of the Georgian Black Sea coastline;
- Biodiversity Changes/Habitats Loss
- Alien Species Identification and Introduction

Previously, major structural units were:

- Water Ecology
- Fishery

Presently, no structural Units are defined in the Center.

Ivane Javakhishvili Tbilisi State University (TSU)

TSU was established in 1918, it is located in Tbilisi. Most of the existing higher educational institutions were founding and afterwards separated from Tbilisi State University. The TSU successfully collaborates with Academy of Science of Georgia, the major part of real academy members are professors of the University or active members of joint scientific works. Over 35 thousand students are studying at the University and its 8 regional branches. The very important rearrangements at the University began on 25 April 1994, when the scientific council of the University adopted "The Concepts of University Education", according to which since the year 1994 the University has entirely transferred to the two-stage form of study (the step-by-step rearrangements were launched in 1992) and moved forward to the integration in the European educational environment.

Basic and applied research is successfully conducted at Tbilisi University. Many important projects have been drafted out, recommendations have been developed and concrete results have been obtained. Their implementation will doubtlessly contribute to the advancement of Georgian science and scholarship and development of the national economy. Special attention is given to the study of natural resources of Georgia, searching for ways of environmental problems solving.

The Faculty of Exact and Natural Sciences of TSU (currently, the faculty has 8 departments: mathematics, physics, chemistry, geography, computer sciences, biology, geology, electric and electronic engineering) and the unit of International Oceanographic Data and Information Exchange (IODE/IOC of UNESCO) - Georgian Designated Agency (GeoDNA), established in 2001 at the Iv.Javakhishvili Tbilisi State University, are strongly involved in research and consulting on marine environmental and ecological issues, meteorology, oceanography, education and in raising of public awareness. In collaboration with international organizations, university staff members and postgraduate students are taking part in various programs and international projects, such as: "Floating University", MedarMedatlas, NATO sfp 791818 Project, the Science & Technology Center in Ukraine (STCU) Project, EU funded projects - SEA-SEARCH, ASCABOS, Black Sea Scene, SEADATANET I/II, SESAME, EMODNET I/II, PERSEUS, BS TourismNet, EMBLAS, etc. The Faculty has well-equipped chemical laboratory facilities for processing of samples and consequent management of environmental data. The GeoDNA (at present, is in the process of transformation into IODE Associate Data Unit - ADU), is part of the SeaDataNet system, holds valuable amount of metadata and marine data (historical and modern) from 24 institutions of Georgia (www. oceandna.ge) and has the functions of a national data collator within the SeaDataNet Project.

Thus, major structural units as related to Black Sea monitoring and data collection are:

- Substance Research Institute at the Faculty of Exact and Natural Sciences of Iv. Javakhishvili Tbilisi State University
- Georgian Designated Agency (GeoDNA)

Scientific/Research Firm GAMMA Ltd

GAMMA was set up in 1991 and is one of the leading consultancy centers focused on research related to the use of natural resources (including oil/gas), environment protection and bottled water/beverage quality. It is located in Tbilisi.

All services are backed by the laboratory complex which is one of the main assets of the company. With consideration of the market requirements, the scope of expertise and capabilities of the company is being extended. A new division – the unit of design was added to the company's structure. The activity of unit comprise the designing of various structures: water supply and drainage systems, waste water treatment facilities, management and consultancy for the civil engineering projects, safety and risk assessment.

Company staff is 70 people with strong expertise in chemistry, geology, hydrogeology, environmental sciences, microbiology, engineering, design, and IT.

The major units of infrastructure in GAMMA are:

1. Chemical Research group
2. Microbiological Research group
3. Chromatographic Research Group
4. Radiological Research Group

In detail the Laboratory comprises:

1. Registration, sample preparation, data management & information unit
2. Gravimetric, volumetric and spectrophotometric analyses unit
3. Ion selective analysis unit
4. Atomic absorption and atomic emission analysis unit
5. Lab of X-ray analysis unit
6. Chromatography unit (G&GL chromatography)
7. Spectroscopy unit (IR and UV spectroscopy)
8. Unit for electrochemical studies
9. Unit for radiological studies
10. Microbiology unit

Gamma carries out research of natural resources including chemical, biological and physical monitoring of the Black Sea coastal waters (within scientific national and international projects). The services cover different aspects of resource exploitation throughout the whole cycle of works required for the source development. The services also cover: field surveys, testing chemical / microbiological quality, training of staff, consultancy and development of quality and process management/monitoring schemes and policy. The company owns database (incl. marine data), which has both scientific and practical value. Gamma is involved in inter-laboratory QA/QC schemes, it is a member of the international association 'Analitica', satisfies the „General requirements for the competence of testing and calibration laboratories" and performs in conformity with the international standard ISO/IEC 17025.

Ajara Division of Environmental Protection and Natural Resources

The division was established under the auspices of the government of the Autonomous Republic of Ajara. It is located in Batumi.

The main objectives of the Division are:

- To maintain and protect living environment including biodiversity, landscapes, endangered species and cultural peculiarities;
- To mitigate the harmful impact on water resources and ensure rational exploitation for sustainable development;
- To carry out assessment of chemical contamination and provide corresponding information to the society;
- To conduct research for revealing and forecasting of hazardous geological processes and creation of respective data base.

Major structural units are:

- Agency of Forestry
- Administrative Unit
- Financial Department
- Juridical Department
- Service of biodiversity and integrated management of nature
- Geological Service
- Service of Land Management
- Public Relations Unit
- Unit of Inspection

Kolkheti National Park of the LEPL[1] Agency of Protected Areas

Kolkheti is a national park located on the coastal plain of the Black Sea. The law on creation and management of the Kolkheti protected area was adopted in 1999[2]. Kolkheti National Park became fully operational in 2000. The park has been established with the support of the Ministry of Environment Protection and Natural Resources of Georgia, Global Environment Facility, the World Bank and other international, national and local institutions. Kolkheti National Park covers almost 29,000 hectares of land and also marine area. More than 190 species of birds have been observed within its borders.

Management of the Kolkheti National Park is under the Ministry of Environment Protection and Natural Resources, and specifically under its Biodiversity Protection Service and the Agency of Protected Areas.

Major structural units are:

- Administrative Unit
- Law Enforcement Unit
- Unit of natural resources
- Financial Unit
- Visitors' Service Unit

[1] **LEPL** – Legal Entity of Public Law.

[2] Recognized as an important natural area early in the 20th century, a 500 hectare area of swampy forest and mire between the Rioni and Pichori Rivers was established as Kolkheti Nature Reserve in 1935. The world-wide significance of the region was acknowledged in 1996 when Georgia joined the international convention on wetlands, known as the Ramsar Convention, and all the mires and other natural areas of the Kolkheti lowlands were identified as Ramsar sites of international importance. Today the Kolkheti National Park includes also an area of Black Sea coastal waters.

Water Ecology and Fisheries Research Institute (WEFRI)

WEFRI is a private entity established in 2006 on the basis of union of scientists, experienced in fisheries and ecology. WEFRI is located in Batumi.

Main activities of WEFRI are as follows:

- Applied and fundamental research within the Black Sea Georgian coastal zone and inland reservoirs, for water quality and biodiversity studies;
- Bioresources' rational use issues;
- Development of responsible fisheries in Georgia and putting in force of the corresponding code;
- The issues of degraded ecosystem recovery;
- Rehabilitation, conservation and monitoring of wetland ecosystems;
- Mariculture and aquaculture issues: elaboration and practical use of up-to-date technologies for different objects, as Black Sea turbot, Black Sea sturgeon, rainbow trout, sturgeons, mussels and oysters;
- Fish diseases prophylactics;
- Support to the activities for mitigation of and adaptation to the global changes;
- Organization of ecological scientific and educational activities;
- Establishment of scientific constructive liaisons for consolidation of scientific and technical potential on international level in order to solve environmental problems;
- Attraction of investments, grants in order to involve Georgia into global environmental issues and invitation of foreign experts for assistance in solving them;
- Assistance to Georgian scientists in participation in various international projects and actions.

Structural units are not defined in this organization.

Laboratory Research Centre Ltd (Lab Centre)

The Centre represents a commercial body established in 2007 by the Self-Governing Poti City Hall, who holds 100% share of the company. The Laboratory is located in Poti. Two divisions are functioning at the moment, Chemical and Bacteriological Labs, where analyses of drinking, surface and waste waters are carried out, as well as analyses for biomedical purposes.

The Bacteriological Lab was reequipped in 2005 – 2006 with modern instruments aiming to monitor coastal area and marine waters. The staff members have the required qualifications.

Thus, the major structural units in this organization are:

- Chemical Lab
- Bacteriological Lab

2. Equipment available in Georgia

2.1. Major laboratory equipment and terms of sharing with other laboratories in the country and outside of it where applicable (Georgia)

Summary for the country:

Number of laboratory equipment units	Shared within the country (number of equipment units)			Shared with other countries (number of equipment units)			Terms of sharing exist		
	Yes	No	No information	Yes	No	No information	Inside the country	Outside the country	No information
63	3	60	-	3	60	-	3/In joint projects	3/In joint projects	60

As reported per organization:

N	Equipment name	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	**Terms of sharing**	
				Inside the country	Outside the country
	National Environment Agency (NEA)				
1	ION Chromatograph ICS 1000, Dionex	No	No	No	No
2	Spectrophotometer Lambda 35, Perkin Elmer	No	No	No	No
3	Plasma Optical Emission Spectrometer ICP-OES, Agilent	No	No	No	No
4	Gas chromatograph/mass spectrometer GC/MS, Agilent	No	No	No	No
5	Gas chromatograph GC, Dani instruments	No	No	No	No
	The Fisheries and Black Sea Monitoring Centre (Batumi)				
6	Microscope Leica DM LS2	No	No	No	No
7	Binocular LEICA	No	No	No	No
8	Microscope MBL 3100 Kruss	No	No	No	No
9	Autoclave	No	No	No	No
10	Thermostat	No	No	No	No
11	SAN^{plus} ANALYZER, SKALAR	No	No	No	No
12	SiS Dissolved Oxygen Analyser	No	No	No	No
13	Luminescence Spectrometer LS 45, PerkinElmer	No	No	No	No
14	Atomic absorption Spectrometer AAS 600, PerkinElmer	No	No	No	No
15	Digital Fluorometer 10-AU-005-CE,Turner Designs, YSI Model 556 MPS	No	No	No	No
16	Chalice Centrifuge 2020, Wagtech	No	No	No	No
17	WaterPro RO Station, LABCONCO (water purification system)	No	No	No	No
18	WaterPro RS Station, LABCONCO (water polishing system)	No	No	No	No
19	Rotary Evaporators, Barloword Scientific Ltd	No	No	No	No
20	Hotplates	No	No	No	No
21	Ductless Fume Hoods	No	No	No	No
22	Drying cabinet, LTE Scientific Ltd	No	No	No	No
23	Oven, Wagtech	No	No	No	No
24	SMEG GW3050 (Universal reprogrammable thermal disinfection glassware washer with drying system)	No	No	No	No
25	Analytical Electronic Balances Model A2204, Oxford	No	No	No	No
26	ANALITICAL *Plus* Electronic Balances Model AP250D, Ohaus corporation	No	No	No	No
27	Electronic motorized sieve shaker Model A6060-01, MATEST Srl TREVIOLO	No	No	No	No
28	Air compressor, JUN_AIR(UK)LTD	No	No	No	No
29	Turbivap LV, Caliper Life Sciences (Concentration	No	No	No	No

N	Equipment name	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
				Inside the country	Outside the country
	workstation of sample extracts used for determination of TPH - Total petroleum hydrocarbon)				
30	All-Glass Vacuum Filter Holder 16309	No	No	No	No
31	Refrigerators, Fiocchetti	No	No	No	No
32	Lec Medical Refrigerators	No	No	No	No
	Tbilisi State University (TSU)				
33	Water Quality Checker U-10 (2M) (Water Quality Multifunctional analyser, Producer – company Horiba Ltd., Japan; year of production – 2003)	Yes	Yes	Joint projects	
34	Atomic-Absorption spectrometer Analyst 800 (Producer – company PerkinElmer Inc., USA; year of produce – 2003)	Yes	Yes	Joint projects	
35	Gamma-spectrometer with semi-conductor detector GC2020 (Producer – company Canberra Industries Inc., USA; year of produce – 2004)	Yes	Yes	Joint projects	
	GAMMA Ltd.				
36	Atomic-absorption spectrophotometer Perkin Elmer Analyst 200 (USA)	No	No	No	No
37	Atomic-absorption spectrophotometer Hitachi 180-80 Zeemann (Japan)	No	No	No	No
38	Gas-chromatograph Perkin Elmer Clarus 500 S/N 4992 (USA)	No	No	No	No
39	Gas-chromatograph Perkin Elmer F-22 (USA) (3 units)	No	No	No	No
40	Gas-chromatograph Hewlett Packard 5700 A	No	No	No	No
41	Gas-chromatograph ЛХМ-80 (Russia)	No	No	No	No
42	Spectrophotometer СФ-26 (Russia)	No	No	No	No
43	Spectrofluo JY 3 (Jobin Yvon, France)	No	No	No	No
44	Beta-radiometer РКБЧ-1еМ (Russia)	No	No	No	No
45	Ion-selective potentiometer ecotest-120 (Russia),	No	No	No	No
46	pH-meter pH-121 (Russia)	No	No	No	No
47	Photoelectrocolorimeter КФК--2 (Russia),	No	No	No	No
48	HACH SensION-156 portable water tester	No	No	No	No
49	HANNA Instruments turbidity meter HI 93703	No	No	No	No
50	Beta-gamma-radiometer СРП-68-01 (Russia)	No	No	No	No
51	Electromagnetic Radiation Detector DT-1130	No	No	No	No
52	Digital Sound Level Meter WS 1361	No	No	No	No
53	Light meter LX- 1010B	No	No	No	No
54	Indoor Thermo-Hydrometer VICTOR VC330	No	No	No	No
	Division of Environmental Protection and Natural Resources of the Autonomous Republic of Ajara				
	No information provided.				
	Kolkheti National Park				
	No information provided.				
	Laboratory Research Centre Ltd (Lab Centre)				
55	PH-meter	No	No	No	No
56	Photoelectrocolorimeter	No	No	No	No
57	Thermostats	No	No	No	No
58	Lab equipment for titration	No	No	No	No
59	Drying oven	No	No	No	No
60	Membrane - filtration device	No	No	No	No
61	Microscopes	No	No	No	No
62	Refrigerators	No	No	No	No
63	Analytical balances	No	No	No	No
	Water Ecology and Fisheries Research Institute (WEFRI, NGO)				
	No information provided.				

Needs were specified by NEA for the laboratories in Tbilisi and Batumi:

- Atomic absorption Spectrometer AAS 600,
- Perkin Elmer equipment fixing (**Note**: the Spectrophotometer is out of order, needs repairing).
- Microwave Digestion System

2.2. Major field equipment and the terms of sharing with other organizations in the country and outside of it where applicable (Georgia)

Summary for the country:

Vessel class required for the use of the equipment					Shared within the country			Shared with other countries			Terms of sharing exist		
Regional	Local and/or coastal vessels	Stationary oceanographic platform	Any type	Not specified	Yes	No	Not specified	Yes	No	Not specified	Inside the country	Outside the country	Not specified
-	2	-	12	-	3	11	-	3	11	-	3	3	11

As reported per organization:

N	Equipment name	Vessel class*** required for the use of the equipment (if any)	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
					Inside the country	Outside the country
	National Environment Agency (Tbilisi)					
1	HORIBA U-10 MULTI-PARAMETER sonde	All types of vessels	No	No	No	No
2	pH-meter	All types of vessels	No	No	No	No
3	Equipment for O2, water temperature, conductivity and salinity measurements	All types of vessels	No	No	No	No
	The Fisheries and Black Sea Monitoring Centre					
4	Bathometers (1.5 l)	All types of vessels	No	No	No	No
5	1200-C Kemmerer Water Sampler (1,5 l)	All types of vessels	No	No	No	No
6	Van Veen grab	All types of vessels	No	No	No	No
7	Jeday net	All types of vessels	No	No	No	No
8	pH-meter	All types of vessels	No	No	No	No
9	Equipment for O2, water temperature, conductivity and salinity measurements	All types of vessels	No	No	No	No
	Tbilisi State University (TSU)					
10	Water Quality Checker U-10 (2M) (Water Quality Multifunctional analyser, Producer – company Horiba Ltd., Japan; year of production – 2003)	10 m < L < 35 m: **Local and/or coastal vessels** for research only; L < 10 m:	Yes	Yes	Joint projects	

N	Equipment name	Vessel class*** required for the use of the equipment (if any)	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
					Inside the country	Outside the country
		Coastal				
11	Portable laboratory complete set DREL/2400 Water Quality Laboratory (Producer – company Hach Company, USA; year of produce – 2004)	10 m < L < 35 m: **Local and/or coastal vessels** for research only; L < 10 m: **Coastal**	Yes	Yes	Joint projects	
12	GPS device	All types of vessels	Yes	Yes	Joint projects	
	GAMMA Ltd.					
13	Bathometers	All types of vessels	No	No	No	No
	No other information provided.					
	Division of Environmental Protection and Natural Resources of the Autonomous Republic of Ajara					
	No information provided.					
	Kolkheti National Park					
	No information provided.					
	Laboratory Research Centre Ltd (Lab Centre)					
14	Bathometers	All types of vessels	No	No	Possible	
	No other information provided.					
Water Ecology and Fisheries Research Institute (WEFRI, NGO)						
	No other information provided.					

3. Availability of vessels and characteristics of the vessel/s, and terms of rent (Georgia)

Summary for the country:

None of the organizations dealing with monitoring in GE has its own R/V or boat, except NEA. GAMMA, Ajara Division of Environmental Protection and Natural Resources, Kolkheti National Park, Laboratory Reseach Centre Ltd (LabCenter) and **W**ater **E**cology and **F**isheries **R**esearch **I**nstitute (WEFRI) for the purposes of field works use the same research vessels, they are Fioni and S.M.B.40. The vessel Fioni belongs to the Yachting Club of City of Poti. The vessel S.M.B. 40 is in a private ownership.

