UP-GRADE BLACK SEA SCIENTIFIC NETWORK

Reporting

Project Information

UP-GRADE BS-SCENE

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Final Report Summary - UP-GRADE BS-SCENE (UP-GRADE BLACK SEA SCIENTIFIC NETWORK)

Executive Summary:
The Up-Grade of Black Sea SCENE (UBSS) project was preceded by the Black Sea SCENE project which made the first step to establish a Black Sea Scientific Network of leading environmental and socio-economic research institutes, universities and NGO's from the countries around the Black Sea and to develop a virtual data and information infrastructure that was populated and maintained by these organisations to improve the identification, access, exchange, quality indication and use of their data and information about the Black Sea.

The Up-Grade of Black Sea SCENE (UBSS) as successor project aimed at:
• To extend the existing Black Sea SCENE research infrastructure with 19 marine environmental institutes/organizations from the 6 Black Sea countries.
• To implement the results of the Joint Research Activities of the 6FP RI SeaDataNet project (common communication standards and adapted technologies to ensure the data-centers interoperability).

• To network the existing and new Black Sea data-centers, active in data collection, and provide integrated databases of standardized quality on-line.

• To realize (further) on-line access to in-situ and remote sensing data, meta-data and products.

• To adopt standardized methodologies for data quality checking to ensure the quality, compatibility and coherence of the data issuing from so many sources.

Up-Grade Black Sea SCENE has been successfully undertaken by 49 partners from Black Sea countries: Ukraine (9), Russia (8), Turkey (7), Romania (3), Bulgaria (6), Georgia (6), together with 6 partners from EU member states, 1 Associated State and 3 International Bodies.

The following results have been achieved:

• The UBSS web portal at www.blackseascene.net has been further developed and now provides a large array of data and information services

• The portal provides well populated meta-databases for:

• Marine Environmental Data sets - 508 entries in the SeaDataNet EDMED format and service

• Marine Envirnmental Research Projects - 642 entries in the SeaDataNet EDMERP format and service

• Cruise Summary Reports of research cruises by Black Sea countries - 765 entries in the SeaDataNet CSR format and service

• Descriptions of marine data centres and institutes in the Black Sea region - 261 entries in the SeaDataNet EDMO format and service

• Profiles of scientists - 1472 entries in the Scientists service

• Scientific publications - 4489 entries in the bibliography service

• Socio - Economic data sets - 158 entries in the SED service

Each of the meta-databases contains entries for all 6 Black Sea countries

• For each of the metadata-databases a dedicated UBSS user interface has been developed and is available at the UBSS portal

• A total of 38 data centres from the Black Sea region are now connected to the UBSS infrastructure, which is powered by the SeaDataNet data management infrastructure; all these data centres provide overview and access to their Black Sea data sets via the dedicated Common Data Index (CDI) Data Discovery and Access service and related locally managed data sets have been converted to the SeaDataNet common formats

• At present more than 158.000 data sets are described and accessible for downloading through the UBSS (CDI) Data Discovery and Access service

• An inventory and comparison have been prepared of 73 Data Quality Control Methods in use in the Black Sea region

• A catalogue of online mapping services for the Black Sea region has been set-up and is available at the UBSS portal

• During the UBSS project 3 Training workshops have taken place on use and application of marine data management procedures and IT-tools and services as developed within the SeaDataNet project, including how to set up and populate the CDI service

• Various promotion and dissemination activities have taken place through electronic newsletters, poster and leaflet, conference papers, conference lectures, publication in scientific journals.

• A highly successful Joint UBSS-Black Sea Commission Conference has been organised in Odessa - Ukraine in November 2011 with more than 300 participants, 236 Abstracts, 50 oral presentations, and 146

Ukraine in November 2011 with more than 300 participants, 236 Abstracts, 50 oral presentations, and 146 posters. Presentations are available through the UBSS portal, the Black Sea Commission Secretariate portal and via the Conference Book of Abstracts.

• Dedicated Black Sea Quality Assurance and Quality Control guidelines have been established for physical oceanographic data, zooplankton, chemical oceanographic data collections, and biological data. These guidelines are produced by key Black Sea experts from the region and are available through the UBSS portal and the Black Sea Commission Secretariate portal.

• A series of new data visualization products have been developed and are made available at the UBSS portal.

• Considerable data input has been given from the UBSS project towards the EMODNet Chemistry portal development.

The now well established Black Sea SCENE research infrastructure stimulates scientific cooperation, exchange of knowledge and expertise, and strengthens the regional capacity and performance of marine environmental data & information management. Moreover it underpins harmonization with European marine data quality control/assessment procedures and adoption of international meta-data standards and

data-management practices, providing improved data & information delivery services for the Black Sea region at a European level.