Name	Category	Length, m	Year built	Rent (Euro per day)
Fioni	Coastal	9	1987	180
S.M.B. 40 (Seiner, fishing motor boat)	Local/coastal	13.8	1984	250
BRIG (coastal aluminium boat of Catamaran Type)	Coastal	4.6	2012	No rent price available
Training ship Elitsa	Local	23.36	1982	No rent price available

As reported per organization:

	FIONI							Year built	
								1987	
	Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
		Length, m	Width, m	Draft, m	Tonnage (Gross/Net)	cruise	max		crew	scientists
	Local/coastal vessel	9	3.5	0.8m	3.5	14	18		2	4
	Other characteristics									
	Fuel Capacity (m^3): **Area Wetlab** (m^2): **Water Capacity** (m^3): **Free Deck Area** (m^2): **Range** (n mi): **Air Cond**: **Data Processing Equipment**: **Navigational equipment**: **Communications**: **Laboratories:** None **Research Equipment**:									
	Photo:									
	Rent per day (Euro)				**Contact person for renting (name, e-mail, tel/fax)**					
	180				Mr. Nikolai Borzenko Mob.593 912417					

S.M.B. 40 (Seiner, fishing motor boat)								Year built	
								1984	
Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
	Length m	Width m	Draft m	Tonnage (Gross/Net)	cruise	max		crew	scientists
Local/coastal	13.8	3.6		17	15			3	5

Other characteristics

Fuel Capacity (m^3):
Area Wetlab (m^2):
Water Capacity (m^3):
Free Deck Area (m^2):
Range (n mi):
Air Cond:
Data Processing Equipment:
Navigational equipment:
Communications:
Laboratories:
Research Equipment:

Photo: S.M.B. 40

Rent per day (Euro)	**Contact person for renting (name, e-mail, tel/fax)**
250	Mr. Yura Inckirveli, Mob. 555 991608; Mr. Giorgi Sichinava, Mob.599 969983; Mr. Murman Sichinava

	NEA "BRIG HD460H" **SN** VA-QRK129571011**Registation number C-00463** **(Catamaran boat of the National Environmental Agency)**	Year built 2012

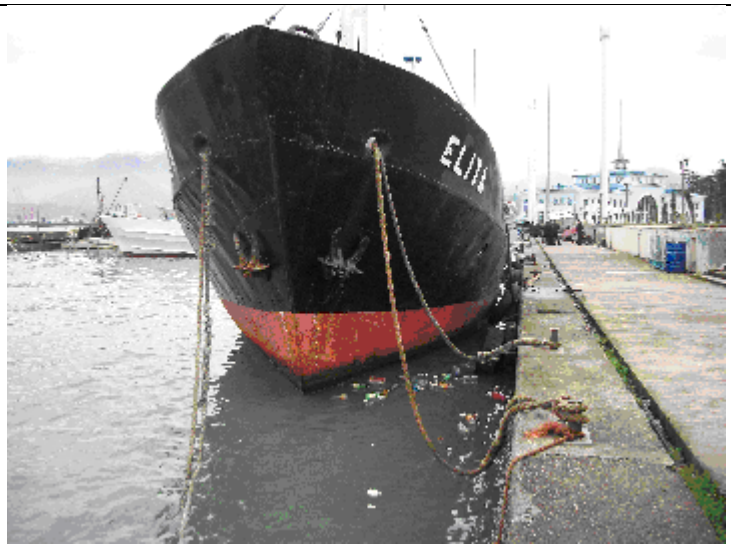
Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
	Length m	Width m	Draft m	Tonnage (Gross/Net)	cruise	max		crew	scientists
Local	4.6	1,95	0,5	900 kg	-	15		2	5

Other characteristics

Fuel Capacity (m^3): 20 l
Area Wetlab (m^2)::
Water Capacity (m^3):
Free Deck Area (m^2):
Range (n mi):
Air Cond:
Data Processing Equipment:
Navigational equipment:
Communications:
Laboratories:
Research Equipment:

Photo:

Rent per day (Euro)	**Contact person for renting (name, e-mail, tel/fax)**
No rent price avaialble	LEPL National environmental agency, **The Fisheries and Black Sea Monitoring Centre (FBSMC, Batumi, Ajara)** George Komakhidze, Postal Address: 51,Rustavelistr, Batumi, Georgia Phone: +995 422 274641 mob: +995 599 909 906 e-mail: g.komakhidze@gmail.com website: www.meteo.gov.ge

	Elita (Training ship) of the Batumi Navigation University							Year built		
	Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
		Length m	Width m	Draft m	Tonnage (Gross/Net)	cruise	max		crew	scientists
	Other characteristics									
	Fuel Capacity: Area Wetlab: Water Capacity: Free Deck Area: Range (n mi): Air Cond: Data Processing Equipment: Navigational equipment: Communications: Laboratories: Research Equipment:									
	 Photo:									
	Rent per day (Euro)					**Contact details:**				
	No rent price is available.					Batumi Navigation Teaching University Postal Address: 26, Tbilisi Highway, Makhinjauri, Batumi, Georgia Ms. Lali Khvedelidze, The Chancellor Phone: +422 9 25 25, +422 9 23 23 Website: http://bni.edu.ge/eng				

4. Underwater vehicles

None available for monitoring and scientific research.

Russian Federation

In the Russian Federation 7 organizations responded to the EMBLAS Questionnaire/Part II. Information for other important organizations has been collected from their web pages, via e-mail communication and from reports of other projects (e.g. SeasEra).

1. General information and major units of Infrastructure in the Russian Federation

State Oceanographic Institute (SOI)

Federal State Budgetary Institution "N.N. Zubov's **State Oceanographic Institute**" (FSBI SOI) was established in 1943 in Moscow**.** Activities of the SOI cover fundamental and applied science in the areas of classical oceanography, including field investigations and mathematical modelling of sea level change, stratification of waters, seasonal dynamics of environmental parameters, currents, tides, ice conditions etc.; integrated monitoring of pollution of oceans, seas and marine estuarine areas; preparation of information reviews and prognosis of state of oceans, seas and marine estuaries.

SOI has experience of carrying out activities in a variety of fields. In particular, the Institute:

- Develops methodological Guidelines and standards for different types of monitoring, data management including QC/QA and DPSIR assessments. About 25 guidance documents have been prepared and adopted for the usage in the network of the Federal Hydrometereology and Environmental Monitoring Service.
- Processes and publishes information on the hydrological and hydrochemical regime of seas of the Russian Federation. During the period of 1990 – 2005, within the frame of the "Sea" project, SOI prepared and published a unique series of monographs «Hydrometeorology and Hydrochemistry of the Seas» which includes 20 volumes on 10 Russian seas (Barents, Baltic, White, Azov, Black, Caspian, Aral, Bering, Okhotsk and Japan).
- Prepares assessments of hydrochemical state and pollution of marine environment of the Russian Seas. The assessments are based mainly on the data of the state monitoring system ran by the Federal Hydrometereology and Environmental Monitoring Service which are annually incorporated into a thematic data base. Since 1967, periodic assessments are annually prepared and published in the «Annual Report on Marine Water Pollution».
- Prepares and transfers data/information under the Russian Federation reporting obligations to the working bodies of the Helsinki, Bucharest and Tehran Conventions on protection of the Baltic, Black and Caspian Seas against pollution.
- Stores raw data from monitoring and research activities as well as analytical materials in State Environmental Data Fund, provides information services to consumers and end - users based on these data.
- Prepares EIA and SEA. Important projects were performed with a number of oil companies, namely, "Gazprom" ("Yamal" in the Kara Sea, "Blue stream" in the Black Sea, etc.); "Lukoil" (the Northern Caspian and the Baltic Seas); "Rosshelf" (the Pechora Sea; "Sakhalin-1" and "Sakhalin-2" on the north-eastern shelf of Sakhalin Island) and others.
- Sustains databases and information systems based on GIS-technologies and develops operational monitoring with a specific focus on satellite remote sensing of the Russian Seas.
- Studies estuarine areas of the rivers and works out methods of calculation and forecasting of hydrometeorological, hydrochemical regime and hydrological and morphological processes in estuaries, maintains electronic databases of hydrological characteristics in the estuarine areas of rivers of the European part of Russia.

SOI has participated in many international projects and proved capacity to implement them successfully (BONUS (Baltic Sea), UNDP/GEF BSEP and BSERP, Black Sea GOOS, ARENA, ASCABOS, Black Sea SCENE (Black Sea), Screening-2000, SSC-2005, Volga Delta, Terek Delta, TASIC (Caspian Sea) and others. The Institute is regularly represented at large international and national conferences and symposia, and maintains working contacts and cooperation with many national and international organizations (BSC, HELCOM, CASCOM, etc.).

Major structural units are as follows:

Labs:

- Ocean climate and marine meteorology
- Ocean physics
- River mouths at seas
- Waves dynamics
- Marine pollution monitoring
- Fundamental and applied chemistry
- Modelling of the state of marine environment
- Automated systems of management and interpretation of oceanographic data
- Modelling of currents and structure of marine waters

Departments:

- Department of Applied marine and water use research (Labs: Tidal research and Hydrochemistry of marine and surface waters)
- Department of methods of marine observations, information systems and technologies (Lab of marine observations and Lab of standardization, metrology and methods of measurements).

P.P.Shirshov Institute of Oceanology of Russian Academy of Sciences (SIO – RAS)

The P.P.Shirshov Institute of Oceanology of Russian Academy of Sciences (SIO RAS) (department of Earth Sciences) was established in 1946 in Moscow. The SIO RAS, Moscow research activities are carried out by four departments: Marine Biology and Ecology, Hydrophysics, Marine Geology and Marine Instruments.

It is a multi-profile institute, which performs comprehensive research of physical, chemical, geological and biological parameters of the World Oceans and seas to create a scientific basis for the forecast of their changes under climatic and anthropogenic impacts and the conservation of marine resources.

In addition, SIO has five regional branches: Saint-Petersburg branch (Saint - Petersburg, the Baltic Sea), Atlantic branch (Kaliningrad, the Baltic Sea and the Atlantic Ocean), Southern branch (Gelendzhik, the Black Sea), North-western branch (Arkhangelsk), Caspian branch (Astrakhan). SIO RAS is working in cooperation with Universities.

The institute is funded by the Russian Academy of Sciences and national and international programs of the Ministry of Science and Education, as well as by international projects of EC, NATO, and other donors. The institute is involved in many large-scale international programs and projects on ocean and seas studies including Arctic and Antarctic surveys. High scientific level and recognition of the SIO RAS has been confirmed by the participation in more than 50 international and EU-sponsored programs.

SIO RAS has a National Oceanographic Data Centre for marine data and projects.

Oceanographic data warehouse OceanDB has been developed in the SIO RAS. This oceanographic data warehouse was created to keep data and descriptions of results obtained in the scientific expeditions organized by the by the SIO RAS since 1956. OceanDB provides the structured storage of diverse oceanographic data on the following scientific sections: physics of ocean, ocean chemistry, marine biology and ecology and geology. They include metadata and data.

The SIO RAS staff consists of 1214 people (including the branches). The institute has performed research in the Black Sea since 1950s: on hydrophysical, hydrochemical and biological parameters. These researches included: variability of the environmental (physical, chemical and biological) characteristics of the Black Sea that are of primary importance from the perspective of global climate change and regional climate variations, as well as from anthropogenic influence point of view.

Major structural units are as follows (in Moscow):

- Laboratory of structure and dynamics of planktonic communities
- Laboratory of ecology of coastal benthic communities
- Laboratory of plankton ecology
- Laboratory of Biohydrochemistry
- Laboratory of experimental physics of the ocean
- Laboratory of Interaction of ocean with land waters and anthropogenic processes
- Laboratory of Geochemistry
- Laboratory of Bottom Hydrolocation

In the Southern branch (Gelendzhik):

- Laboratory of Litodynamics of the sea coastal zone
- Laboratory of Ecology
- Laboratory of Chemistry
- Department of hydrophysics research

Federal State Unitary Enterprise "All-Russian Research Institute of Fishery and Oceanography" (in Russian – VNIRO)

The Institute is a state organization dealing primarily with collection of environmental data. It is affiliated to the State Federal Agency of Fishery. The Institute is located in Moscow and has a Department/branch in Krasnodar. The major spheres of interest of this department are fishery and aquaculture. The investigations of the Institute include:

- Comprehensive studies of aquatic biological resources; quality and quantity of fishery resources assessment; development of recommendations for aquatic biological resources sustainable use; monitoring of the state of aquatic biological resources and of economic situation in the Azov-Kuban Basin; development of Total Allowable Catches (ODU) and quantity of aquatic biological resources possible extraction.
- Preparation of materials on the matters of environmental & fisheries expertise of economic projects; assessment of impact and calculation of damage done to fisheries by different kinds of economic activities and development of compensative measures.
- Development of measures to increase reproduction efficiency of migratory and semi-migratory fish species in the Azov-Kuban Basin; development of fishery & biological feasibility evaluations of natural water bodies

stocking with aquatic species in order to increase their productivity and improve natural reproduction conditions for valuable migratory and semi-migratory fish.

- Development of basic biological principles, methods and technologies of pond, grazing, industrial aquaculture; development of new feed-staff for valuable fish species; elaboration of business plans for aquaculture farms.
- Development of biotechnologies of mariculture growing, methods of processing and production of food; development of fishery & biological feasibility evaluations and business plans for mariculture farms building.

Major structural units are as follow:

- LABORATORY of Reproduction an Breeding of Sturgeons and Other Target Species
- LABORATORY of Marine Studies and Commercial Fishery Forecasting
- LABORATORY of Biological Resources Studies in Water Bodies of Multi-Purpose Destination
- LABORATORY of Freshwater Biological Resources Studies

Major structural units of the Krasnodar Department are as follows:

- LABORATORY of Marine Studies and Commercial Fishery Forecasting
- LABORATORY of Biological Resources Studies in Water-Bodies of Multi-Purpose Destination
- LABORATORY of Biological Resources Studies
- LABORATORY of Reproduction an Breeding of Sturgeons and Other Target Species

A A.N. SEVERTSOV ECOLOGY AND EVOLUTION

INSTITUTE OF

Federal State Budgetary Institution of Science "A.N. Severtsov Institute of Ecology and Evolution", Russian Academy of Sciences

The **Institute of ecology and evolution** of the Russian Academy of Sciences, established in Moscow in 1934 by academician **A.N. Severtsov,** is one of the leading biological institutes of Russia. The Institute is a scientific research centre on ecology, biological diversity, ethology, evolutionary morphology and nature conservation.

The Principal Directions of studies are:

- structural and functional organization, dynamics and evolution of populations, communities and ecosystems;
- ecology of organisms and mechanisms of adaptation;
- ecological and evolutionary aspects of animal behavior and communications;
- morphological regularities and mechanisms of animal evolution;
- biological diversity and sustainable use of biological resources.
- fundamental problems of nature conservation.

The data obtained at the Institute are of wide use in various branches of the national economy (agriculture, plants protection, fishery and fish farming, forest and game management, nature conservation, etc.) These data are the basis for sustainable use of natural resources and conservation of natural ecosystems and wildlife.

The Institute has two branches, 24 laboratories, Bird Ringing Centre of Russia, Study Centre for Electron Microscopy, Vivarium, 8 biological stations in various regions of Russia, Tropical Centre in Vietnam, Joint Russian-Mongolian Complex Biological Expedition, Joint Ethio-Russian Biological Expedition, Complex Radioecological Expedition. Currently, the Institute staff includes four Academicians and two Corresponding Members of the Russian Academy of Sciences, 23 Professors, 94 Doctors of Sciences (DSc), 178 Candidates of Sciences (PhD), 46 researchers, about 30 postgraduate students, including some foreign citizens.

Every year the Institute's scientists publish about 30 books and 600-700 articles on fundamental biological problems. Some of them (about 10 books and 300 articles) are published by international publishing houses and scientific journals.

The Institute coordinates programs of the Russian Academy of Sciences: e.g. “Biodiversity” and “Biological Resource of Russia”.

The UTRISH MARINE STATION belongs to this Institute. The Station is situated at the coast of the Black Sea between Anapa and Novorossiysk, near the cape Malyi Utrish. The Utrish Marine Station is a stationary base for studies of marine mammals and fishes.

Major structural units of the Utrish Station are as follow: the station has one laboratory with a staff, which performs mainly dolphin studies and there is a Lab available for any experimental work. The station has a dolphinarium.

Faculty of Geography of the M.V.Lomonosov Moscow State University

Department of Cartography and Geoinformatics of the Faculty of Geography of the M.V.Lomonosov Moscow State University

The Moscow University “Lomonosov” belongs to the Ministry of Education and Science of the Russian Federation.

Faculty of geography of the Lomonosov Moscow State University is the largest in the world scientific and educational team of geographers. The head of the faculty is academician Nikolay S. Kasimov, Professor. The faculty has about 1000 students and 200 post-graduates, 860 employees including 97 doctors and 280 PhDs. Also there are 2 Academicians and 4 Corresponding Members of the RAS, Honored Workers of Science of the RSFSR and the Russian Federation, winners of the State Prizes of the USSR and the Russian Federation, the RF Government Prize in the field of education, science and technology, the Lomonosov Prize of Moscow state University for scientific work and pedagogical activity, Anuchinskaya Prize and other. The Faculty comprises 15 departments, 8 scientific-research laboratories and 4 educational-scientific bases.

Departments and Laboratories which deal with ecosystem monitoring issues are:

THE CHAIR OF OCEANOLOGY at the Faculty of Geography of Moscow State University was founded in 1953 at the initiative of the famous Arctic Explorer, an honoured worker of science and technology of the RSFSR, Professor Nikolai Nikolaevich Zubov.

The CHAIR OF OCEANOLOGY was headed by Professors: A.D. Dobrovolsky (1953-1987), Mamaev I. (1988-1994), S. Lappo (1994-2006)

Since 2006 the CHAIR OF OCEANOLOGY is headed by Corresponding Member of RAS, doctor of geographical Sciences, Professor Sergey A. Dobrolyubov.

The CHAIR OF OCEANOLOGY has academic and educational relations and contacts with the Institute of Oceanology of RAS, Institute of Computational Mathematics of RAS, institutions of Goskomgidromet (State Committee of Hydrometeorology), Marine Hydrophysical Institute of NAS of Ukraine and other organizations. There is a base with laboratory and equipment for field work in the coastal area of the Black Sea, boats and diving equipment.

The main focuses of research are: to study the role of the ocean in regional climate changes; summarize the results of the research of ocean climate and hydrological processes in seas of Russia in the XX century; develop methodological bases of environmental. Network resources are actively used for receiving and replenishment of data banks; replenishment of modern equipment for Oceanographic measurements enables to provide high level of work in marine waters.

CHAIR OF CARTOGRAPHY AND GEOINFORMATICS

The Chair of Cartography and Geoinformatics, Faculty of Geography, MSU, is the largest scientific and research center, occupying leading positions in the domestic and world cartography. The Chair has research laboratory of aerospace methods, automation in cartography, digital cartography and photogrammetry, and the center of geoinformation technologies.

The Chair of Cartography and Geoinformatics was recognized as the Russian leading scientific school of geographical cartography, the purpose of which is to develop the theory of cartography as a science of cartographic modeling and knowledge of geosystems.

The Chair of Cartography and Geoinformatics carries out studies in the field of geoinformatics and geoinformational mapping, GIS of various types of resources, information, educational, other), development of cartographic CDs, multimedia, computer presentations, studies of new software products, implementation of Internet mapping in scientific researches and educational process. Much attention is paid to the methodology of ecological-geographical mapping, development of theory and methods of aerospace methods use in geography and cartography, implementation of satellite positioning systems - GPS mapping and geographical research.

Major structural units are as follows:

- LABORATORY of Automation
- LABORATORY of Aerospace Methods
- LABORATORY of Digital Cartography and Photogrammetry
- Centre of Geo-Information Technologies LABORATORY AUTOMATION

The department of Cartography and Geoinformatics does not deal with monitoring, it collects and manages data.

РОСГИДРОМЕТ

Federal State Budgetary Institution "Specialized Centre on Hydrometeorology and Environment Monitoring of the Black and Azov Seas" (FSBI «SCHEM BAS»)

General information

The Institution is located in Sochi. It monitors environmental pollution using the data from automated and fixed monitoring stations on the following parameters:

Atmosphere: Nitrogen dioxide, nitrogen oxide, suspended matter, sulfur dioxide, carbon oxide, formaldehyde.
Coastal waters: Oil hydrocarbons, heavy metals, dissolved oxygen, pH, etc.

Departments and Laboratories

- DEPARTMENT of Digital Methods of Weather Forecasting
- DEPARTMENT of Hydrometeorology of Sea
- DEPARTMENT of Land Hydrology
- DEPARTMENT of Observation Network
- Laboratory of Environmental Pollution Monitoring

РОСГИДРОМЕТ

Federal State Budgetary Enterprise (FBGU) «North Caucasus Department of Hydrometeorology and Environmental Monitoring»
Krasnodar Centre of Hydrometeorology and Environmental Monitoring
Tuapse Hydrometeorology Bureau

The Bureau is affiliated to the Krasnodar Centre of Hydrometeorology and Environmental Monitoring, which is a branch of the FBGU (Federal State Budgetary Enterprise) "North Caucasus Department of Hydrometeorology and Environmental Monitoring". The Bureau is located in Tuapse.

Departments and Laboratories

- Group of Monitoring of the Black Sea Marine Waters Pollution (area Anapa-Tuapse)
- Group of Routine Forecasts (Tuapse Area)
- Group of Meteorological Observations
- Group of Coastal Observations of Marine Hydrological Station

AZOV SCIENTIFIC RESEARCH INSTITUTE OF FISHERIES (in Russian – AzNIIRKh)

AzNIIRKh is located in Rostov. The current name (since 1958) of the Institute is Azov Scientific Research Institute of Fishery, but its history dates back to 1928 when the Azov-Black Seas Research Fishery Station was established. Main task of the institute is to study the Sea of Azov with its coastal waters, lower currents of the Don and the Kuban Rivers. Since 1992 the area of studies has been extended to the Russian Black Sea coast.

Priority in the activities of FSUE "AzNIIRKh," is the biological resources management.

Major structural units:

- Department of the fishing resources and the development of ODE
- Department of aquaculture
- Division of environmental studies
- Department of fisheries toxicology
- Department of Oceanography
- Department of genetics and biological monitoring
- Laboratory comprehensive ecological assessment

Details on the Departments of AzNIIRKh are given below.

Department of Oceanography

- Hydrology studies lab
- Hydrochemistry lab
- Hydrobiology lab

Main scientific research – complex studies of aquatic biological resources and their habitats in the Black and Azov Seas, in the interior water bodies of the Don and Kuban River basins. The Department of Oceanography is licensed in Hydrometeorology and related fields: No. P/2012/2257/100/L of 25.12.2012 issued by Roshydromet.

Department of fishing resources and the development of ODE

- Laboratory of Marine fish
- Laboratory of anadromous and semi-anadromous fish.
- Laboratory of juvenile commercial fish
- Laboratory of freshwater and non-fish objects

Research activities are focused on comprehensive studies of the status of aquatic biological resources in the Black and Azov Seas, inland freshwater reservoirs of the Don and Kuban Rivers with the aim of developing justified ODE and identification of possible yield of fishing resources.

Department comprehensive ecological assessment

- Laboratory of control of water ecosystems
- Laboratory of assessments of the consequences of oil and gas exploration

Main scientific research: trends in the state of the coastal ecosystems of the Azov and Black Seas under the conditions of increased anthropogenic load and assessment of the impact of anthropogenic pollution on marine coastal biocenoses (Azov and Black Seas).

Department of aquaculture

- Laboratory of reproduction of anadromous and semi-anadromous fish
- Laboratory of genetics and radiology
- Sector fish diseases

The main areas of research: assessment of the wild fish populations enhancement (Azov Sea anadromous and freshwater fish species), enhancement programmes, genetic studies of sturgeon fish species in the Azov-Black Seas and related fresh water bodies.

Department of fisheries toxicology

- Laboratory of regulation of pesticides
- Llaboratory of development of permissible levels of pollutants and toxicology

Main scientific research - assessment of the content of new generations of pesticides in the environment and the fish response to them in the Azov-Black Seas, assessment of fungicides negative impact on commercial fish and their fodder organisms.

Department of genetics and biochemical monitoring

Main scientific research – evaluation of the physiological condition and reproductive quality of the main commercial fish species of the Azov-Black Seas.

AzNIIRH also includes Analytical Testing Centre, established in 1995. It is accredited and registered in the State Register of the State Standard of Russia. Main scientific objectives of the Centre are: - development and

improvement of methodical and methodological foundations of environmental studies - metrological assurance and standardization of analytical methods of research. - A systematic hydrobiological and hydrochemical observations of water bodies where fishery takes place.

LOGO South Scientific Center of Russian Academy of Science

The Southern Scientific Centre of the Academy of Sciences (http://www.ssc-ras.ru/) acts under the Program of the Fundamental researches of the Academy of Sciences and the Guidelines for Basic Researches approved by Decree of the Presidium of the Academy of Sciences (biotechnology of aquaculture, ecosystem approach to the management of natural resources of seas, problems of fishery industry of the southern seas and the development of resource-saving, environmentally sound aquaculture technologies, fish fauna study) studies marine biology and geology, biological resources and aquaculture of the southern seas, and conducts ecosystem monitoring. It includes two Institutes, which have relation to the Black Sea monitoring/data collection. One of them is located in Rostov (Institute of Arid zones) and the second one is in Sochi (Sochi Scientific Research Center RAS). Their major structural units are presented below.

Major infrastructural Units (Departments) in the Rostov Institute of Arid zones

- Hydrology and hydrochemistry
- Molecular biology (incl. Genetics)
- Physiology
- Information technologies and mathematical modelling
- Hydrobiology
- Land ecosystems
- Arid ecology
- Geology
- Lithology, zoobenthos and palaeography

Major infrastructural Units (Laboratories) in the Sochi Scientific Research Center (RAS)

- Ethno-social problems
- Economy of nature exploitation, ecology and modelling
- Socio-economy of tourism development
- Regional market problems
- Marketing in the field of tourism
- Economy and management of touristic-recreational clusters

More information is available at: http://www.ssc-ras.ru/page469.html

NOVOROSSIYSK EDUCATIONAL AND RESEARCH MARINE BIOLOGICAL CENTER, KUBAN STATE UNIVERSITY

The Novorossiysk Educational and Research Marine Biological Center[3] of the Kuban State University is the former Novorossiysk marine biological station, which was created in 1920. It is engaged in studying state of the Black Sea: sea water, bottom sediments, structures of sea ecosystems in the conditions of a chronic anthropogenic pressures, influence of various sources of pollution on the sea and living organisms, biota contamination, etc.

State Scientific Center of the Russian Federation, Federal State Unitary Geological Enterprise, Southern Scientific & Production Association for Marine Geological Operations[4] (in Russian Yuzhmorgeologia)

Yuzhmorgeologia operates under the jurisdiction of the Federal Agency of Natural Resources of the Ministry of Natural Resources and Ecology. It is one of the leading Russian scientific organizations with more than 55-years' experience.

The Institute is situated in Gelendzhik, comprises 14 divisions and laboratories. It possesses 4 specialised marine vessels and 110 items of research equipment.

Major structural units are:

- Geophysics
- Geology
- Marine navigation
- Geotechnology

More information at: http://en.ymg.ru/w/Business_Card

Logo Typhoon Research and Production Association (RPA)

RPA 'Typhoon' is a governmental scientific institution, a leading one for the Russian Federal Service on Hydrometeorology and Environmental Monitoring (Roshydromet). It was founded in 1986. It is an assignee of

- The Institute of Experimental Meteorology, which was founded in 1968
- The Central Design Bureau of Hydrometeorological Instrumentation founded in 1966
- Regional Centre 'Arctic Monitoring' founded in 2002

RPA 'Typhoon' consists of:

[3] **Postal addess:** 353905, Novorossiysk, ul Naberejnaia im. Admiral Serebriakova, 43. Tel: +7 (86117) 23-60-13; **Fax:** +7 (86117) 23-17-65

[4] Postal Address: 20, Krymskaya St., Gelendzhik, 353461, Russia; Tel: +7 (86141) 56267; Fax: +7 (86141) 56266; E-mail: postmaster@ymg.ru; Contact person: Arthur Pronkin E-mail: Pronkin@ymg.ru; Website: http://www.ymg.ru

1. **The Institute of Experimental Meteorology (IEM)**

2. **The Institute for Problems of Environmental Monitoring (IPEM)**

3. **The Central Design Bureau of Hydrometeorological Instrumentation (CDBHI)**

4. **The Federal Environmental Emergency Response Center (FEERC of Roshydromet)** providing on-line and predicting information in emergency situations connected with accidental contamination of the environment in the territory of the Russian Federation.

5. **The Centre for Metrology and Technical Regulations in hydrometeorology and environmental monitoring (CMTR)**

6. **The Northwestern Branch of RPA 'Typhoon' (NW branch)**

7. **The Affiliated Branch 'KOMET' ('KOMET' branch)**

The postal address of Typhoon points Obninsk as the main location. Typhoon carries out environmental monitoring and investigations related to nuclear safety in the frameworks of bilateral and multilateral intergovernmental agreements. The Seas attended are mostly the RU Northern and Far-Eastern Seas (with focus on their pollution), the Black Sea is occasionally included in the scope of work of Typhoon (in projects). RPA 'Typhoon' takes part in international programs of climate and ozone layer studies, cooperates with research institutions of the USA and Germany in physics of the upper atmosphere.

The Typhoon infrastructure includes:

- **The Meteorological Experimental Site on the basis of the High Meteorological Mast** - for studies in the atmospheric layer (up to 300 m) of temperature and wind parameters, turbulence, conditions of pollutants transport and dispersion, heat and mass exchange between the underlying surface and the atmospfere, etc.. *It is supported by the Ministry of Industry, Science and Technologies of Russia as a unique installation of the Russian Federation.*
- **A Specialized Complex of Model Installations for Geophysical Investigations (The Aerosol Building).** The Aerosol Building is aimed at the conduction of basic and applied studies in atmospheric physics, physics and chemistry of clouds and aerosols, atmospheric optics, changes in hydrometeorological and geophysical processes. *It is supported by the Ministry of Industry, Science and Technologies of the Russian Federation as a unique installation of the Russian Federation.*
- **Obninsk Lidar Station** with two stationary and one mobile radars is for tracing atmospheric aerosols and stratospheric ozone to determine and forecast the climate-related changes.
- **The Complex of Stations for Radiometeor Soundings** is for studying the dynamics of the upper atmosphere (global scale). It is used in investigations under the Roshydromet programs, and in special problem-oriented studies/projects serving the national economy. The Complex has no analogues in the world.
- **The Geophysical Rocket Complex** is for studying the upper layers of the atmosphere and the adjacent space with the help of meteorological rockets. A ground-based version of the complex exceeds in its experimental and operational characteristics the world analogues in the USA and the European Space Agency, a naval version of the Complex has no analogues in the world.
- **The Complex of Mass-Spectrometric and Spectrophotometric Instrumentation** is for assessing the levels of chemical and radioactive contamination of all the natural media (water, soil and air). It allows one to identify and analyze a wide range of chemical components and radioactive substances.

Кубанский государственный аграрный университет

Research Institute of Applied and Experimental Ecology (Kuban State Agrarian University)

The Institute was founded in 1995 in Krasnodar. Currently, the institute is a major research center in the field of ecology, staffed by qualified personnel and in possession of modern laboratory equipment that allows to solve many environmental problems at a high scientific and technical level. The Institute is accredited for technical competence and independence by the Federal Agency for Technical Regulation and Metrology of the GOST Russian system, and by the accreditation system for radiological control (SARK). Clients include industrial and agricultural enterprises, municipalities, and state executive authorities (regional and federal level).

The main activities of the Institute include:

- development of automated systems for environmental management (customers: businesses, municipalities, specially authorized executive bodies);
- laboratory analyzes of the content of harmful substances in the environment;
- research into ecology (environmental studies for the establishment of protected areas, spatial planning schemes for municipalities, biotechnology, comprehensive assessments of environmental status of various areas, environmental protection management plans, etc.);
- EIAs for various economic activities;
- training of specialists in the field of waste management and others;
- environmental support for enterprises and authorities (development of environmental standards, environmental monitoring systems, etc.).

One of the activities and Experimental Institute of Applied Ecology is the creation of automated control systems in the field of environmental protection. The Institute has expertise in creating the following systems:

- Automated environmental monitoring system
- Development of automated control systems for protected areas at regional (local) level
- Development of automated systems for waste management

Major structural units are:

- Department of research and environmental programs (founded in 2007)
- Department of Ecology and Environmental Monitoring

The Department of Ecology and Environmental Monitoring is engaged in environmental projects in Krasnodar and the Krasnodar Kray (region).

- Laboratory of Physical, Chemical and Biological Research (accredited). The biological research includes microbiological and parasitological studies.
- Educational environmental center (established in 1996, provides various trainings)

For more information: http://instecology.ru/institute/structure/laboratory.html

Scientific Research Centre "Dynamics of the Nearshore zone" (SRC, Gelendzhik, Russia)

The Center is a non-governmental organization, which was created in 2004 in Gelendzhik. The Centre joins leading Russian scientists for coastal research. There are specialists in Hydrophysics, Coastal processes, Geology and lithodynamics. It has own facilities, a diving station and also agreements with many other organisations for using their facilities under joint projects.

For more information see: http://www.coastdyn.ru/

State scientific institution "Institute for scientific research of aerospace monitoring "AEROCOSMOS"

The Institute exists since Dec 2000, first as a Center (education/research) in the Moscow State University of Geodesy and Cartography. The present name of the Institute was given in May 2011, the organization became Federal State entity affiliated to the Ministry of Defence of the Russian Federation.

"Aerocosmos" implements aerospace monitoring of anthropogenic impacts, including the Black Sea. It also deals with:

- The development of methods for integrated aerospace monitoring and forecasting of condition of coastal water to prevent their pollution using multispectral optical and radar imagery
- Aerospace research and monitoring of interactions between the atmosphere and ocean in the interest of Earth Sciences, Ecology and Environmental Management».
- Research of natural oil and gas shows (gas seeps) on the water surface by space imagery" (Program of the Presidium of Russian Academy of Sciences 24)

The Institute has ground stations for aerospace data receipt. Servers and workstations for aerospace data processing. Software for preliminary and thematic data processing.

For more information see: http://www.aerocosmos.net/

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2. Equipment available in the Russian Federation

2.1. Major laboratory equipment and terms of sharing with other laboratories in the country and outside of it where applicable (Russian Federation)

Summary for the country: *the organizations have not specified the terms of sharing of their equipment (a few microscopes were only mentioned by SIO-RAS). Therefore, 'sharing' cannot be analysed, the only concussion is that it simply does not take place.*

Number of laboratory equipment units	Shared within the country (number of equipment units)			Shared with other countries (number of equipment units)			Terms of sharing exist		
	Yes	No	No information	Yes	No	No information	Inside the country	Outside the country	No information
139	3	-	136	3	-	136	-	-	139

Note: The total number of equipment units does not include the equipment of the Southern Center of Science (Rostov) and the Typhoon capacity for various measurements.