For sustaining the operation and maintenance of the UBSS infrastructure as an integrated regional part of the pan-European SeaDataNet infrastructure the connected data centres have undersigned an exploitation agreement, which stipulates that each organisation will maintain its service and contents on its own account awaiting opportunities for employing and further developing the infrastructure in future projects for marine environmental management and beyond.

Detailed information about the UBSS project and its results can be derived from www.blackseascene.net.

Project Context and Objectives:
2.1 Concept and project objectives
The FP7 Up-grade Black Sea SCENE (UBSS) project is a successor to the "Black Sea SCENE" (Black Sea Scientific Network) that started in December 2005 as a FP6 Research Infrastructures Coordination Action and finished end November 2008. Black Sea SCENE supported the integrated provision of infrastructure related services to the research community in the Black Sea region. It made a start with stimulating scientific cooperation and exchange of knowledge, expertise and environmental/socio-economic data & information. Black Sea SCENE (BSS) and its successor UBSS project can be considered as developing a "satellite" network of the SeaDataNet infrastructure project in the Black Sea region. The SeaDataNet project for a pan-European infrastructure for marine and oceanographic data and information management started around the same time as an I3 project within the Research Infrastructures programme with a 5 year duration and in the meantime is continued as SeaDataNet II for another 4 years till 2015. Therefore, where possible, UBSS activities are tuned to the SeaDataNet strategy and approach, and SeaDataNet standards and protocols are adopted.

Achievements of the previous Black Sea SCENE project:
• Establishment of a Black Sea cooperative network consisting of 25 partners from Black Sea countries - Ukraine (5), Russia (7), Turkey (3), Romania (2), Bulgaria (4), Georgia (4) - together with 6 partners from

Ukraine (5), Russia (7), Turkey (5), Romania (2), Bulgaria (4), Georgia (4) - together with 6 partners from EU member states and 1 from an Associated State.

• Creation of an overview of available data & information within the 25 BS institutes, including information on the Data Quality Control procedures in use and applied to their data sets
• Population and maintenance for the Black Sea region of the SeaDataNet EDMED (data sets), EDMERP (research projects), EDMO (organisations) and CSR (research cruise summary reports) V0 meta-databases
• Realisation of the prototype Black Sea SCENE distributed virtual data & information infrastructure including unified access to the distributed databases of a number of partners (CDI V0)

The general objectives of the UP-GRADE BS-SCENE project were:
• To expand the existing network with an additional 19 marine environmental institutes and universities from the 6 Black Sea countries:
- To improve and harmonize the marine data management practices in the region, and to expand the coverage of the data infrastructure
- To strengthen and improve the exchange of scientific knowledge, and regional cooperation of institutes

for environmental problems and for the protection, rehabilitation and sustainable development of the Black Sea Ecosystem
• To improve significantly the technical performance of the data & information infrastructure by adopting and implementing the latest technical developments and standards of the Joint Research Activities of the SeaDataNet project:
- To implement the so-called V1 versions of all meta-directories (EDMED, EDMERP, CSR and EDIOS), which are now mutually harmonised, make use of Common Vocabularies and are based on ISO 19115
- To implement the V1 version of the CDI service with unified access to datasets and downloading services
• To enlarge the number of local data bases that will be made available for user access via the Black Sea SCENE infrastructure.
• To expand the existing meta-databases with additional entries from new partners.
• To assess the scientific data quality of the Black Sea partner's datasets, through screening (Quality Control) of all data sets, to be executed by each Black Sea partner
• To implement innovative data visualisation and viewing techniques
• To prepare long term arrangements for sustaining the Black Sea SCENE network and the Black Sea distributed virtual data and information infrastructure

For the new institutes there were a number of additional objectives:
• To become well acquainted with the European Water Framework Directive (for environmental monitoring and hereto related laboratory analysis), Birds and Habitats Directives and other existing and draft European Directives (for example on Integrated Coastal Zone Management and the Marine Strategy).
• To assess the Data Quality Control methods, that they are using at present. This is done by making an inventory of their DQC methods and by comparing these methods with European standards, guidelines and practices.

Advances over the state of the art is realised through Networking Activities (NAs) (mobilizing a large number of Black Sea institutions holding significant quantities of environmental and socio-economic data and information, providing availability overviews and access to Black Sea data, comparing data quality

and information, providing availability overviews and access to Black Sea data, comparing data quality procedures at the Black Sea data centres with European environmental and data management guidelines and practices), Transnational Access Activities (TAAs) (providing online access to national and international marine environmental and socio-economic data and information services from the data holding institutes within the Black Sea region), and Joint Research Activities (JRAs) (developing standards for common data management including quality assessment of the Black Sea partners data and information and also harmonisation of their formats.

2.2 Progress beyond the state of the art

State of the art

Marine environmental and socio-economic management and assessment on regional scale normally require multinational effort by the states bordering the sea area in question, and can only be effective if there is an appropriate overview of the availability, as well as a high degree of compatibility, accessibility and inter-changeability of scientific knowledge and expertise, quality controlled marine environmental and socio-economic data and information and availability of an operational data and information exchange

infrastructure. Within the Black Sea region, the environmental and socio-economic policy, management and administration are not appropriately coordinated. The previous Black Sea SCENE project represented an important step in improving this situation.