As reported per organization:

N	Equipment name	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
				Inside the country	Outside the country
	SOI				
1	Spectrophotometer «GENESIS 10Vis» (Спектрофотометр «GENESIS 10Vis»)				
2	Spectrometer LS-55 (Спектрометр LS-55)				
3	Spectrometer VARIAN 660-IR (ИК-фурье спектрометр VARIAN 660-IR)				
4	Gas Chromatographer CLARUS-500 PerkinElmer (Газовый хроматограф CLARUS-500 PerkinElmer)				
	SIO-RAS				
5	Atomic Absorption Spectrophotometer (AAS); Russia; "KVANT-2A" (heavy metals: Mn, Fe, Cu, Zn, Cd, Pb)				
6	Fluorat 02 3M (Russia "Lumex"; used for Total Petroleum Hydrocarbons (TPHs), Detergents, and Phenols)				
7	pH meter; Germany (pH-330i; pH)				
8	Gas Chromatograph (Russia NPF "Meta-chrome", "KristaLyuks-4000M"; used for Pesticides (DDT, DDE, DDD, HCB))				
9	Liquid chromatograph (Russia, "Lyumahrom"; used for Benzo (a) pyrene)				
10	Concentratometer (IR, Russia, KN-2M; used for TPHs)				
11	Photocolorimeter (Russia, KFK-3; used for Nutrients: PO4-P, TP, NO3-N, NO2-N, NH4-N, TN, Si; and H2S)				
12	Spectrophotometer (Germany "Hach"Lange DR 2800; used for Nutrients: PO4-P, TP, NO3-N, NO2-N, NH4-N, TN, Si; and H2S)				
13	Mercury analyzer (Russia NPO "Metrology +"Julia-5K"; used for Hg)				
14	Potentiometric titrator (Germany, Metrohm; used for O2, BOD5, H2S)				
15	Potentiometric titrator (Russia, ATP-02; used for Total alkalinity)				
16	Electronic balance (USA, RECISION Standart AV 264 C; used for Suspended solids)				
17	Total Carbon Analyzer (Germany Elementar Vario TOC Cube; used forTOC)				
18	Microscopes Optical ERGOVAL	Yes	Yes		
19	Microscopes Fluorescent FLUOVAl	Yes	Yes		
20	Microscopes Inverted Fluorescent LEICA	Yes	Yes		
	Krasnodar VNIRO				
	No information provided.				
	Federal State Budgetary Institution of Science "A.N. Severtsov Institute of Ecology and Evolution", Russian Academy of Sciences				
21	Equipment for dolphins studies (at the Utrish Biological Station)				
	Department of Cartography and Geoinformatics of the Faculty of Geography, M.V.Lomonosov Moscow State University				
22	Workstations				
23	Servers				
24	Geodesy equipment				
25	Printers				
	FSBI «SCHEM BAS» (Sochi)				
26	Chromatograph «Кристалл 2000М» (Khristall 2000M)				
27	Spectrophotometer Shimadzu UV-1800				
28	Oil analyser AH-2 (AN-2)				
29	Water analyser Profiline Cond 3210				
30	Laboratory electronic balance				

N	Equipment name	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
				Inside the country	Outside the country
	KT1 MB 210-A (KT1 MV 210-A)				
31	Laboratory electronic balance KT 1 ЛВ 210-A (KT 1 LV 210-A)				
32	Electronic balance ПВ6 (PV6)				
33	Laboratory balance ВЛМ 510-П (VLM 510-P)				
34	Atomic-absorption spectrophotometer «КВАНТ-Z.ЭТА» (KVANT-Z ETA)				
	Spectrometer СФ-103 (SF-103)				
35	Photometer «Эксперт-003» (Ekspert-003)				
36	Fluid analyser «Эксперт-0,01-1-0,1» (Ekspert-0.01-1-0.1)				
37	pH/C-meret HI 9024C pH/C/mB/Eh-meter HI 9025C				
38	Photocolorimeter (turbidimeter) HI 93703C Oxygen analyser HI 9143				
	Tuapse Bureau				
39	Spectrophotometer UNICO				
40	Concentration meter КН-2				
41	Hydrological sonde Hydrolab MS-5				
42	Single-beam colorimeter КФО (KFO)				
	Novorossiysk Educational and Research Marine Biological Center				
43	Photoelectric photometer КФК-3, ПО ЗОМЗ (KFK-3 PO ZOMZ), town Zagorsk				
44	Spectrophotometer UNICO 1201, manufacturer «United Products&Instruments Inc..», USA				
45	Electronic balance Explorer model EP214C, «OHAUS Europe», precision class: special				
46	Fluid analyser “Флюорат-02-3М,” (Fluorat-02-3M) НПФ АП “Люмэкс”, (NPF AP “Lumeks”), St. Petersburg				
47	Analytic gas chromatograph “Кристаллюкс-4000М”, ООО НПФ “Мета-хром” (“Kristallyuks-4000M”, OOO NPF “Meta-chrom”), city Yoshkar-Ola				
48	Analyser of ionic concentration voltammetric TA-Lab, Tomsk				
49	Concentration meter КН-2м, «Сибэкоприбор» (КН-2m, “Sibecopribor”), Novosibirsk				
50	pH-meter-water analyser, model HI2211,ЗАО «Портлаб» (ZAO “Portlab”), Moscow				
51	High-performance system of chromatography “Стайер” (“Stayer”) with conductometric detector, ЗАО «НПКФ Аквилон» (ZAO “NPKF Akvilon”), Moscow				
52	Atomic-absorption spectrophotometer , Shimadzu AA-7000 F, Japan				
53	Microscopes				
	AzNIIRKh				
54	Spectrophotometer UNICO 1200/1201, USA (США				
55	КФК-3), Russia				
56	Photometer Expert-003, Russia				

N	Equipment name	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
				Inside the country	Outside the country
57	pH–meter Expert , Russia				
58	pH– meter 150, Russia				
59	Laser diffraction particle size analyzer SALD-201V, Shimadzu, Япония				
60	Laboratory scales VPR-200 KT2, Russia				
61	Jewelry scale MW-II Series, Korea				
62	Dryer «SHC-80»				
63	Microscope МБС-10				
64	Microscope Биолам				
65	Microscope MBI 15-2				
66	Microscope Olympus				
67	Luminescent Microscope MIKMED (Микмед-2)				
68	Microscope MIKMED (Микмед-1)				
69	Laboratory scales jewelry GAS-150				
70	Scales VEU 205/1				
71	Distiller DE-4				
	Southern Scientific Center of RAS				
	In the Southern Scientific Center of RAS (Rostov), all laboratories work with modern equipment, for details see: http://www.ssc-ras.ru/page420.html.				

RPA 'Typhoon' has an unique capacity for investigations in cloud physics and hazardous meteorological phenomena, physics of the adjacent space (to the atmosphere), climate monitoring and monitoring of chemical and radioactive contamination of the environment.

The Research Institute of Applied and Experimental Ecology (Krasnodar, Kuban Agrarian University) has a long list of equipments used in the following fields:

Water analysis

Equipment: photoelectric photometer KFK-3-01 "ZOMZ", portable pH meter, HI 8314 pH meter, ionomer "Ecotest - 2000", dissolved oxygen analyser, "MARK-303E" fluid analyser, "Fluorat-02-2M", Liquid chromatograph "Stayer" with fluorimetric and conductometric detector, gas chromatograph HP 6890 with MSD 5973, mercury analyzer RA-915M, capillary electrophoresis system "Capel 103-R", Kontsentratomer KH 2, atomic absorption spectrometers "QUANTUM - 2AT" and "QUANTUM-Z.AT, "fluid analyzer conductometric HI 98301, laboratory electronic scales SARTORIUS« E2000D », laboratory scale OHAUS AR 2140, laboratory electronic scales SHIMADZU« AUX 220, "Scales OHAUS Adventurer ARC 120, etc.

Air analysis

Equipment: Gas chromatograph "Kristall 2000M" analyzer "ELAN-CO-50," analyzer "ELAN NO / NO_2 , "analyzer" ELAN NH_3 ", integrating sound level meter - vibrometer SHEA - 01V, noise and vibration analyser, Assistant device sampling electric PU-4E, a sampling device PU - 3E/220, aspirator PU-2E des.1, aspirator M822, gas analyzer universal GANK -4, meteometr MES – 200, meteometr MES - 200A, differential manometer DMC - 01M, analyzer DAG - 510MV, pressurized tube NIIOGAZ, pressurized tube differential Pitot, chromatograph FGH -1, thermometer digital compact TCM 9210M103, differential pressure Testo 506 meter combined; Testo 405, Scales LP-120-A, Hygrometers VIT-1, the thermometer in a glass box, dust analyzer ICP-5 etc.

Radiology
Equipment: universal spectrometric complex "GAMMA PLUS" radiometer radon RRA-01M dosimeter exposure dose wideband wearable DRG-01T1, the dosimeter DKG-02U "ARBITER"; dosimeter MKS/SRP-08A, electronic scales Adventurer ARC 120 OHAUS.

Microbiology and parasitology
Equipment: Drying and sterilization equipment (SCC-80), TSU-200 Thermostat, Thermostat TC-80 M-2 4, sterilization/drying cabinets HSS-80, Steam Sterilizer VC-75, VC Steam Sterilizer-75-PT, DE-distillers, Analyzer fluid multivariable ECOTEST-2000, shaker "Laurel 30", Hladothermostat air HT-3/70-1, Centrifuge ELEKON TSLMN-P10-01, microscope MBI-6, MIKMED-1 Microscope, Microscope Nikon Eclipse E 400, Digital Camera Nikon coolpix 995, irradiator DBS, vacuum filtration device PVF-35, microscope MBS-9, light meter "TKA-Suite", etc.

2.2. Major field equipment and terms of sharing with other organizations in the country and outside of it where applicable (the Russian Federation)

Summary for the country: *the number of units given below does not include the full list of field equipment, as some organizations specified the availability of such but did not describe in detail what is this equipment like.*

Vessel class required for the use of the equipment					Shared within the country			Shared with other countries			Terms of sharing exist		
Regional	Local and/or coastal vessels	Stationary oceanographic platform	Any type	Not specified	Yes	No	Not specified	Yes	No	Not specified	Inside the country	Outside the country	Not specified
-	-	-	4	77	-	-	81	-	-	81	-	-	81

As reported per organization: *none of the stakeholders specified sharing and terms of sharing.*

N	Equipment name	Vessel class*** required for the use of the equipment (if any)	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
					Inside the country	Outside the country
	SOI					
	No such equipment available.					
	SIO-RAS					
1	Plankton nets for microzooplankton	All vessel types	Yes	Yes		
2	Juday nets (for mesozooplankton)	All vessel types	Yes	Yes		
3	Bogorov Russ nets and its small modification (for macrozooplankton)	All vessel types	Yes	Yes		
4	Bathometers (1 liter)	All vessel types	Yes	Yes		
	AzNIIRKh					
5	Large Juday Net (БСД-36)					
6	Middle Juday Net (ССД-24)					
7	Small Juday Net (МСД-12)					
8	Bogorov-Rass Net (БР-80)					
9	Apshtein Net					
10	bottom sampler Peterson 0.025 m^2 (ДНЧ)					

N	Equipment name	Vessel class*** required for the use of the equipment (if any)	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
					Inside the country	Outside the country
11	bottom sampler Peterson 0.1 m^2					
12	bottom sampler Ocean 0.15 m^2					
13	Automated zond «Vector (Вектор) -2»					
14	Waterbotle ГР-18					
15	Waterbotle Niskin					
16	Disk Secchi					
17	Dial color					
18	Aspiration psychrometer MB-4M					
19	Anemometer ARI – 49					
20	Marine meteorological complex 'MA-6-3C'					
	Krasnodar VNIRO					
	No information provided.					
	Federal State Budgetary Institution of Science "A.N. Severtsov Institute of Ecology and Evolution", Russian Academy of Sciences					
21	Equipment for dolphins studies (at the Utrish Biological Station)					
	Department of Cartography and Geoinformatics of the Faculty of Geography, M.V.Lomonosov Moscow State University					
	No such equipment available.					
	FSBI «SCHEM BAS» (Sochi)					
	No information provided.					
	Tuapse Bureau					
	No information provided.					
	Southern Scientific Center of RAS					
22	Hydrologic CDT probe SEACAT SBE19 (2 pcs.) of carousel type					
23	Hydrologic probe ECOMEMORY ECM 031					
24	Current meter RCM 9LW					
25	Piston/Gravity corer Model 13.540B, Denmark					
26	Automatic continuous flow analyser San^{++} with sampler SA1100 accommodating 2 x 50 sampling positions					
27	Deep-water sampling complex					
28	Molchanov bathometers for water sampling					
29	Marine bathometer БМ-48 (BM-48) for water sampling					
30	Niskin sampler, 5.0 l, for water sampling					

N	Equipment name	Vessel class*** required for the use of the equipment (if any)	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
					Inside the country	Outside the country
31	Petersen sampler for bottom sediments sampling					
32	Van Veen grab for bottom sediments sampling					
33	Benthic dredge					
34	Bottom beam trawl (2 m, 3 m)·					
35	Pelagic otter trawl (28 m horizontally, 8 m vertically)					
36	Equipment for hydrochemical studies: oxygen, nutrients, pH, hydrogen sulphide, plant pigments, production-destruction					

Additionally, in the SeasEra Project Reports (http://www.seas-era.eu/np4/6/) the following information can be found on the availability of equipment in one of the leading institutes of the Russian Federation - State Scientific Center of the Russian Federation, Federal State Unitary Geological Enterprise, Southern Scientific & Production Association for Marine Geological Operations (Yuzhmorgeologia):

Yuzhmorgeologia

Seismic equipment

- BOX radio telemetry system manufactured by «Fairfield Industries»
- Marsh Line Telemetry system for exploration of transition zones
- INTROMARIN-L2 Seismic acquisition and recording system
- CCT-480/960 Telemetric cable & modular system for seismic exploration
- UPCM-120x4 Multi component digital receiver
- Multi channel seismic high response Aquaseis
- Air guns: «Puls 6»
- Well Airguns «Puls 6C»

Acoustic equipment

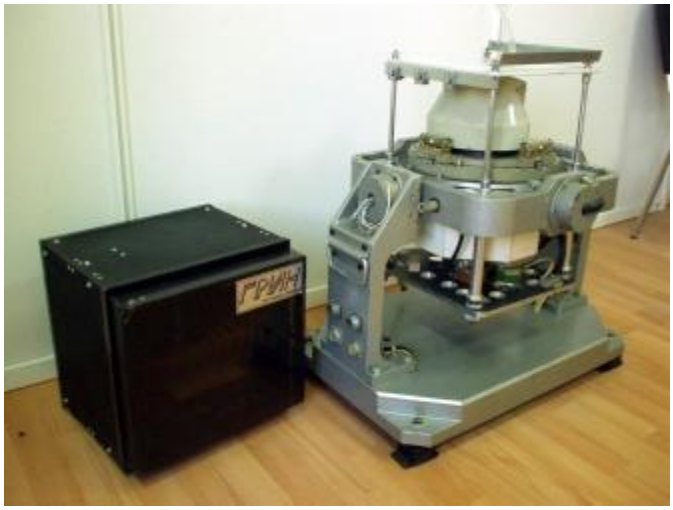
- Echo-sounders
- PEL-D Double-frequency hydrographic survey echo-sounder
- Simrad EM 12S-120 multi-beam echo-sounder
- Simrad EM 3000D multi-beam echo-sounder
- Sonars
- Deep-water geo-acoustic systems of MAK series
- Katran-D Side scan sonar

Sampling, coring and drilling equipment

- OKEAN-0,25 grab sampler
- KADR–1 Self-contained sea-floor coring system
- Core pipes:
- Vibrocores
- LITO 1-4
- FGL

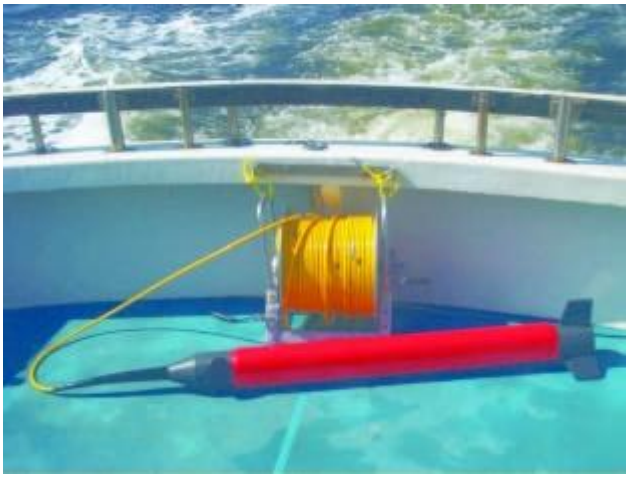
Gravimeters

- Grin-2000 Shipboard gravity system
- Gravimeter T-200 by Sodin



Magnetometers

- 300M Sea Spy Marine Magnetics magnetometer
- MDM differential magnetometer (Russian made)
- G-877 sea proton magnetometer by Geometrics



Navigation equipment

- AgPS-132 DGPS receiver (2001)Trimble Navigation Ltd.
- Starlink Invicta 210 DGPS receiver (2001) Trimble Navigation Ltd.
- TSS/Meridian Surveyor Gyrocompass (2001) Meridian Surveyor (Russia)
- Roll/pitch/heave sensor, “SeaTex / MRU 5” (2001) Kongsberg Seatex
- RL-II Trimble 4000 (2001) Trimble Navigation Ltd.
- MTS-1000 (2001) GeoMarine
- MRX-1000 (2001) GeoMarine

Chemical and analytical equipment

- Specter-5-3 atomic absorption spectrophotometer (Russian made)
- KFK-3 Spectrophotometer (Russia)
- Fluorat 02-3M Fluorescence spectrophotometric analyzer (Russia)
- Fluorat-02-ВЭЖХ-3 — Chromatographic system (Russia)
- Expert-001 pH-meter-ionomer (Russia)

- IVA-5 Volt-amperometric analyzer (Russia)
- «Yuliya-5K», Hg analyzer (Russia)
- Gas chromatographer (Russia)
- *И*-500 Ionometric converter (Russia)
- SNOL 67/350 Low-temperature laboratory furnace (Lithuania)
- A&D HR-200 High-accuracy scales («A&D», Japan)
- MINOTAVR-1 SHF-mineralizer

In order to improve and further develop the Black Sea monitoring, the following needs in equipment have been specified by the SIO-RAS:

- CTD probe with set of waterbottles in rosette,
- Deepfreezer to collect and preserve samples for specific purposes.

Other needs are:

1. Modern microscopic equipment for high-resolution processing of samples (for instance, bacteria, phytoplankton):

   - Microscope Fluorescent CARL ZEISS YENA
   - Microscope Laser CARL ZEISS YENA

2. Photocamera with high resolutions to take pictures of microorganism and camera to take pictures of invaders or unknown organisms.

3. With the growing shortage of highly experienced taxonomists, the monitoring should be based on automated equipment, such as modern flow cytometry, which allows you to define the size structure and species/group of phytoplankton in semi-automatic mode:

   - Cytosense flow cytometer CYTOBIOY, the Netherlands

3. Availability of vessels and characteristics of the vessel/s, and terms of rent (Russian Federation)

Summary for the country: Availability of vessels was reported by the SOI and the SIO-RAS only. The Tuapse bureau mentioned that the lack of vessel influenced monitoring negatively and prevented proper evaluation of the state of the Black Sea coastal waters.