The Up-Grade Black Sea SCENE project built upon the achievements of the Black Sea SCENE project as already described and the technological results of the Joint Research Activities of SeaDataNet. The UBSS project upgraded the Black Sea SCENE research infrastructure by technical improvements and by expanding the number of connected data centre nodes. Moreover it gave clear indicators of the quality of available data sets, managed by Black Sea data centres, and improved considerably the interchangeability, comparability and compatibility of these data sets.

Advances over the state of the art has been realised through:

Networking Activities:
• Mobilizing a large number of Black Sea institutions that hold significant quantities of environmental and socio-economic data & information as well as high level scientific knowledge and expertise.
• Providing availability overviews and access to Black Sea data that will support the European research community.
• Comparing Data Quality procedures at the Black Sea data centres with European environmental and data-management guidelines and practices, resulting in tuning data quality control and management practices into a coherent approach, and consistent with European and international standards.

Transnational Access Activities (TAAs):
The TAAs provide online access to national and international marine environmental and socio-economic data & information services from the data institutes within the Black Sea Region. The services provided are:
• Public access to the following meta-directories: European Directory of Marine Environmental Datasets (EDMED), European Directory of Marine Environmental Research Projects (EDMERP), European Directory of Marine Organizations (EDMO), Cruise Summary Reports (CSR), scientists, bibliography and

Directory of Marine Organizations (EDMO), Cruise Summary Reports (CSR), scientists, bibliography and socio-economic data
• Regulated access to the distributed Black Sea data sets
• Public access to data-viewing services
• Regulated access to Black Sea partner's scientific documents, reports and other scientific services.

The online access to all services has been provided through a unique Black Sea SCENE portal that facilitates users in querying the range of Black Sea meta-databases and in getting access to the distributed data sets, managed by partners. The new V1 technology - data communication standards and interfacing software tools - developed within the Joint Research Activities of the SeaDataNet project are adopted. The implementation has been done gradually. A first group of 6 Black Sea data centres, being the National Oceanographic Data Centre (NODC) in their country, i.e. partners IO-BAS (PR18), NIMRD (PR21), MHI (PR7), TSU (PR23), RIHMI-WDC (PR14) and METU-IMS (PR15), were leading the process. The other Black Sea data centres followed gradually in time, with a target of interconnecting all the participating data centres by the end of the project. Taking into consideration the technical capabilities of partners, 2 connection modes were supported:

• The data access handling services can be set-up in fully automatic mode for data centres, that are equipped with local database systems and reliable internet connectivity;
• Alternatively the partners with less technical expertise and internet connected servers could host their data at their NODC (or other trusted partner) server. This still means partners should harmonised their metadata (to CDI) and data (to ODV/NetCDF) themselves.

In both modes, users experience the same unique interface for identifying and retrieving data sets. However there will be a difference at the data centres in the way that the online data requests are being handled for restricted data from other partners (modus 2). In that case manual handling is needed, and confirmation needs to be given by the original data holding centre.

Note: it is strived that data sets are made available as much as possible without restrictions, however partners have the right to apply data access restrictions. This is implemented in the CDI V1 retrieval and delivery system by including standardised 'data access restriction' labels in the CDI V1 metadata and business logic in the request processing system. The business logic takes into account the data access restriction in combination with the type of organisation of the user to decide whether data sets are freely available for that user, whether further negotiation is required between that user and data provider, or that access is denied.
The NODCs coordinated the national networking and assisted their national colleagues. During the project the content of the meta-databases has been significantly increased, and gradually more services and services products have been made available.

Joint Research Activities (JRAs)
The JRAs developed standards for common data-management that has been applied to screen and explore the quality of Black Sea partner's data & information and to harmonise their delivery formats. All data sets underwent quality control, by both automatic checks and visual inspection to ensure consistency. Data quality has been assessed and indicated with a quality flag from a standard scale. Also have the data sets been converted to standard exchange formats. This activity was absolutely essential to ensure a high quality, harmonized base of datasets and resulted in strong improvement of comparability and

quality, harmonized base of datasets and resulted in strong improvement of comparability and compatibility of data & information within the Black Sea region. This ensured a much better basis for developing environmental policies and strategies (quality status report of the Black Sea), decision making and administration of the Black Sea ecosystem. Moreover, it strongly improved the exchangeability of data & information between scientists, researchers and all other stakeholders involved in the Black Sea ecosystem. The activity has been undertaken by all partners and required considerable scientific analysis and applying scientific knowledge. In addition the JRAs developed new innovative viewing services that have been implemented to present and distribute data products.