Name	Category	Length, m	Year built	Rent (Euro per day)
Viktor Buynitskiy	Regional	44.95	1986	Not specified
Professor Shtokman	Ocean	68.87	1979	Not specified
RIFT	Regional	53.71	1981	Not specified
Ashamba	Local/Coastal	15	2001	Not specified
Youzmorgeologiya	Ocean	104.5	1985	Not specified
Gelendzhik	Ocean	104.5	1989	Not specified
Prof Panov	Local /Coastal	19	Not specified	Note specified
Deneb	Local/Coastal	28.6	Recently renovated	4 100
Vladimir Shipov	Not specified			
Small boats of various organizations	The boats are of various size and year of built			

As reported per organization:

	R/V Viktor Buynitskiy, SOI							Year built	
								1986	
	Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
		Length, m	Width, m	Draft, m	Tonnage (Gross/Net)	cruise	max		crew	scientists
		44.95	10.00	3.60	693/207	12	16	35	18	20
	Other characteristics									
	Fuel Capacity (tonnes): 96.0 **Area Wetlab** (m^2): **Water Capacity** (tonnes): 929.0 **Free Deck Area** (m^2): **Range** (n mi): **Air Cond**: **Data Processing Equipment**: **Navigational equipment**: **Communications**: **Laboratories: 4** **Research Equipment**:									
	 Photo:									
	Rent per day (Euro)				**Contact person for renting (name, e-mail, tel/fax)**					

	R/V Professor Shtokman (SIO-RAS)							Year built	
								1979	
	Vessel class	Size				Speed, knots	Endurance, days	Accommodation	
		Length m	Width m	Draft m	Tonnage (Gross/Net)	cruise	max	crew	scientists
		68.87	12.42	4.7		10.0	13.5	40	34	26
	Other characteristics								
	Fuel Capacity (tonnes): 260 **Fuel consumption**: on the run -5 t/day; parking 1 t /day. **Area Dry/Wetlab** (m^2): 95 **Water Capacity** (tonnes): 100 **Free Deck Area** (m^2): **Range** (n mi): **Air Cond**: **Data Processing Equipment**: **Navigational equipment**: **Communications**: **Laboratories:** 6 labs, 21 working places **Research Equipment**:								
	 Photo								
	Rent per day (Euro)					**Contact person for renting (name, e-mail, tel/fax)**			

R/V RIFT (SIO-RAS)								Year built	
								1981	
Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
	Length m	Width m	Draft m	Tonnage (Gross/Net)	cruise	max		crew	scientists
	53.71	10.52	4.53		10.0	11.6	21	20	20

Other characteristics

Fuel Capacity (tonnes): 133
Fuel consumption: on the run -5 t/day; parking 630 kg /day
Area Dry/Wetlab (m^2): 29
Water Capacity (m^3): supply 39.5 tonnes
Free Deck Area (m^2):
Range (n mi):
Air Cond:
Data Processing Equipment:
Navigational equipment:
Communications:
Laboratories: 4 labs, 14 working places
Research Equipment:

Photo

Rent per day (Euro)	**Contact person for renting (name, e-mail, tel/fax)**

	R/V Ashamba (SIO-RAS)							Year built	
	Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
		Length m	Width m	Draft m	Tonnage (Gross/Net)	cruise	max		crew	scientists
		15	4.15	1.5			9		6	4
	Other characteristics									
	Fuel Capacity: 1 tonne **Fuel consumption**: on the run -0.36 t/day **Area Wetlab:** **Water Capacity:** **Free Deck Area:** **Range (n mi):** **Air Cond:** **Data Processing Equipment:** **Navigational equipment:** **Communications:** **Laboratories:** **Research Equipment:**									
	Photo:									
	Rent per day (Euro)				**Contact details:**					

Availability of other vessels has been reported by the SeasEraProject ( ), they are as follow:

	R/V Youzmorgeologiya (State Scientific Center of the Russian Federation Federal State Unitary Geological Enterprise, Southern Scientific & Production Association for Marine Geological Operations) (Yuzhmorgeologia)							Year built	
								1985	
	Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
		Length, m	Width, m	Draft, m	Tonnage (Gross/Net)	cruise	max		crew	scientists
	Local/coastal vessel	104.5	16	5.8	4430/1329	10	14	90		
	Other characteristics									
	Fuel Capacity (tonnes): 960 **Area Dry/Wetlab** (m^2): 646 **Water Capacity** (tonnes): **Free Deck Area** (m^2): 768 **Range** (n mi): **Air Cond**: **Data Processing Equipment**: **Navigational equipment**: GPS receiver Trimble 4000 DL-II nav. ver. 7.15; Trimble 4000 RL-II nav.ver. 5.51; Nav computer IBM-PC with HYDRO Pro software ver. 6.02; Gyro compass "GEUS"; USBL positioning system Sonardyne 7707; Acoustic responders Sub-Mini 7970; DP System; Automatic control system MOREKHOD **Communications**: FURUNO radar FR 2110, FR 2115 ; GPS FURUNO receiver GP 30; GMDSS System FURUNO 400W (region A1, A2, A3); Navtex receiver Gyro compass "Geus"; Log IEL-2M; Echo sounder Sargan E, Priboi 101; INMARSAT Mini-M communications: Phone: 873 – 763 044 515, Fax: 873 – 763 044 516, E-Mail: nis_ymg@marsat-south.net; Satellite station Saturn BM **Laboratories:** ▪ Navigation and hydrographical 12 m2 ▪ Geological laboratory: 26 m2 ▪ Processing center: 94 m2									

- Geochemical laboratory: 32 m2
- Acoustic laboratory: 26 m2
- Photo laboratory: 28 m2
- Hangar for UTV: 64 m2
- Hydro chemical laboratory: 15 m2
- Biological laboratory: 27 m2
- Processing laboratory: 37 m2
- Trial processing lab: 17 m2
- Microbiological laboratory: 26 m2
- Research storeroom: 48 m2
- Deck space (main deck): 120 m2
- Deck space (boat deck): 100 m2

Research Equipment:

- navigation system (receiver GPS MX-200, gyrocompass «Guis»)
- geoacoustic system MAK-1M (side scan sonar with near seabed profiler)
- towed photo & TV system «Neptun»
- profile recorder M-140
- hydrophysical probe CTD SeaCat with the General Oceanics rosette
- automatic hydro meteostation AWS 2700
- coring instruments (core pipe 7 m and 5 m, dredges, grab samplers)
- geotechnical and geochemical laboratory equipment
- workboat ZODIAC
- deployment equipment

Photo

Rent per day (Euro)	**Contact person for renting (name, e-mail, tel/fax)**
	Arthur Pronkin E-mail: Pronkin@ymg.ru Tel: +7 (86141) 56267 Fax: +7 (86141) 56266

R/V Gelendzhik (State Scientific Center of the Russian Federation Federal State Unitary Geological Enterprise, Southern Scientific & Production Association for Marine Geological Operations) (Yuzhmorgeologia)	Year built
	1989

Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
	Length, m	Width, m	Draft, m	Tonnage (Gross/Net)	cruise	max		crew	scientists
Local/coastal vessel	104.4	16	5.88	4504/1351	10	14	90		

Other characteristics

Fuel Capacity (tonnes): 960
Area Dry/Wetlab (m^2): 646
Water Capacity (tonnes):
Free Deck Area (m^2): 768
Range (n mi):
Air Cond:
Data Processing Equipment: Nav computer IBM-PC with HYDRO Pro software ver. 6.02; Data logging work station SunSparc 5 with software; MERMAID v. 3.4.4; MERLIN v. 3.4.4; Data processing workstation Sun Ultra with software; NEPTUNE v. 3.4.4 ; IRAP v. 6.3; HP DesignJet 750 colour plotter; Special onboard processor; Data logging IBM-PC computer; Post processing IBM-PC computer; DOWTY 120/138 thermal printer
Navigational equipment:
Communications: FURUNO radar, GPS FURUNO receiver, GMDSS SAILOR (Area A3), Navtex receiver, Gyro compass "Geus", Log IEL-2M, INMARSAT Mini-M communications: Phone: 873 – 763 044 515, Fax: 873 – 763 044 516, E-Mail: nis_gld@marsat-south.net
Scientific equipment: GPS receiver Trimble 4000 DL-II nav. ver. 7.15; Trimble 4000 RL-II nav.ver. 5.51; USBL positioning system Sonardyne 7707; Acoustic responders Sub-Mini 7970; DP System; Vessel movement automatic control system MOREKHOD; Sampling equipment - Gravity corer 3 m length, Gravity corer 6 m length, Grab sampler Ocean-0.25, Box corer; Multibeam - SIMRAD multibeam echosounder EM12 S-120; SEATEX motion sensor MRU-5; AML sound velocity profiler SVP-16, SV Plus; AML surficial sound velocity probe Smart SV; MAK-1M side-scan sonar / subbottom profiler; SSS/SBP tow fish; Spare SSS/SBP tow fish
Laboratories and free deck space: Navigation and hydrographic lab: 50 m2; Geological lab: 12 m2; Processing center: 68 m2; Geochemical lab: 13 m2; Laboratory for deep water studies:70 m2; Photo laboratory: 27 m2; Hangar for underwater vehicles: 90 m2; Gravity data lab.: 26 m2; Deck space (boat deck): 100 m2; Processing laboratory: 43 m2; Deck space (main deck): 120 m2
Survey activities:

- Site and route survey
- Bathymetric survey (single- and multi-beam)
- Geophysical studies (seismic-acoustic survey, side-scan sonar and sub-bottom profiling, gravimetry and magnetometry, CTD/STD)
- Photo and TV profiling
- Geological and microbiological sampling (bottom soil, water column)
- Onboard and onshore data processing, interpretation, charting and reporting

Photo

Rent per day (Euro)	Contact person for renting (name, e-mail, tel/fax)
	Arthur Pronkin E-mail: Pronkin@ymg.ru Tel: +7 (86141) 56267 Fax: +7 (86141) 56266

R/V Prof. Panov of the Southern Scientific Center (Rostov)							Year built	
Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
	Length, m	Width, m	Draft, m	Tonnage (Gross/Net)	cruise	max		crew	scientists
Coastal	19	3.8	1.2	32.5				4	5

Other characteristics

Fuel Capacity (tonnes):
Area Dry/Wetlab (m^2):
Water Capacity (tonnes):
Free Deck Area (m^2):
Range (n mi):
Air Cond:
Data Processing Equipment:
Navigational equipment:
Communications:
Scientific equipment:
Laboratories and free deck space:

Photo (http://www.ssc-ras.ru/page423.html)

Rent per day (Euro)	Contact person for renting (name, e-mail, tel/fax)

R/V Deneb of the Southern Scientific Center (in Port Azov)	Year built

Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
	Length, m	Width, m	Draft, m	Tonnage (Gross/Net)	cruise	max		crew	scientists
Coastal	28.6	6.9	3.15	190			20	9	7

Other characteristics

Fuel Capacity (tonnes):
Area Dry/Wetlab (m^2):
Water Capacity (tonnes):
Free Deck Area (m^2):
Range (n mi):
Air Cond:
Data Processing Equipment:
Navigational equipment:
Communications:
Scientific equipment: available full set for for hydrobiological and lithological studies, for hydrocehmical studies, and for ichthyological studies.
Laboratories and free deck space:
Equipped with motor boat, type Zodiak (Engine Mariner-40)

There is a hydrochemical laboratory on board the R/V "DENEB" where the whole set of field analyses is carried out (oxygen, nutrients, pH, hydrogen sulphide, plant pigments, production-destruction, etc.)

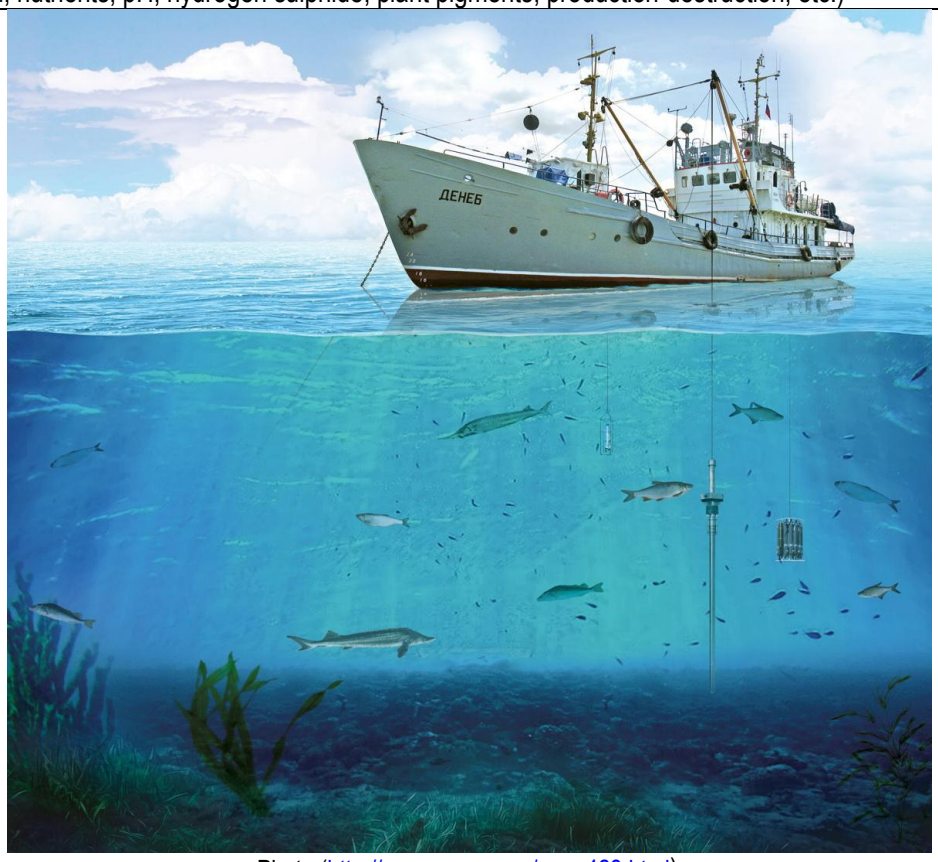


Photo (http://www.ssc-ras.ru/page423.html)

Rent per day (Euro)	Contact person for renting (name, e-mail, tel/fax)
4 100 (Note: The vessel cannot be simply rented, it can be used in projects together with staff of the Institute, at least 1 representative)	

The Southern Scientific Center has small boats: Master 540, Kaiman, Quick Silver 2, Quick Silver 1, UMS 600.

The boat Master 540 of the Southern Scientific Center of RAS (Photo : http://www.ssc-ras.ru/page423.html)

The A.N. Severtsov Institute has coastal boats at its station in Utrish. Novorossiysk Educational and Research Marine Biological Center - no vessels available, they rent for sampling.

AzNIIRKs have the small research vessel 'Vladimir Shipov" and the boast 'Taiphun".

4. Underwater vehicles

Vehicle name	Owner/operator and website	Category	Depth	Crew	Year
Mir	PP. Shirshov Institute of Oceanology, Moscow, Russia Website: www.ocean.ru	Manned Submersible	6000	3	
Pisces			2000	3	
Argus			600	3	
Osmotr			200	5	
RT-1000 PLI	Southern Scientific & Production Association for Marine Geological Operations Gelendzik, Russia Website: www.ymg.ru	Remotely operated vehicle (ROV)	1000	N/A	
RTM500			500	N/A	
RT 6000M			6000	N/A	
STINGRAYMKII	Southern Scientific Center of RAS (Rostov)	ROV	150	N/A	

The SIO-RAS manned submersible vehicle Osmotr

Additionally, the Southern Scientific & Production Association for Marine Geological Operations (Gelendzik, Russia) operates:

- Towed TV-Systems
- Towed Underwater Survey System «Neptune-D»

CRS (Gelendzhik, Russia) has a boat with a cabin for 3 people. It takes on board 7 people in total. The boat is fast, equipped with sonar. The organization has also a well-equipped diving station. Precise geodesic equipment is available, which operates simultaneously with satellites, JPS and Glonass. Equipment fort measurements of various physical parameters is available as well (see: www.coastdyn.ru).

Ukraine

9 organizations from Ukraine answered the EMBLAS Questionnaire Part II (Annex …) of the Diagnostic Report "Guiding improvements in the Black Sea monitoring/data collection and data management". One of them, the Azov-Black Sea Ornithological Station (Melitopol), deals with birds monitoring, but covers only the Ramsar sites of UA. The Melitopol Laboratory for monitoring in Azov-Black Sea wetlands deals with monitoring of fish and benthos in the wetlands of the Azov Sea only. YugNIRO was contacted additionally and they provided information on their infrastructure/vessels/equipment as well.

1. General information and major units of Infrastructure

SRI "Ukrainian Scientific Centre of the Ecology of Sea" (UkrSCES), Minpriroda

SR Ukrainian Scientific Centre of the Ecology of Sea (UkrSCES), Ministry of Environmental Protection of Ukraine (UkrSCES) was established in Odessa in January, 1992 on the basis of the Odessa Branch of State Oceanographic Institute[5]. It is the main institution of the Ministry of Environmental Protection of Ukraine in the field of marine ecological researches. UkrSCES is a unique institution of all state ecological systems of monitoring within the Black and Azov Seas, which provides a whole complex of tasks of the ecological monitoring.
The main task of the UkrSCES is scientific and practical providing for implementation of Ukrainian public policy related to the protection, rational use and rehabilitation of natural resources of the Black and Azov Seas basin, and also providing for implementation of international obligations of Ukraine in relation to marine aspects. (http://www.sea.gov.ua/index.htm.en)

Major units of infrastructure:

- Marine Information and Analytical Centre
- Department of Analytical Studies and Organisation of Monitoring
- Department of Scientific Investigations of the Marine Environment
- Department of Scientific Fundamentals of Nature Use, Ecological Expertise and Audit
- Department of Scientific Investigations and Protection of Marine Biocenosis
- Department of Scientific and System Information Support

Odessa National I.I. Mechnikov University

Odessa National I.I. Mechnikov University (the ONU) is one of the oldest universities in Ukraine. It was established in 1865 according to an Edict of Alexander II, Russian Emperor. From the very first years of its existence the University of Novorossiya (now – the ONU) became an important centre of science and education of research and lecturing staff in the Northern Black Sea Region. The marine researches are implemented with involvement of scientists from the following units of the University: Regional Centre for Integrated Environmental Monitoring and Ecological Studies; Faculty of Geography and Geology; Faculty of Biology; Department of Information Technology. The ONU has a Biological Station in Odessa and marine research station on the Zmiinyi Island in the Black Sea near the Danube Delta, which carries out regular monitoring including hydrological, hydrochemical, hydrobiological and other observations. The main fields of marine investigations: geology, hydrobiology, hydrology, hydrochemistry, ecology, microbiology etc. (information from the EDMO database).