2.3 Overall strategy and general description

The upgrading of the existing Black Sea SCENE infrastructure was mainly targeted on:
• Expansion of the existing Black Sea SCENE Network with new Black Sea institutes
• Expansion of the coverage of the Black Sea meta-databases and significant technical upgrading of the distributed virtual research infrastructure and

GIH-GAS (PR30), GAMMA (PR31), GWMI (PR32), TNU (PR33), IGS (PR34), UHI-MB (Pr35), YUGNIRO (PR36), IEG-RAS (PR37), CDNZ (PR38), UMG-GI (PR39), CLGE-BAS (PR40), NIMH-BAS (PR41), DDBRA (PR42), DEU-IMST (PR43), IU-IMS (PR44), AU-FAF (PR45), BENA (PR46), BSCS (PR47) and DHMO (PR50) have joined as new partners.

These partners started from 'scratch' and reached the same level as the existing Black Sea SCENE Network. For them the following catch-up activities were planned, assisted by the non-Black Sea partners:
• getting acquainted with European Directives, data quality control (DQC) methods and guidelines (WP3)
• bringing together information on the DQC methods, applied for their data sets (WP3)

Thereafter these partners worked together with the existing Black Sea SCENE Network partners and non-Black Sea partners on populating the various meta-databases and upgrading the technical basis of the infrastructure.

The existing Black Sea SCENE Network partners are:
MHI (PR7), USRIEP (PR8), ONU (PR9), MSU (PR10), SIO-RAS (PR11), IL-RAS (PR12), IKI-RAS (PR13), RIHMI-WDC (PR14), METU-IMS (PR15), SNU-FF (PR16), BSTU (PR17), IO-BAS (PR18), TUV (PR19), IFR (PR20), NIMRD (PR21), GeoEcoMar (PR22), TSU (PR23), CMP (PR24), IG-GAS (PR25), BSNN (PR26), IBSS (PR27), SOI (PR29) and UkrSCES (PR49)

The non-Black Sea partners are:
MARIS (PR1), IBES (PR2), IMWM (PR3), MSH (PR4), FIED (PR6), HNODC-HCMR (PR28) and OC-UCY (PR51)

The full group of all partners carried out the following activities:
• WP4: Updating and importing new EDMED, EDMERP, CSR and EDMO records at V1 level (NA)
• WP5: Upgrading the data & information infrastructure and web portal to V1 level (NA)
• WP6: Training and capacity building workshops about use and application of tools from SeaDataNet for populating and updating the EDMED, EDMERP, CSR and EDMO V1 meta-databases, for implementing

populating and updating the EDMED, EDMERP, CSR and EDMO V1 meta-databases, for implementing and operating the CDI V1 application and for quality control and data file conversion (NA)
• WP7: Promotion, Dissemination and Public Outreach activities (NA)
• WP8: Transnational Access to V1 Services (TA)
• WP9: Determining the Quality of all data sets & harmonising their delivery formats (JRA)
• WP10: Developing new data visualization services (JRA)

Overview Work Packages

The required activities to achieve the project objectives are divided over 10 work packages:

Networking Activities
WP1 Management & Coordination
WP2 Black Sea SCENE Network meetings
WP3 Inventory and comparison of Black Sea Data Quality Control Methods
WP4 Population of V1 meta-databases

WP5 Upgrading Black Sea virtual data & information infrastructure to V1 level
WP6 Training and Capacity building
WP7 Public Awareness and Outreach, Promotion, Dissemination and Exploitation

Transnational Access Activities
WP8 Operation Transnational Scientific Access Services of Black Sea partner's Installations

Joint Research Activities
WP9 Determining the Quality of all data sets & harmonising their delivery formats
WP10 Developing new data visualization services

Project Results:
3.1 Achievements WP1: Management and coordination

Applied management structure

Within the management structure two different decision levels were established:
• Strategic level, represented by the Steering Committee (SC) to manage the overall strategy and financial, scientific and technical progress of the project
• Operational level, represented by the Work Package leaders to implement the scientific & technical activities necessary to achieve the objectives of the project.

The management structure consisted of the following bodies:
• Steering Committee, consisting of leaders of individual Work Packages, Activity coordinators, Black Sea Commission Secretariat (PR47), and chaired by the Project coordinator
• Project Office at the institute of the Project coordinator MARIS for daily management and supporting the Steering Committee
• Work package leaders, coordinating individual work packages
• Activity coordinators for Networking, Transnational access, and Joint Research activities, assisting the

• Activity coordinators for Networking, Transnational access, and Joint Research activities, assisting the Project coordinator
• Black Sea SCENE Network of all partners
• Advisory Board

Note: the appendix gives a graphical illustration of the Management Organisation

Steering Committee
The Steering Committee (SC) executed the overall scientific and financial management and coordination of the project. All important decisions regarding scientific and technical activities, finances, priorities, remediation actions, etc. were taken within the SC.

The Steering Committee (SC), chaired by the Project Coordinator, consisted of the leaders of the work packages 2 – 10. Moreover the coordinators of the Networking (IBES – PR2), Transnational access (MHI – PR7) and Joint Research (MARIS – PR1) activities were member of the SC. The SC met 2 times a year and at the end of the project. The SC meetings for practical reasons were preceded during the Black Sea

SCENE Network meetings of all partners (WP2).

Black Sea SCENE Network of all partners
All partners were represented in the Black Sea SCENE Network, that met every 6 months as part of the WP2 activities. At the meetings the progress of individual Work packages were presented and reported and mutual relationships between Work packages were discussed. This contributed to an overall understanding at all partners of the project developments and expected actions.

Advisory Board (ADBO)
The Project Coordination Group was assisted by an Advisory Board (ADBO), consisting of representatives of relevant international committees and associations and comprising a number of relevant experts. The ADBO met 1 time per year in conjunction with the meetings of the full network. It advised the project and assessed the results of the project activities..

Work package leaders
Each activity WP2 => WP10 comprised a selection of partners, whereby WP2 included all partners. Each activity has been coordinated by a WP leader that monitored and guided the progress of that activity by regular communication to the partners concerned.
Activity coordinators for Networking, Transnational acces, and Joint Research activities
The project coordinator was assisted by the coordinators of the Networking, Transnational access and Joint Research activities. The Networking coordinator (IBES – PR2) supervised the activities in WP3 – WP7. The Transnational access coordinator (MHI – PR7) the activities in WP8. The Joint Research coordinator (MARIS – PR1) the activities in WP9 – WP10.

3.2 Achievements WP2: Up-grade Black Sea SCENE Network meetings

I) A summary of progress towards objectives and details for each task

The upgrading of the Black Sea SCENE infrastructure was mainly targeted on:

The upgrading of the Black Sea SCENE infrastructure was mainly targeted on:
• Expansion of the coverage of the Black Sea meta-databases and significant technical upgrading of the distributed virtual research infrastructure
• Expansion of the existing Black Sea SCENE Network with 19 Black Sea institutes

The 19 new partners started from 'scratch' and should reach the same level as the existing Black Sea SCENE Network. Therefore for them the following catch-up activities were planned, assisted by the non-Black Sea partners:
• getting acquainted with European Directives, data quality control (DQC) methods and guidelines (WP3)
• bringing together information on the DQC methods, applied for their data sets (WP3)

Thereafter these partners worked together with the existing Black Sea SCENE Network partners and non-Black Sea partners on populating the various meta-databases and upgrading the technical basis of the infrastructure.

To encourage and achieve an overall cohesion and cooperation all partners met on average every 6

months, making a total of 6 meetings over the project duration of 3 years. These Workshops were prepared by the Project Office together with the Project Steering Group and chaired by MARIS, assisted by the Networking and scientific coordinator (IBES), and the Transnational Access coordinator (MHI). The Black Sea country partners join the Workshops with 1-2 persons, involving both data scientific and technical competences.

The objectives of the WP2 Workshops were:
• To discuss and to tune the content and coherence of all activities (WP3=>WP10)
• To monitor and to evaluate the progress of the activities (WP3=>WP10)
• To discuss and to establish long term arrangements for sustaining the Black Sea SCENE network and the Black Sea virtual data and information infrastructure
• To stimulate mutual capacity building by exchanging experiences in data management, data quality control and assessments

During the project the following (full group) workshops were organized:

Istanbul Turkey from 6-8 April 2009 (Deliverable 2.1.1)
Bucharest Romania from 2-6 November 2009 (Deliverable 2.1.2)
Limassol Cyprus from 17-20 May 2010 (Deliverable 2.1.3)
Istanbul Turkey from 24-25 October 2010 (Deliverable 2.1.4)
Rhodes Greece from 13-15 April 2011 (Deliverable 2.1.5)
Odessa Ukraine 30 October 2011 (Deliverable 2.1.6 incorporated in periodic report
P19-P36)

The Bucharest, second Istanbul and Odessa workshops were combined with a meeting of the UBSS Advisory Board; the Limassol workshop was combined with the Mid Term Assessment of the project, attended by the Project Officer of the Commission (Mrs. Anna-Maria Johansson) and the external evaluator (Mr. Stathis Balopoulos).

II) Highlight clearly significant results;

The Workshops were essential for the overall Project Coordination and project implementation. This is confirmed during the Mid-Term Assessment being reported by the project officer and external evaluator in a separate document.