[5] The Odessa SOI was a branch of the Moscow SOI in the Soviet times.

Major units of infrastructure:

- Regional Centre for Integrated Environmental Monitoring and Ecological Studies:
  - Marine Research Station “Zmiinyi Island”
  - Atmospheric Monitoring Research Station “Petrodolinskoye”
  - Monitoring station network in the Dniester Delta
- Biological Department;
  - Educational – Research Marine Biological Station “Odessa”
- Department of Geography and Geology

Marine Hydrophysical Institute of the National Academy of Sciences of Ukraine

Marine Hydrophysical Institute of the National Academy of Sciences of Ukraine is one of the leading oceanological centers in the world consisting of 14 scientific departments and four branches, the Special Design-Technological Bureau, the publishing-printing enterprise “ECOSI Gidrofizika” and the Experimental Branch of NAS of Ukraine (Katsiveli). The Institute is located in Sevastopol.

Main directions of investigations are: fundamental and applied physical and climatic research; complex interdisciplinary studies of main processes of formation and evolution of ecosystems in the Black and Azov seas and other strategically important regions of the World Ocean; development of methods and means of operative oceanography, modern informational technologies and systems of collection, processing, analysis and use of information. (http://mhi.nas.gov.ua/eng/)

Major units of infrastructure:

- Department of systems analysis
- Department of Marine Climatic Research
- Department of turbulence
- Department of remote methods of research
- Department of Marine Biogeochemistry
- Department of Automation of Oceanographic Researches
- Department of Marine Forecast
- Wave Theory Department
- Department of Atmosphere-Ocean Interaction
- Shelf Hydrophysics Department
- Oceanography Department
- Marine Optics Department
- Department of Marine Environmental and Information Technologies
- Department of Dynamics of Ocean Processes
- Special Engineering and Design Bureau

MHI is the National Oceanographic Center of Ukraine.

The Designated National Agency (DNA) of Ukraine was established by the IODE Data Centre on the basis of the Department of Marine Information Systems and Technologies (MIST) of MHI in 1993.

In 2006, the Department of Marine Environmental and Information Technologies (MEIT) was organized in the MHI in accordance with both the new priorities in scientific research and optimization of the MHI 's structure. MEIT is composed by employees that previously had worked at the Department of Marine Information Systems and Technologies (MIST). Presently MEIT functions as DNA of Ukraine.

A.O. Kovalevsky Institute of Biology of the Southern Seas, National Academy of Sciences of Ukraine

The Institute is located in Sevastopol. Under its present name the IBSS is known since 1963, when the former Sevastopol Biological Station, established in 1871, Odessa and Karadag Biological Stations were combined into a research marine centre. Incorporated into the Division of General Biology, National Academy of Sciences of Ukraine, the IBSS is the base institution of the Oceanological Centre NAS Ukraine. The present IBSS includes 12 scientific departments, the Aquarium-Museum, scientific library, the editorial and publishing department and the R/V Professor Vodyanitsky; the Branch in Odessa has 4 research departments. Main areas of the IBSS scientific activity are: studying the mechanisms of adaptation, transformation and evolution of marine and oceanic systems under climatic changes and anthropogenic pressure; solving hydrobiological and biotechnological problems of the integrated management of the coastal zones for rational using the natural resources, ecological rehabilitation and stable development; creation of methods and technologies for operative control of biota ecological state, marine environment quality and estimation and prediction of ecological risks level in the active maritime exploitation zones; studying biological diversity in the Black and Azov Ses basin and development of effective measures for its preservation; development of modern informational technologies for systematization of hydrobiological data and information, modern expert systems and methodology of their use to provide bioresources and ecological investigations. (information from EDMO database)

Major units of infrastructure:

- Department of Marine Pharmacology and Bioassay
- Department of Biotechnologies and Phytoresources
- Department of Biophysical Ecology
- Department of Ichthyology
- Department of Mariculture and Applied Oceanology
- Department of Plankton
- Department of Radiation and Chemical Biology
- Department of Marine Sanitary Hydrobiology
- Department of Animal Physiology and Biochemistry
- Department of Functioning of Marine Ecosystems
- Department of the Ecology of Benthos
- Department of Ecological Parasitology
- Department of Ecological Physiology of Algae
- Department of Aquaculture and Marine Pharmacology

LOGO Odessa branch of A.O. Kovalevsky Institute of Biology of the Southern Seas, National Academy of Sciences of Ukraine (OB IBSS)

Set up on December 21, 1953 as Odessa Biological Station within the Institute of Hydrobiology of the Academy of Sciences of UkrSSR. In 1963 it was reorganized into the Odessa Branch of the Institute of Biology of the Southern Seas. Its main lines of activities are: integral fundamental and applied studies in various areas of biology and ecology of aquatic ecosystems; development of new methods to select, process and analyze scientific information; providing of ecological expertise and improving methods of conservation and integrated management of aquatic ecosystems; training of research personnel and advancing the qualification of researchers through postgraduate and postdoctoral studies in hydrobiology and zoology. The Branch also uses other forms of training, relying on agreements on scientific and educational collaboration with institutes of higher education in Ukraine and foreign research institutions (http://www1.nas.gov.ua/en/Structure/dgb/obibss/Pages/default.aspx).

Major units of infrastructure:

- Department of the Ecological Integration of Biocycles;
- Department of Morphofunctional Ecology of Water Vegetation;
- Department of the Water Quality;
- Department of Ecology of the Marginal Communities

Marine department of the Ukrainian Hydrometeorological Institute of the Emergencies State Service Of Ukraine (MD UHMI)

The Institute is located in Sevastopol. Activity directions: climatology of marine processes within the Azov-Black Seas basin; oceanography and chemical pollution of coastal zones; estuarine and deltaic processes; development and application of marine forecasting methods; marine hydrometeorological observations and service technologies; integration of different marine data including satellite remote sensing information; development of specialised GIS and DSS for marine and coastal environments. (information from EDMO database)

Major units of infrastructure:

- Laboratory of marine chemistry
- Laboratory of sea hydrometeorology
- Laboratory of coastal zones and estuaries

Danube Hydrometeorological Observatory (DHMO)

Danube Hydrometeorological Observatory (DHMO), structural unit of State Committee for Hydrometeorology of Ukrainian Ministry of Emergencies, was established in September, 1960. It is located in Ismail. It comprises 3 hydro-meteorological stations, 14 hydrological stations and three research boats used for surveys in the Danube Delta and the adjacent Black Sea area. DHMO studies the Ukrainian Danube Delta, the adjacent part of the Black Sea and the Lower Danube. The main tasks of the DHMO are the following: daily hydrological observations according to standard programmes on the network of permanent river, lake and sea stations; special field surveys to study natural and anthropogenic changeability of hydrological processes; daily meteorological observations according to standard programmes on the meteorological stations; forecasting of and warning on natural emergencies and accidents; monitoring of river, lake and sea water pollution; collecting, processing and analyses of the data from the observations; forecasting of weather conditions and hydrological regime of the Danube River; supplying of consumers with hydrometeorological and hydrochemical information and forecasts. (http://envirogrids.net/index.php?option=com_content&view=article&id=47&Itemid=62)

Major units of infrastructure:

- Department of Hydrology
- Complex Laboratory of Environmental Pollution Observations
- Division of Automated Receiving and Transmitting of Information
- Hydrometeorological Department
- Meteorological stations in Ismail, Vilkovo and Ust'-Dunaisk
- River, lake and sea hydrological stations (16 points)

Hydrometeorological Center of the Black and Azov Seas (HMCBAS)

The Hydrometeorological Center of the Black and Azov Seas is operational and methodical organization of the State Hydrometeorological Service of Ukraine, the parent organization of the operational marine forecasting services for the marine sectors of Ukrainian economy in the Black Sea region**.** It is located in Ismail.

Major units of infrastructure:

No information was provided. On the organization web-site (http://www.hmcbas.od.ua/) 7 departments are mentioned.

LOGO Azov-Black Sea Ornithological Station (Monitoring Laboratory, Melitopol), NASU and Ministry of education, science, youth and sports

The station is a governmental organization dealing with monitoring of birds in the wetlands of Ukraine. It also collects environmental and socio-economic data of relevance to the field of its investigations. The organization is not part of a national system of monitoring or data collection. It is located in Melitopol.

Southern Scientific Research Institute Of Marine Fisheries and Oceanography (Kerch, Ukraine) (in Russian YugNIRO)

YugNIRO is a unique institution in Ukraine, carrying multidisciplinary scientific, engineering, consulting, and expert research in the sphere of marine fisheries and commercial oceanography. It was created in 1922 as an ichthyological laboratory. The Institute is located in Kerch. Research activities include nowadays:

- carrying out complex researches in the Black and Azov Seas and districts of the World Ocean, which are of interest for the Ukrainian fishing fleet, complete usage of oceanographic and hydrometeorological information as well as information of the remote sensing of Earth on behalf of fish industry for the significant increase of accuracy level of the forecast changes as to the state of water living resources supplies;
- development and introduction of the monitoring system of the resources of basic commercial fish of the Black and Azov Seas on the basis of collection and processing of the principle data, obtained on the Ukrainian fishing vessels;
- prognostic monitoring of fish kill situations in the sea of Azov and on the shelf of the Black Sea for the rational withdrawal of the bottom fish;
- complex ecological monitoring of aquatoria, enduring intensive anthropogenic impact (exploration, catches, transporting of oil hydrocarbons, dredging and soil damping of dredging, aquatorium of ports and the other industrial enterprises) to minimise the damage induced to the marine ecosystems;
- formation and maintenance of scientific research base as a ground for the analysis of long-term climatic changes, commercial ecosystems and biodiversity;
- development of the system of the information providing of enterprises and industrial establishments on the basis of modern technologies;
- operative providing of commercial vessels with information as to spatio-temporal changeability of distribution of commercial accumulations of fish on the base of distance and contact methods of the hydrophysical monitoring of commercial districts of the World Ocean (operative prognosis of fishing fleet spacing);

- operative providing of the interested organizations with actual and prognostic ice maps in the Azov and Black Seas;
- preparation of grounds for the receipt of permissions on carrying out works, related to the impact on environment;
- estimation of toxic contaminants accumulation in tissues and organs of commercial fish and molluscs, their contents in food products;
- development and formation of the GIS branch for the strategy of steady development of fisheries in the Azov and Black Sea Basin;
- scientific and technical providing of effective activities of Ukraine in the international fishery organizations, whose member it is (ANTCOM, NAFO, FAO) and in the other regional organizations in the sphere of fisheries as well as international fishery conferences and forums;
- development of recommendations for providing access of the Ukrainian fleet to the marine living resources in the exceptional economic areas of the off-shore states, regulation areas of the international fishery organizations and their long-term usage and conservation;
- preparation of materials for the bilateral and multilateral negotiations, development of grounds on providing reliable position of Ukraine at the negotiations on determination of catch volume and size of quotas for the Ukrainian fleet;
- development of recommendations on adoption to the standards of FAO on providing responsible fishing such as: Code of the responsible fishing conduct, Plan of operating on by-catch diminishing of marine birds at tier trade, Plan of operating on control of sharks conservation, Plan of operating on prevention, counteraction and liquidation of illegal, uncontrolled trade and the trade, which does not represent commercial Statistics (HHH-Fisheries);
- providing of access to the modern international information resources in the sphere of fishing and fisheries, participating in the international information system on water sciences and fisheries of ASFA;
- development, introduction and improvement of biogeotechnologies of reproduction and breeding of fish, molluscs, microalgae, related to the particular regions of mariculture enterprises;
- development of grounds and initial requirements on creation of the pool system of modern mariculture enterprises, mussel plantations, oyster farms, feeding and polysystem enterprises on the estuaries, closed aquatoria, garden and pool enterprises, production areas on industrial cultivation of microalgae;
- development of food and fodder products technologies, prophylactic and medical preparations and biologically active matters from hydrobiota;
- implementation of engineering activities on creation of effective and ecologically acceptable instruments and methods of the industrial fisheries;
- development of normative documents (standards, technological terms) on food, fodder, technical products, medical and prophylactic preparations taking into account the requirements of the European Union directives, international and European standards;
- development, drafting and edition of commercial manuals, atlases, scientific information and patent reviews, registration of patent documents.

Major infrastructural units are:

- Department of marine living resources of the Azov and Black Seas Basin
- Laboratory of commercial fisheries technology
- Laboratory of the Bioresources of the World Ocean
- Commercial Oceanography and Ecological Monitoring Department
- Scientific baze “Zavetnoe”
- Mariculture Laboratory
- The Sector of Information and Analytical Support for the Development of Marine Fisheries
- Standardization Sector

LOGO **Laboratory for monitoring in Azov-Black Sea wetlands**

The Laboratory is a governmental organization, subordinated to the Ministry of Education and Science of Ukraine, NASU. It is located in Melitopol. No infrastructural units were specified. Major field of research is related to biodiversity of fish and benthos in Azov Sea wetlands.

2. Equipment available in Ukraine

2.1 Major laboratory equipment and the terms of sharing with other laboratories in the country and outside of it where applicable

Summary for the country: 41 units of major laboratory equipment were mentioned for all 8 organizations who filled the EMBLAS questionnaire (Part II) and YugNIRO reported additionally 11 in their ownership.

Number of laboratory equipment units	Shared within the country			Shared with other countries			Terms of sharing exist		
	Yes	No	No information	Yes	No	No information	Inside the country	Outside the country	No information
52	25	12	15	18	19	15	16	16	36

As reported per organization:

N	Equipment name	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
				Inside the country	Outside the country
	SRI "Ukrainian Scientific Centre of the Ecology of Sea" (UkrSCES), Minpriroda				
1	Gas chromatography-mass spectrometer firm "Agilent" (USA).	Yes	Yes	On the terms of economic agreements	Within the framework of International Projects of cross border cooperation
2	Chromatograph Mega 2 HRGC 8560 firm "Fisons Instruments" (Franch)	Yes	Yes	- " -	- " -
3	Atomic absorption spectrophotometer SPECTR-AA-800 firm "Varian" (USA)	Yes	Yes	- " -	- " -
4	Infrared spectrophotometer UR-20 (Germany).	Yes	Yes	- " -	- " -
5	Spectrophotometers: „Gelios", UV-160 firm"Shimadzu" (Japan)	Yes	Yes	No	No
6	Ionomer „Экотест-2000" ("Ecotest-200")	Yes	Yes	No	No
	Odessa National I.I. Mechnikov University				
7	Simple sampling and laboratory equipment for marine research	No	No	No	No
8	Atmospheric monitoring analysers	No	Yes	In framework of FP6 and FP7 projects	
	Marine Hydrophysical Institute (MHI), NASU				
9	AA-II SCIC Bran+Luebbe auto-analyzer	Yes	Yes	Joint projects	
10	AS-C3 / LI7000DP analyze for inorganic carbon and CO2	Yes	Yes	Joint projects	
11	DLK-60 (Analytical Instrument Systems, Inc.) voltammetry analyzer	Yes	Yes	Joint projects	
12	Spectroscan Max-G RFA analyzer	Yes	Yes	Joint projects	

N	Equipment name	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
				Inside the country	Outside the country
13	SpectrAA-220G AAS analyzer	Yes	Yes	Joint projects	
14	GX-3800 VARIAN gas-chromatograph	Yes	Yes	Joint projects	
15	HRPT Satellite receiving station (1.7 GHz)	Yes	Yes	Joint projects	
	Marine department of Ukrainian Hydrometeorological Institute (UHMI)				
16	Gas chromatograph Tsvet-500M	No	No	-	-
17	Spectrophotometer	No	No	-	-
	A.O. Kovalevsky Institute of Biology of the Southern Seas (IBSS), NASU				
18	IR Furier spectrometer	No	No		
19	Cytomics FC 500 Flow Cytometry System	No	No		
20	High-pure germanium gamma-detector ORTEC GMX-10 (USA)	Yes	Yes	Joint radioecological studies	IAEA intercomparison program
21	Low background liquid scintillation alpha/beta spectrometer QUANTULUS-1220 (LKB Wallac, Finland)	Yes	Yes	Joint radioecological studies	IAEA intercomparison program
22	Alpha-spectrometer EG&G ORTEC BERTHOLD-WALLAC (USA)	Yes	Yes	Joint radioecological studies	IAEA intercomparison program
23	Liquid scintillation counters 1410-WALLAC Beta, 1209-RACKBETA, 1219-RACKBETA Spectral	Yes	Yes	Joint radioecological studies	IAEA intercomparison program
	Odessa branch of A.O. Kovalevsky Institute of Biology of the Southern Seas, National Academy of Sciences of Ukraine (OB IBSS)				
24	Microscopes (dissection and compound)	-	-	-	-
25	Laboratory and field equipment for measuring the main abiotic parameters (pH, salinity, temperature, etc.)	-	-	-	-
26	Spectrophotometers	-	-	-	-
27	Equipment for bioassay	-	-	-	-
	Danube Hydrometeorological Observatory (DHMO)				
28	Photocolorimeter КФК-2	No	No		
29	Photometer КФК-3	No	No		
30	Gas analyser 621 ЭХ 07	No	No		
31	Oil analyzer АН-2	No	No		
32	pH meter millivoltmeter pH-673M	No	No		
33	Chromatograph "Color-500m"	No	No		
	Hydrometeorological Center of the Black and Azov Seas (HMCBAS)				
34	Electronic mercury thermometers, CTD-probe-1 GHZ	Yes	No		
35	Electro salinity meter ГМ-65М (GM-65M)	Yes	No		
36	pH-meter Эксперт (Ekspert) Ionomer И-130 (I-130) portable pH-meter	Yes	No		
37	White disk, autonomous submersible turbidity meter ИМП-1	Yes	No		
38	Oximeter OXI-197	Yes	No		
39	Photoelectrocolorimeters КФК-2, КФК-3	Yes	No		
40	Analyzer Fluorat (Флюорат) 2M	Yes	No		
41	Automatic weather stations Milos-500 and Troposphere	Yes	No		
	YugNIRO				
42	Atomic absorption spectrophotometer 180-50, Hitachi, Japan	-	-		
43	Atomic absorption spectrophotometer AAS-30, Karl Zeis Jena, Germany	-	-		
44	Mercury analyzer HG-1, Hiranuma, Japan	-	-		
45	Gas chromatograph G-180 F. E., Yanaco, Japan	-	-		
46	Infrared Spectrometer JR-420, Schimadzu, Japan	-	-		

N	Equipment name	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
				Inside the country	Outside the country
47	Fluorimeter «Kvant -7»	-	-		
48	Spectrophotometer SF (СФ – 46)	-	-		
49	Ionometer (I-160 MI) И-160МИ	-	-		
50	Colorimeter photoelectric (Колориметр фотоэлектрический концентрационный КФК -2 -УХЛ 4,2)	-	-		
51	Salinity-meters				
52	Titration equipment				

2.2. Major field equipment and the terms of sharing with other organizations in the country and outside of it (where applicable)

Total 7 of 8 organizations provided information on major field equipment. At all, 50 units of major field equipment, including underwater vehicles were mentioned. YuGNIRO provided also information on major sampling equipment.