3.3 Achievements WP3: Inventory and comparison of Black Sea Data Quality Control Methods (Deliverable D3.1)

Objectives WP3:
• To make the new Black Sea partners acquainted with the EU directives and guidelines.
• To make an inventory and comparison of the DQC methods, applied at present by the new Black Sea partners for their data sets

NOTE: This WP3 has been undertaken only by the new BSS partners, with guidance by selected old BSS

partners, to achieve an overall overview of available datasets via EDMED records (see WP4) and practiced DQC methods. The old BSS partners already had undertaken this activity in the previous BSS project. It was very important that this WP3 has bee4n undertaken early in the project, because consecutive WP's were built upon this.

WP3 consisted of:
• WP3-1: Introduction of European Environmental Directives and data-management guidelines by EU member state partners (Deliverable D3.1)
• WP3-2: Comparison of Black Sea countries DQC methods and European guidelines (Deliverable 3.1)
• WP3-3: Content Management System Data Quality Control (DQC-CMS)

I) A summary of progress towards objectives and details for each task;

WP3-1 and 3-2: 24 and 25 October 2009 IBES organized a DQC workshop in Brussels for the new partners. The workshop was attended by:

During the workshop the following presentations were given:

Presentations of EU and international guidelines for DQC : procedures and methods

• Review of the existing quality control procedures, standards and software in marine data management and data exchange by Sissy Iona, Hellenic Oceanographic Data Centre-Hellenic Centre for Marine Research (HNODC-HCMR), Greece
The presentation gave an overview of QC standards, procedures and available tools as implemented at National Oceanographic Data Centres as well as at EU and major International Programmes.

• Review of quality assurance requirements in HELCOM monitoring programme of the Baltic Sea by Ela Lysiak-Pastuszak, Institute of Meteorology and Water Management, Maritime Branch (IMGW), Poland
The presentation gave an overview of HELCOM requirements regarding monitoring measurements in

The presentation gave an overview of HELCOM requirements regarding monitoring measurements in Cooperative Monitoring of the Baltic Sea. The recommended control procedures and QC protocols were discussed. Additionally, the QC procedures implemented in the marine laboratory of IMWM also regarding data collection and storage were presented.

• Marine Biodiversity Data Collection and Quality Control in the EU by Paul Goriup, Fieldfare International Ecological Development plc (FIED), United Kingdom
The presentation covered the application of the EU Birds and Habitats Directives, Marine Strategy Framework Directive and establishment and reporting on the marine Natura 2000 network.

• Data Quality Management in the Netherlands and in frame of the EU-MESH project by Gerrit de Vries, Marine Sampling Holland B.V. (MSH), The Netherlands. The presentation covered the Habitat Mapping project.

• Overview of the QA/QC approach for the EU Water Framework Directive by Jan Klerkx, International Bureau for Environmental Studies, Belgium

Presentation about the EU WFD, analytical Quality Control at the EU level, Quality Control approaches, types of QA/QC information and information exchange and what QC information is needed?

• The DQC approach in the Black Sea Commission by Volodimir Myroshnychenko, Black Sea Commission Secretariat (BSCS), Turkey

• New partners presented the DQC procedures they are using within their institute, mainly based on National guidelines

• A Demonstration was given of the online tools to supply information on applied DQC procedures of partners datasets (related to EDMED). After presenting the background information, a hands-on training was done for partners to illustrate how they can describe DQC information and relate these to datasets, that are described in EDMED.

WP3-3: Content Management System Data Quality Control (DQC-CMS)
During the first 18 months of the project the Content Management System was developed and directly after a start has been made with populating of it. The CMS population action was finished in month 35.

II) Highlight clearly significant results;

Conclusions of the DQC workshop:

a) The presentation of EU and international guidelines for DQC has given an overview of the procedures and methods for QA/QC applied for the marine data management as a whole as well as for restricted geographical areas such as the Baltic Sea (HELCOM). It also has given the DQC methods that are applied for more specific topics such as those applied within the EU-MESH project, for the EU Water Framework Directive and for marine biodiversity data. Information has been delivered to the partners concerning manuals and instructions for the application of the DQC methods and procedures.

b) The new partners within UPGRADE BSS have presented the DQC procedures that are applied on their data within their Institutes. Among the new partners, some of them are specifically oriented towards marine data management; in these Institutes a tradition for DQC already exists and mostly is currently applied, often in a way that is similar to the procedures that are applied internationally and within the EU. Other partners are not specifically oriented towards data management, and the DQC approach is not always strictly and uniformly applied. Nevertheless, there exists among these partners a strong interest for improving the application of the DQC procedures.

c) The practical information that has been given for completing the DQC information related to EDMED, combined with the general information that the partners have received on DQC procedures for marine data, will allow them to perform the activities that are planned within the project for the assessment of the data quality on the datasets that are delivered.

3.4 Achievements WP4: Population of V1 meta-databases (Deliverables D4.1?D4.8)

Objectives WP4:
• To improve the overall overview and accessibility of Black Sea environmental data & information
• To update, upgrade and expand the content of the online European EDMED, EDMERP, EDMO and CSR meta-databases to V1 level with input of Black Sea partners
• To update and expand the content of the online meta-databases for Scientists, Publications and Socio-economic information with input of Black Sea partners
• To update, upgrade and expand the content of the online Common Data Index (CDI) system to V1 level with input of Black Sea partners

WP4 was divided in the following sub-work packages:
WP4-1: Populating the EDMED, EDMERP, CSR and EDMO V1 meta-databases (all Black Sea partners)
WP4-2: Populating the Scientists, Publications and Socio-economic meta-databases (all Black Sea partners)
WP4-3: Adopting and populating the Common Data Index – CDI V1 system (all Black Sea data holding partners)

I) A summary of progress towards objectives and details for each task;

During the first 6 months the following metadata User Manuals have been drafted:
• D4.1: User manual and instructions for contributing to EDMO, CSR, EDMED and EDMERP V1 meta-databases
• D4.2: User manual and instructions for contributing to Scientists, Publications and Socio-economic meta-databases
• D4.5: User manual and instructions for compiling the CDI V1 meta-data

These have been combined in one combined Deliverable 4.1-4.2-4.5 and provide partners instructions how to apply the SeaDataNet V1 tools and additional UBSS tools to populate the upgraded V1 versions of the various meta-databases. Using these manuals existing Black Sea partners undertook first upgrading of their existing V0 entries to the new V1 formats and thereafter adding new entries. The new UBSS partners

their existing V0 entries to the new V1 formats and thereafter adding new entries. The new UBSS partners started from scratch and from the start worked on producing new entries for the various meta-databases at V1 level.

These activities were coordinated at national level by the NODCs that are partner in both SeaDataNet and this project. The NODCs intermediated in the transfer of the new and updated Black Sea entries to the SeaDataNet Directory managers.

In October 2009 also a successful Training Workshop took place in Oostende – Belgium with participation by all partners that were instructed and trained in:
- Use of SDN tools for metadata management: CMS and MIKADO software
- Use of NEMO software: Tool for reformatting datasets
- Use of ODV software: Tool for Quality Control, analysis and presentation of datasets

All partners are now applying the new expertise and tools to populate the various meta-databases with relevant Black Sea information which has resulted in well populated metadatabases. Underway

Deliverables 4.3 and 4.4 have been produced reflecting the progress with population of the general purpose metadatabases, while Deliverables 4.6 4.7 and 4.8 were produced to give progress about the installation, configuration and population of the CDI Data Discovery and Access service.

II) Highlight clearly significant results;

Meta-databases populated in UBSS are:
• European Directory of Marine Environmental Datasets (EDMED)
• Cruise Summary Reports (CSR)
• European Directory of Marine Environmental Research Projects (EDMERP)
• European Directory of Marine Organizations (EDMO)
• Common Data Index (CDI)
• Black Sea DQC extension to EDMED
• Black Sea Scientists Directory
• Black Sea Publications Directory
• Black Sea Socio Economic Data (SED)

Deliverable D4.1-D4.2-D4.5 provide to partners:
• Overview of available tools for maintenance
• References to online manuals, formats for all UBSS meta-data directories
• Work division between NODC and other national partners per country. The latter gives a precise overview how the updating and maintenance is organized per country. Which tools to use? Who to contact etc.

The manuals indicate which methods of maintenance (XML files via MIKADO or other tool, or via CMS) are chosen per country for each of the meta-databases. In any case the NODC will act as national focal point, providing assistance in metadata preparation and collating new records for inclusion in the UBSS. Therefore the NODC for each Black Sea country has prepared a document, describing which methods will

Therefore the NODC for each Black Sea country has prepared a document, describing which methods will be applied for their country and group of national institutes for completing and maintaining the various V1 meta-databases. These documents have been included in the User Manuals.

The role of the NODC's is schematized in the Appendix.

Progress and significant highlights WP4-1, WP4-2 and WP4-3.

Very good progress was made with population of all the different metadatabases as part of Deliverables 4.3 4.4 4.6 4.7 and 4.8 and can be is summarised below:
• European Directory of Marine Environmental Datasets (EDMED) (508 entries)
• Cruise Summary Reports (CSR) (765 entries)
• European Directory of Marine Environmental Research Projects (EDMERP) (642 entries)
• European Directory of Marine Organizations (EDMO) (261 entries)
• Common Data Index (CDI) (158111 entries)
• Black Sea DQC extension to EDMED (73 entries)

• Black Sea Scientists Directory (1472 entries)
• Black Sea Publications Directory (4489 entries)
• Black Sea Socio Economic Data (SED) (158 entries)
.
3.5 Achievements WP5: Updating Black Sea virtual data & information infrastructure to V1 level (Deliverables D5.1?D5.5)

Objectives:
• To upgrade the Black Sea virtual data and information infrastructure to the SeaDataNet V1 level
• To establish unified online data access to data sets, managed by Black Sea partners, through the Black Sea SCENE portal
• To install and make operational the SeaDataNet V1 software components at the Black Sea SCENE portal and locally at the Black Sea partners