Summary for the country:

Vessel class required for the use of the equipment					Shared within the country			Shared with other countries			Terms of sharing exist		
Regional	Local and/or coastal vessels	Stationary oceanographic platform	Any type	-	Yes	No	-	Yes	No	-	Inside the country	Outside the country	-
4	22	6	4	14	27	18	5	24	21	5	33	33	17

As reported per organization:

N	Equipment name	Vessel class*** required for the use of the equipment (if any)	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
					Inside the country	Outside the country
	SRI "Ukrainian Scientific Center of Ecology of the Sea" (UkrSCES), Minpriroda					
1	CTD probe	Regional	Yes	No	On the terms of economic agreements	-
2	Hydrozond (Bathyprobe)	Regional	Yes	No	- " -	-
3	Remote operated underwater vehicle "Atlesh" (ПТК " Атлеш") the State joint-stock company "Черноморнефтегаз" (Tchernomorneftegaz")	Regional	Yes	No	- " -	-
	Odessa National I.I. Mechnikov University					
4	Simple sampling equipment (bathometers, portable conductometer, pH meter, oxygen meter, etc.)	All types of vessels	No	No	No	No
	Marine Hydrophysical Institute (MHI), NASU					
5	SBE 911 Sea-Bird Electronics, Inc. with DO522 dissolved oxygen sensor and a 12-bottle cassette of 5L Niskin bottles	Regional vessels	Yes	Yes	Joint projects	

N	Equipment name	Vessel class*** required for the use of the equipment (if any)	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
					Inside the country	Outside the country
6	SHIK 1 CTD profiler with DO522 dissolved oxygen sensor and a 6-bottle cassette of 1L Niskin bottles	Local and/or coastal vessels	Yes	Yes	Joint projects	
7	GAP 16 CTD profiler with DO522 dissolved oxygen sensor and a 3-bottle cassette of 1L Niskin bottles	Coastal	Yes	Yes	Joint projects	
8	ADCP Acoustic Doppler current profilers: VHS 300 and VHS1200	Coastal	Yes	Yes	Joint projects	
9	MHI 1308 Mechanical current meters	Local and/or coastal vessels	Yes	Yes	Joint projects	
10	Portable IST-1 acoustic current meter	Coastal	Yes	Yes	Joint projects	
11	GCZ 1 Hydrochemical profiler with CTD, oxygen, sulphide, pH, and lead sensors.	Local and/or coastal vessels	Yes	Yes	Joint projects	
12	Oceanographic bottom station with current meters and optic sensors.	Local and/or coastal vessels	Yes	Yes	Joint projects	
13	Portable turbidity meter	Coastal	Yes	Yes	Joint projects	
14	Optical instrument to measure volume scattering function of natural waters and water media	Local and/or coastal vessels	Yes	Yes	Joint projects	
15	9-channel nephelometer	Local and/or coastal vessels	Yes	Yes	Joint projects	
16	17-channel Thermo-profiler	Stationary oceanographic platform	Yes	Yes	Joint projects	
17	Tide-gauge sea level equipment	Stationary oceanographic platform	Yes	Yes	Joint projects	
18	Wave meter	Stationary oceanographic platform	Yes	Yes	Joint projects	
19	METEO Complex Davis 6152EU Meteo-station	Coastal	Yes	Yes	Joint projects	
20	Turbulence meters: Sigma 1 and 2	Coastal	Yes	Yes	Joint projects	
21	Calibrated stereo-system with high-accuracy cameras synchronization for surface wind wave studies	Stationary oceanographic platform	Yes	Yes	Joint projects	
22	6-elements Grid of string wave-meters	Stationary oceanographic platform	Yes	Yes	Joint projects	
23	Cimel-318 photometer	Stationary oceanographic platform	Yes	Yes	Joint projects	
24	SVP-B and SVP-B mini drifters	Coastal	Yes	Yes	Joint projects	
	Marine department of Ukrainian Hydrometeorological Institute (UHMI)					
25	Molchanov bathometer		No	No		
26	Garrett net		No	No		
	A.O. Kovalevsky Institute of Biology of the Southern Seas (IBSS), NASU					
27	Petersen sampler	Local and/or coastal vessels	No	No		
28	Bathyphotometer 'SALPA'	Coastal	No	No		
29	ROV “MiniRover MK-II”	Coastal	Yes	Yes	Joint surveys	Joint surveys
30	Portable echosounder “SeaCharter 480 DF”	Coastal	Yes	Yes	Joint surveys	Joint surveys
31	Nikon D 800	Local and/or coastal vessels	No	No		
32	Olympus E 400	Local and/or coastal vessels	No	No		

N	Equipment name	Vessel class*** required for the use of the equipment (if any)	Shared within the country (Yes/No)	Shared with other countries (Yes/No)	Terms of sharing	
					Inside the country	Outside the country
33	GoPro Hero 2	Local and/or coastal vessels	No	No		
34	Underwater box + port: PT E03 + PPO E05	Local and/or coastal vessels	No	No		
35	Various types of microscopes	All types of vessels	No	No		
36	Gill nets with a mesh of 10–30, 200 mm; hand nets with a mesh of 2–5 mm; and bottom traps with a mesh of 12 mm, a towed sac m with a mesh size of 6.5 mm, mid water trawls.	Local and/or coastal vessels	No	No		
37	Large Juday zooplankton net, (diameter of the inlet is 80 cm); small Juday net (diameter of the inlet is 80 cm) with the mesh size, which differ from 112 to 145 micron. As usual about 140 micron.	All types of vessels	Yes	Yes		
38	Bogorova-Rassa ichthyoplankton net (diameter of the inlet is 80 cm) with the mesh size about 400 micron and sometimes little less	All types of vessels	Yes	Yes		
	Odessa branch of A.O. Kovalevsky Institute of Biology of the Southern Seas, National Academy of Sciences of Ukraine (OB IBSS)					
	No information provided					
	Danube Hydrometeorological Observatory (DHMO)					
39	Single beam echo sounder Hydrobox 210	Any type, 12 V power	No	No	Possible during joint field work	
40	GPS Trimble 5700		No	No	Possible during joint field work	
41	GPS Trimble R3		No	No	Possible during joint field work	
42	Portable laboratory complex HACH DREL-2800	Any type, 220 V power	No	No	Possible during joint field work and materials (HACH Standard Solutions) provided	
43	pH-meter HACH Sension 1		No	No	Possible during joint field work	
44	Conductivity Meter HACH Sension 5		No	No	Possible during joint field work	
45	Oximeter HACH Sension 6		No	No	Possible during joint field work	
46	Turbidimeter HACH ISO 2100 p		No	No	Possible during joint field work	
	YugNIRO					
47	CTD-probe	-	-	-	-	
48	Hydrobiological nets Bongo, Jeday	-	-	-	-	
49	Grabs Petersona 0.25 and 0.5 m^2	-	-	-	-	
50	Bothometers GM-48 (Nansen) and Van-Dorn	-	-	-	-	

For birds monitoring the Melitopol Ornithological Station reported availability of telescopes, binoculars and a small boat (5 m long, manufactured in 2013, equipped with an engine, can be used in the coastal zone). The rest of the stakeholders, who answered the EMBLAS Questionnaire, and deal with biodiversity/birds monitoring, their observations are on land or at Ramsar sites– e.g. the Laboratory for monitoring in Azov-Black Sea wetlands (Melitopol) – they have a 5 m boat with engine, Opukskii Nature Preserve (Feodosia), and Priazovskiy National Nature Park (Melitopol).

3. Availability of vessels and characteristics of the vessel/s, and terms of rent (Ukraine)

Summary for the country:

Name	Category	Length, m	Year built	Rent (Euro per day)
R/V "Vladimir Parshin"	Regional	49,9	1989	4500
Vessel "Ecocontrol"	Local and/or coastal	19.68	-	-
R/V "Professor Vodyanitsky"	Global	68.86	1976	8.000 for foreign countries 4000 for Ukrainian organisations
"Vjazemsky"	Local	11.28	1988	400
"Aquarium"	Coastal	6.1	1976	200
"Sprut"	Local and/or coastal	19	1990	370
"Cziklon"	Local and/or coastal	23.6	1990	Rent is not possible. Possible joint research surveys
"Bogomazov"	Coastal	25.7	2001	3170

As reported per organization:

R/V "Vladimir Parshin" SRI "Ukrainian Scientific Centre of the Ecology of Sea" (UkrSCES)								Year built 1989	
Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
	Length, m	Width, m	Draft, m	Tonnage (Gross/Net)	cruise	max		crew	scientists
Regional vessel	49,9	10	5	927/270	10	13	35	20	20

Other characteristics

Fuel Capacity (m^3)
Area Wetlab (m^2):
Water Capacity (m^3): 90 tons
Free Deck Area (m^2):
Range (n mi): 5500
Air Cond: Yes
Data Processing Equipment: Computers/printers;
Navigational equipment: Furuno, GPS.Sounder, gyro compass
Communications: Radio Station Reid Navigation receiver – Rumba
Laboratories: Meteo; Oceanographic: Hydrochemical; Biological; Photo lab; Computer.
Research Equipment: System continuous temperature and salinity registration of the surface layer while the vessel is going with reference coordinates for satellite system 4 deep Winch - 4-6 thousand meters cable; STD-Probe, Gydrozond, Snapper – Ocean, Geological tube; Niskin samplers; system for photographing the sea bottom; Plankton nets; Colemer GM-65, I-130 ionomer, Photocolorimeters KFK-3

Photo: http://www.sea.gov.ua/stuff/parsh.htm

Rent per day (Euro)	**Contact person for renting (name, e-mail, tel/fax)**
4500	Acting director Aleksander Reva e-mail: accem@te.net.ua tel.: +38 0482 636622 fax:+38 0482 636673

	Vessel "Ecocontrol" SRI "Ukrainian Scientific Centre of the Ecology of Sea" (UkrSCES)							Year built -	
	Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
		Length m	Width m	Draft m	Tonnage (Gross/Net)	cruise	max		crew	scientists
	Local and/or coastal vessels	19.68	-	1,8	86.3/64.12	7	10	3	2	4
	Other characteristics									
	Fuel Capacity (m^3): **Area Wetlab** (m^2): **Water Capacity** (m^3): 1.6 **Free Deck Area** (m^2): **Range** (n mi): 20 **Air Cond**: Yes **Data Processing Equipment**: **Navigational equipment**: Radar (Coden), GPS (Furuno) **Communications**: VHF **Laboratories:** **Research Equipment**: 1 winch - 30 m cable CTD- robe "Indromar", Bottom grabs Peterson ;Geological tube; Niskin samplers; Plankton net ; Colemer GM -65, I- 130 ionomer , Photocolorimeters KFK-3									
	Rent per day (Euro)					**Contact person for renting (name, e-mail, tel/fax)**				
						Acting director Aleksander Reva e-mail: accem@te.net.ua tel.: +38 0482 636622 fax:+38 0482 636673				

	R/V "Professor Vodyanitsky" A.O. Kovalevsky Institute of Biology of the Southern Seas (IBSS), NASU							Year built 1976	
	Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
		Length m	Width m	Draft m	Tonnage (Gross/Net)	cruise	max		crew	scientists
	Global	68.86		4.75	1498/	12	13.5	30	23	37
	Other characteristics									
	Fuel Capacity: 300t **Area Wetlab**: 45 m^2 **Water Capacity**: 260 t **Free Deck Area** (m^2): **Range** (n mi): 12000 **Air Cond**: Centralized air conditioning/ventilation of berthing spaces; Local heating of berthing spaces; Heating of outer tanks for potable water **Data Processing Equipment**: Data network (Token-Ring, Ethernet), Mission-required PC computers at various points throughout ship, access to satellite navigation system, Simrad EK-500 echo-sounder and CTD data; Coaxial wire inter-lab distribution; **Navigational equipment**: FURUNO GP-80, GPS-500 Navigator satellite navigation systems, NMEA output Simrad LC Loran C, Decca Navigator, Path finders, Navigation mapper Plath 705 LNG, (2) Furuno Radar, Nayada-5 Radar, Magnetic Compass, (2) Gyro Compass, Simrad Dopplerm, Speed/Distance Log; Acoustical and Sounding Systems: Simrad EK-500 scientific dual frequency 38 (split beam)/120 kHz echo-sounder, FURUNO CH-16 searchlight sonar, Depthfinder **Communications**: Call letters ENQT; GMDSS ID 272004000, area A1, A2, A3; Furuno FS-5000 SSB radiotelephone, Furuno FM-8500 VHF radiotelephones, walkie-talkie VHF radiotelephones, Intra-ship telephone and repeater system, NAVTEX PNV 901 receiver, Weather Facsimile FAX-214 receiver; **Laboratories:** 5 Dry labs (70.8 sq. m.): Sedimentology (wet) lab (9.5 sq. m.) Photographic (dark) lab (4.5 sq. m.) Oceanographic lab (13.5 sq. m.) Video & Computer Lab (10 sq. m.)									

Acoustic Lab (10.5 sq. m.)
Radioisotopic Lab(11.5 sq. m.),
Distillator Room;
Briefing room with VCR, TV, stereo (53 sq. m.),
Research Equipment: CTD/Fluorescence instrument MARK-III NEIL BROWN coupled the ROSETTE-system with 12x10L GoFlo-bottles
TV submersible vehicle, MiniRover MK-II,
Searchlight sonar FURUNO CH-16 coupled to NTSC VCR,
Simrad EK-500 scientific, echo-sounder with PC-based software,
Automatic liquid-scintillation beta counters,
1209-Rack-Beta or 1410-Wallac Beta,
The photo-copy machine
Laboratory bi-distillated water device
Five laboratory exhausting hoods,
Laboratory freezers and refrigerators,
Seawater supply in all the laboratories

Life-saving equipment:
(2) Full covered life-boat 42 seats each,
(4) Life raft 25 seats each;
Research Equipment:
Deck Equipment:
A-frame on stern, 8 ton capacity @ 3 meters outreach
(2) Crane 3 ton capacity @ 9.5 meters outreach
Capstan at stern
(2) Anchor windlass
Winches: (2) 3 tons hydrographic with current-collecting device for CTD (2100 meters cable), towed instruments (1800 meters cable) etc., (2) 3 tons and 0.5 ton for nets or water samplers, trawl 2x4 tons @ 0-120 meters/min rope 20 mm 3000 meters for geological sampling etc.

Photo R/V 'Prof Vodyanitsky": Ignatyev S. M., Ivanov A. V. 2008. Expedition fleet of Institute of Biology of the South Seas. Historical essay. – Sevastopol: Ekosi-Gidrofizika. – 269 p.

Rent per day (Euro)	**Contact person for renting (name, e-mail, tel/fax)**
8 000 for foreign countries 4 000 for Ukrainian organisations	Director Valery Eremeev e-mail: director@ibss.iuf.net tel. +380 692 544110 fax +380 692 557813

"Vjazemsky" A.O. Kovalevsky Institute of Biology of the Southern Seas (IBSS), NASU	Year built 1988

Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
	Length m	Width m	Draft m	Tonnage (Gross/Net)	cruise	max		crew	scientists
Local	11.28	-	0.8	-	-	7.2		2	6

Other characteristics

Fuel Capacity: 0.2m^3
Area Wetlab:
Water Capacity:
Free Deck Area:
Range (n mi): 3.1
Air Cond:
Data Processing Equipment:
Navigational equipment: GPS system;
Communications: mobile telephone; radio "Garving";
Laboratories:
Research Equipment: Echosounder "Pirania-20", Boat hoist

Photo "Vjazemsky": Ignatyev S. M., Ivanov A. V. 2008. Expedition fleet of Institute of Biology of the South Seas. Historical essay. – Sevastopol: Ekosi-Gidrofizika. – 269 p.

Rent per day (Euro)	**Contact person for renting (name, e-mail, tel/fax)**
400	Director Valery Eremeev e-mail: director@ibss.iuf.net tel. +380 692 544110 fax +380 692 557813

"Aquarium", A.O. Kovalevsky Institute of Biology of the Southern Seas (IBSS), NASU	Year built 1976

Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
	Length m	Width m	Draft m	Tonnage (Gross/Net)	cruise	max		crew	scientists
Coastal	6.1	-	0.4					2-5	6

Other characteristics

Fuel Capacity (m3):
Area Wetlab (m2):
Water Capacity (m3):
Free Deck Area (m2):
Range (n mi):
Air Cond:
Data Processing Equipment:
Navigational equipment: GPS system;
Communications: Mobile Telephone
Laboratories:
Research Equipment:

Photo Boat Aquarium: Ignatyev S. M., Ivanov A. V. 2008. Expedition fleet of Institute of Biology of the South Seas. Historical essay. – Sevastopol: Ekosi-Gidrofizika. – 269 p.

Rent per day (Euro)	**Contact person for renting (name, e-mail, tel/fax)**
200	Director Valery Eremeev e-mail: director@ibss.iuf.net tel. +380 692 544110 fax +380 692 557813

"Sprut" Odessa branch of A.O. Kovalevsky Institute of Biology of the Southern Seas, National Academy of Sciences of Ukraine (OB IBSS)	Year built
	1990

Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
	Length m	Width m	Draft m	Tonnage (Gross/Net)	cruise	max		crew	scientists
Local and/or coastal vessels	19	3.8	2.1	32/-	-	-	-	4	8

Other characteristics

Fuel Capacity (m3):
Area Wetlab (m2):
Water Capacity (m3):
Free Deck Area (m2):
Range (n mi): 3
Air Cond:
Data Processing Equipment:
Navigational equipment:
Communications:
Laboratories:
Research Equipment: 2 cargo winches (100 kg); Molchanov bathometer 4 L; Temperature, salinity, pH, oxygen probes, Petersen grab 0,1 м2 and 0,025 м2; Rass net 80 cm/300 um; Zaytsev neustonic fry trawl (MNT) 300 um; Juday net 34 cm/150 um

Photo Boat Sprut: Ignatyev S. M., Ivanov A. V. 2008. Expedition fleet of Institute of Biology of the South Seas. Historical essay. – Sevastopol: Ekosi-Gidrofizika. – 269 p.

Rent per day (Euro)	**Contact person for renting (name, e-mail, tel/fax)**
370	

"Cziklon" Danube Hydrometeorological Observatory (DHMO)	Year built
	1990

Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
	Length m	Width m	Draft m	Tonnage (Gross/Net)	cruise	max		crew	scientists
Local and/or coastal vessels	23.6		2.06	115/-	9.5	-	6	7	12

Other characteristics

Fuel Capacity (m3): 11.4 m3
Area Wetlab (m2): 4+4
Water Capacity (m3): 5.95
Free Deck Area (m2): 26.2
Range (n mi): 1800
Air Cond: No
Data Processing Equipment: None
Navigational equipment: РЛС ZR-102; R4 GPS; R4 AIS Class B; echo-sounder HDS-5x
Communications: Radiostation IC-M302; Radiophones IC-M32 (2); Mobile phones
Laboratories: None
Research Equipment: None

Photo Cziklon: http://www.dhmo.org.ua/images/images/cziklon.jpg

Rent per day (Euro)	**Contact person for renting (name, e-mail, tel/fax)**
1 500 Euro; Possible joint research surveys.	Morozov V. N. e-mail: mikhail.kornilov@gmail.com tel: +38 095 306 22 29

F/V "Capitan Bogomazov" State Enterprise " Fishery Expedition Centre " (FISHEC)	Year built 2001

Vessel class	Size				Speed, knots		Endurance, days	Accommodation	
	Length, m	Width, m	Draft, m	Tonnage (Gross/Net)	Cruise	max		crew	scientists
Regional vessel	25,7	8,0	2,7	187/56	8,5	10,5	10	7	2

Other characteristics

Fuel Capacity (m^3) 45,3
Area Wetlab (m^2): 9
Water Capacity (m^3): 10
Free Deck Area (m^2):
Range (n mi): 400
Air Cond: Yes
Data Processing Equipment: Computers/printers;
Navigational equipment: Icom MR ||, GPS. Echo Sounder, Magnetig compass
Communications: Radio Station MF/HF,Radio Station VHF, Inmarsat-C
Laboratories: Oceanographic; Hydrochemical; Biological.
Research Equipment: Bongo ring net, closing plankton nets, vertical point water sampler, Petersen dredge, Gunderson beamtrawl, water oxymeter, salinity meter, multi-net bottom and pelagic trawls, bottom seine, deck equipment for Ichthyology analyzes

Rent per day (Euro)	**Contact person for renting (name, e-mail, tel/fax)**
3170	Acting director Motora Oleg e-mail: motopa.o.b@yandex.ru tel.: +38 097 99 77 154 fax:+38 0629 402665

4. Underwater vehicles

MiniRover MK-II (ROV – remote operated vehicle) – IBSS, Sevastopol, Ukraine

Conclusions, recommendations

Table . Summary of IEV in the beneficiary countries

Issue	Georgia	Russian Federation	Ukraine
Number of organizations with monitoring capacities	8	13	11
Number of Laboratory equipment	63	139	52
Number of Field equipment	14	81	50
Number of vessels	4 (incl.the small boat of NEA)	9 (additionally small boats)	8

1. State of infrastructure

Conclude on the sufficiency of institutions and their Labs to carry out complex monitoring, the one we target to develop: not only complex as we know it, but including non-traditional measurements, such as contamination of biota and sediments, marine litter, noise, habitats mapping, etc.

In the beneficiary countries there are 32 organizations dealing with Black Sea monitoring. And the List is for sure not yet complete, as many stakeholders have not responded to the EMBLAS collection of information on IEVs. The described organizations in this Chapter are the largest governmental institutions which perform observations or collect Black Sea data. Private organizations, which have also capacities for monitoring, are not included, therein the 'self-monitoring" IEV needs further investigation. There are a number of private organizations in the beneficiary countries, which have in possession equipment and vessels.

The number of institutions in the beneficiary countries implies that at least one organization is available for Black Sea monitoring at every 100 km of the Sea coast. If the national Black Sea monitoring programmes (where available or planned for development in the beneficiary countries) would take into consideration the available infrastructure, the monitoring could have been optimised, avoiding duplication of efforts.

Important part of the Infrastructure are the marine stations and platforms. In Georgia there are none, those available in RU and UA are:

Russian Federation

1. Utrish Marine station of the A.N.Severtsov Institute
2. Educational and Biological research Center of the Kuban State University, Novorossiysk

Ukraine

1. Marine Obseravtion platform "Katsiveli" of MHI in Crimea
2. Marine Research Station "Zmiinyi island" of ONU.
3. Marine Educational Biological Station in Odessa of ONU

Georgia

The analysis of the existing monitoring capacity of Georgian institutions reveals a number of Laboratories, which are able to conduct standard observations using modern techniques. An additional training and upgrading of equipment are needed to carry out complex observations, including non-traditional measurements.

Russian Federation:

Note: The conclusions below refer to the human capacity rather than to the status of infrastructure.

Concerning major ecological parameters monitoring, hydrobiology is well covered, for instance by SIO RAS. However, not all components of the trophic chain are equally attended, e.g. Protozoa and fish studies are absent in the routine monitoring. In these studies experts are available in the Moscow State University and in the Institute of Biology of Internal Waters RAS, but they do not monitor the Black Sea. SIO-RAS has the capacity to study bacteria, phytoplankton, zooplankton and benthic communities, the same stands for the SSC, AzNIIRKh and the Novorossiysk Biological Station.

Needs: special epifluorescent microscopes are needed to advance the studies on nanoplankton (specialists are available in SIO RAS and other organizations).

For monitoring of benthos communities (observe them once per year would be sufficient) - special annual cruise in pilot areas seems to be the best decision. These works in addition to the standard equipment available onboard (drags, etc.) have to be accompanied by diving, underwater video and other modern instruments. Experts on phytobenthos and zoobenthos are present in SIO RAS and other organizations.

Standard hydrophysical equipment, including CTD-probes is available. Many laboratories can fulfill a broad set of standard hydrochemical measurements and pollutants tracing. Some additional (non-standard) chemical analyses can be also fulfilled (in YUZHMORGEOLOGIA, for instance).

Fishery investigations, dolphin populations and physiological state studies are carried out by the Federal State Unitary Enterprise "All-Russian Research Institute of Fishery and Oceanography", AzNIIRKH, and by the Federal State Budgetary Institution of Science "A.N. Severtsov Institute of Ecology and Evolution" Russian Academy of Sciences.

Other institutes could be involved in such observations as biota contamination, marine litter, noise, and habitats mapping. In these SOI and the Research Institute of Applied and Experimental Ecology (Kuban State Agrarian University) have the experience.

Ukraine

Existing infrastructure in Ukrainian institutions and organizations allows to perform standard observations (hydrological, hydrobiological and hydrochemical) in the Ukrainian part of the Black Sea. There are laboratories which have the capacity to perform observations using modern methods (SEM, genetic analyses, eco – toxicological research, etc.) in cooperation with central institutions (mostly in Kiev) where modern equipment is available.

2. Number of equipment

Conclude on the sufficiency of equipment for complex monitoring, including potential to apply modern methods, such as genetic investigations, eco-toxicology, high-resolution microscopy, etc.

Conclude on the level of sharing and terms of sharing.

Georgia

Laboratory equipment should be upgraded to be sufficient to cover the investigation of additional parameters in accordance with present-day requirements (an in harmonization with the MSFD). In Georgia, few institutions are ready to share equipment with other organizations in the frames of joint projects only. There are no other terms of sharing.

Russian Federation

Basically many of the Russian Institutes have onboard equipment for routine monitoring: nets, trawls, water bottles, CTD-probes, etc.. Alas, important instruments are absent, e.g. zooplankton multinet devices. Also, there is no equipment for submersible watching on jelly-fish. The scientific submersible ARGUS, which belongs to SIO RAS, is not operational presently, and cannot be used for jelly-fish or benthic communities observations. In SIO RAS practices a special airplane is used for whales watching in the White Sea. This airplane can be copied and used for dolphins monitoring in the Black Sea.

The BS monitoring laboratories are accredited (mot of them) and have certified equipment for hydrochemical analyses. Some equipment units need to be improved or replaced by new ones. The same stands for binoculars and microscopes. As for modern methods, including automatic or semi-automatic techniques of biological samples processing (such as Zooscan or Phytosence), none of the BS institutions is in posession. High-resolution microscopy (scan) is present in SIO RAS, Severtsev Institute of Ecology and Evolution" Russian Academy of Sciences, and some others. But, such equipment which can be used for regular monitoring (lazer microscopy, for example) is not present in the Institutes located near the Black Sea coast. While simple Chlorophyll *a* measurements could be easily organized, modern HPLC pigment analysis cannot be carried out due to absence ofequipment.

For collecting samples for genetic analysis, special deep freezer should be available, and such is absent in all Russian organizations. Processing of samples can be organized in the Moscow in Institute of Genetics RAS (**Note:** This Institute has not been among the EMBLAS stakeholders and therefore no information is provided on its IEV). Selected equipment units for eco-toxicological experiments are present in SIO RAS. Nevertheless, for regular and proper experiments cultivating chambers with temperature and light control should be obtained.

In general, standard observations can be well sustained in the Black Sea by the present capacities of the Russian Federation institutions. However, the new type of monitoring (integrated and modern, ecosystem-based, studding processes and many additional parameters) require sophisticated equipment which is not available at present in the RU organizations dealing with BS monitoring.

Ukraine

The inventory of equipment available in the Laboratories of Ukraine shows a high level of capacity to manage various samplings and analyses.

Standard observations (hydrological, hydrobiological and hydrochemical) can be performed in the Ukrainian part of the Black Sea and open waters (R/V Professor Vodyanitskiy) by the present capacities of the Ukrainian institutions.

In many laboratories equipment can be shared within country / or with other countries. Terms of sharing exist for 1/3 of the available equipment specified in this report. However, a great part of the existing equipment is rather old and often obsolete. There are permanent financial problems with the purchase of new equipment or upgrade existing ones as there is no special and regular funding for the acquisition of new research equipment. During the last years most crucial was the situation with equipment/laboratory infrastructure in organizations belonging to the Ministry of Agrarian Policy and Food of Ukraine (YugNIRO, YugNIRO/ Odessa branch).

For all states:

The equipment is mostly outdated (as in GE and UA), and in many laboratories there are no possibilities to apply modern methods. Having in mind the status quo, the Laboratories in the BS region can be divided into the following categories:

- High (International) level of laboratories which are equipped with modern laboratory equipment and with possibility to implement all types of sampling and analysis;
- Middle (National) Level of laboratories which are involved in National Monitoring Activities, however, they miss major equipment which would be necessary to develop new type of monitoring;
- Field laboratories (on vessels, marine stations and platforms) which are involved in International and National Monitoring Activities, and can be used for all and new types of monitoring;
- All other laboratories which implemented narrowly specialised marine research and observations

For all these classes on national and international levels it will be necessary to develop or harmonise the requirements for the various types of observations and analysis and prepare lists of obligatory field equipment and analytical devices for laboratories.

The collaboration between the different organizations takes place in the frames of different projects, the same stands for 'sharing equipment'. Outside of projects, 'sharing' is not developed and correspondingly not termed. This is especially valid for the national monitoring, where the capacities of the different organizations are not taken into consideration.

3. Number of vessels

Conclude on the availability of vessels, their research capacities and suitability of equipment to undertake complex observations, and options of renting.

Georgia

The inventory of vessels (most of them old) showed, that there is a very limited number of vessels, having capacity, technical parameters and equipment to satisfy the requirements of the modern monitoring. All vessels are available to be rented on a daily fee base (specified in the GE Tables above)

Russian Federation

Among the 8 vessels belonging to Russian Institutes (located near the Black Sea), 6 are not available de facto. R/V Viktor Buynitskiy, (SOI) permanently is based on the Baltic Sea. Yuzmorgeologiya vessels (Yuzmorgeologiya and Gelendzhik) work based on commercial contracts in the Atlantic Ocean. R/V Professor Shtokman (SIO-RAS) is constantly based in the Baltic Sea (Kaliningrad) and works generally in the Arctic Ocean. R/V Deneb and R/V Professor Panov (both Southern Scientific Center) are in the Sea of Azov near the city of Rostov – their use in BS routine monitoring does not seem cost-efficient.

R/V Deneb could be used in some non-regular cruises, for example, for benthic observations. This vessel cannot be simply rented; it can be used in projects together with staff of the Institute, at least 1 representative. It has a rather low rent price of 4100 EUR, which should be taken into account when planning a cruise.

Actually, only two R/Vs are permanently available for BS monitoring purposes. R/V Rift (SIO-RAS) allows working with a large research team, justifying its high cost of rent of 12 000 EUR. It is reasonable to use it for special cruises to the sea center (for example, in Joint Cruises). Obviously, R/V Ashamba (SIO-RAS) is the only vessel convenient for coastal routine monitoring in RU waters. It has winch, with possibility to use a cable and CTD-probe with Rosette. Planktonic net tows are available as well. Low rent price ~1000 EUR permits to organize regular ecological monitoring in cost effective way. The main restriction of this vessel is that it has a limited working zone of 10 miles offshore and only 1 working day of endurance. Another restriction is that Ashamba cannot work in winter time (from December to April).

Ukraine

Ukraine has reported 1 global vessel (R/V Professor Vodyanitskij, built in 1976, 38 years old, renovated in 2010) and one regional vessel Vladimir Parshin (UkrSCES), built in 1989, 25 years old. Both vessels are rather old. Vladimir Parshin has not been operational during the last several years, there are plans to renovate it in 2014. Other 6 vessels reported are small (local and/or coastal category) and have limited area of investigation (coastal area). Their working capability depends on meteorological conditions.

The scientific equipment of the vessels is insufficient. Some domains of marine science are not covered or not covered sufficiently (e.g. marine geophysics, geologic studies, etc.)

This largest Ukrainian and Black Sea vessel (Professor Vodyanitskij) has been renovated in 2010 and performes cruises in the Ukrainian EEZ. The vessel is actively rented by Ukrainian organizations. During 2013, 3 joint cruises were organized with the participation of 10 Ukrainian scientific research institutions - Marine Hydrophisical NASU, Institute of Geophysics (IGP) NASU, Institute for Radiophysics and Electronics NASU, Kharkov University and other organizations.

No database exists on research vessels in the Black Sea where information on performed cruises and measurements undertaken along with information on future/planned cruises can be published. The Existing Cruise Summary Reports database does not have the required functionality.

Certain existing problems in marine research in the region can be solved through better co-ordination and sharing of facilities but bureaucracy and administrative barriers lead to difficulties in implementing these activities on international and national levels.

There are no visible plans for future investments in research vessels and marine equipment in Ukraine.

For all states:

The research vessels are mostly old and the on-board equipment is not sufficient to perform all types of needed observations (e.g. marine litter, habitat mapping, etc.).

4. Recommendations

Give recommendations where improvements are needed.

- Vessels renovation
- New sampling equipment and laboratory devices, e.g….. (to enlist as proposed by the stakeholders)

  …….

EMBLAS proposes establishing of an international network of stations. In accordance, the relevant institutional framework should be developed and those organizations, which are going to sustain the international network will need relevant equipment – both for sampling and processing of samples and data management.
……

Recommendations given by GE stakeholders

Taking into account the shortage of funds and gaps in monitoring capacity, this inventory of IEV should be widely distributed and used by the national organizations (involved in monitoring) to ensure most efficient use of existing capacities (incl. human capacities). The renovation of, at least, two marine stations (posts) for standard (routine) marine observations (e.g……) should be considered. Together with nonstandard observations conducted within scientific projects, it seems possible to compose the joint national oceanographic programme (NOP), following the recommendations of BSIMAP, MSFD and IOC/INESCO

Recommendations given by RU stakeholders

The main improvement is needed in the Russian scientific research fleet. All vessels are old (25-30 years) with exception of R/V Ashamba (12 years). The majority of vessels have no the regular equipment necessary for environmental monitoring: modern devices for collecting and preliminary processing of biological samples. It is possible to recommend to the Russian authorities responsible for scientific management, to establish a new vessel in the Black Sea. The vessel has to have the appropriate tonnage of 300-400 tons, to be completed with the modern onboard equipment and to have opportunity to reach the sea center during the whole year.

The evident problem which will grow in the nearest future is the lack of experienced taxonomists who can process the biological samples. At the moment there are not experts on heterotrophic flagellates and ciliates, who can process such samples on a regular basis. It is recommended to organize the internship for young persons on this issue.

Taking into account growing problems with specialists on species taxonomy and high cost of such sample processing, the future routine monitoring should be shifted from manual processing to semi- or automatic techniques. The latter can be used for regular observations, while the thin taxonomic identifications, including scan technique and genetic analysis can be applied in special cruises (like Joint Cruise). Therefore, Institutes responsible for monitoring programs should be equipped first of all with modern devices including microscopes with function of automatic counting, zooscans, cytofluorometers, spectrofluorometers, etc.

Important problem is the lack of a multidisciplinary joint database of all parameters which are measured in ongoing monitoring. Data are stored in various formats on the computers of the experts collecting them (with no access). Development of a special software for storage of all measurements in a joint database, data processing, standard statistical analysis, visualization of results and convenient export of conclusions to policy makers and stakeholders are strongly recommended.

Recommendations given by UA stakeholders

There is a need in modern Regional multidisciplinary research vessel that can cover all the domains of marine sciences: oceanography (Physical and Chemical), geology, geophysics and biology/fishery. Policy for the sharing of the vessel and equipment should be developed in the region.

Many laboratories pointed out the absence of national monitoring strategy and the need to develop a joint Black Sea monitoring programme and harmonize the equipment used, methods, formats etc.

Ships of opportunity are extensively used in the world ocean for repeated observations, mostly in operational oceanography. The attempts to establish equipment and organise observations on ships of opportunity were not successful in the Black Sea region. Further efforts should be undertaken in establishing such a program, preceded by necessary public awareness raising and strengthening the cooperation between the scientific organizations and state and private maritime companies operating in the Black Sea region.