WP5 was composed of the following sub Work packages:
• WP5-1: Modifying the Black Sea SCENE Web portal
• WP5-2: Upgrading and provision of the online Black Sea EDMED, EDMERP, CSR and EDMO V1 meta databases
• WP5-3: Upgrading and provision of the online Black Sea Scientists, Publications and Socio-economic meta databases
• WP5-4: Upgrading of the Common Data Index (CDI) system to SeaDataNet V1 level

WP5 activities were aimed at upgrading and harmonizing the range of meta-databases to V1 level in a technical way, thereby adopting and integrating the SeaDataNet standards and vocabularies. These upgrading activities have been undertaken by MSU and RIHMI-WDC with support of MARIS.

I) A summary of progress towards objectives and details for each task;

During the project the following has been realized:

During the project the following has been realized:

Deliverable 5-1: Upgraded Black Sea SCENE Web Portal

Deliverable 5-2: Upgraded Black Sea EDMED, EDMERP, EDMO and CSR V1 metadata services

Deliverable 5-3: Upgraded Black Sea Scientists, Publications and Socio-economic metadata services

Deliverable 5-4: Upgraded Black Sea Common Data Index V1 system and NODC's connected

Deliverable 5-5: Upgraded Black Sea Common Data Index V1 system and (almost) all Black Sea partners (Data holding centres!) connected

II) Highlight clearly significant results;

Deliverable 5-1: Upgraded Black Sea SCENE web portal :

• A new website lay out has been developed (stylesheet) and implemented for the portal at http://www.blackseascene.net

• The portal website content has been upgraded with information about the Up-grade Black Sea SCENE project and the additional new partners

• Extranet has been expanded for use by all partners. The extranet stimulates internal communication

between partners, including uploading – downloading of project documents. It serves as the project archive for all relevant presentations and documents.

Illustrations of the new UBSS website can be found in the Appendix.

Deliverable 5-2: Upgrading and provision of the online Black Sea EDMED, EDMERP, CSR and EDMO V1 meta-databases

• New style sheets have been created and distributed by MARIS to the WP5 partners MSU and RIHMI-WDC for the components of the system that they are managing

• MSU has upgraded the existing local databases for EDMERP, EDMED and EDMO to V1 level and imported the latest content from SeaDataNet and UBSS into the local buffer database. A facility is set-up for easy updating using the existing EDMO and EDMERP web services. For EDMED there is not yet a web service available from SeaDataNet (this is planned soon) so data is imported manually in batch modus now. MSU has also developed new interfaces for each of the 3 meta-databases, using OGC WMS services to support map viewing. MSU has finalized and fine-tuned the user interfaces for their functionality and look & feel. The upgraded discovery services have been launched in May 2010 replacing the existing services at the Black Sea SCENE website and upgraded and maintained since.

• MARIS has been working on discovery services for the Black Sea CSR meta-database. CSR has been undertaken in regular contact with BSH (Germany) who is managing full CSR for SeaDataNet. Locally a Black Sea CSR buffer database has been set-up following the CSR V1 format and this has been loaded with CSR V1 XML files that have been extracted by BSH from the master CSR database. A facility is set-up for easy updating using the new CSR web service, so that the UBSS CSR database can be updated automatically every week with newly available CSR V1 files for the Black Sea region. This can be new cruises, but moreover upgraded V1 versions of older cruises.

MARIS has also developed a new interface for the CSR meta-database, bringing it in line with the new Black Sea SCENE look & feel. In May 2010 MARIS has finalized and fine-tuned the user interface and maintenance service, so that the upgraded CSR discovery service has been launched replacing the existing service at the Black Sea SCENE website. It has been maintained and upgraded since.

existing service at the Black Sea SCENE website. It has been maintained and upgraded since.

• As an additional service partner TUV has redeveloped and upgraded the data quality control service that can statistically filter datasets for outliers. It is not only compatible with XLS or txt files, but also with the ODV format, standard in SeaDataNet.

Deliverable 5-3: Upgrading and provision of the online Black Sea Scientists, Publications and Socio-economic meta-databases:

• RIHMI-WDC has focused on upgrading the existing Black Sea meta-databases for Scientists, Publications and Socio Economic Data. Where possible the formats have been upgraded by integrating the SeaDataNet vocabularies, and EDMO directory. Also the online Content Management System has been upgraded technically to support the new formats. RIHMI-WDC has also developed new interfaces for each of the 3 meta-databases, adopting the UBSS look & feel. The upgraded discovery services have been launched, replacing the existing services at the Black Sea SCENE website.
• BSNN has developed a special section where Black Sea legislative data and socio economic data can be retrieved.

• BENA has developed a special Black Sea publications directory of downloadable full articles, all published in the JEPE journal as well.

Deliverable 5-4: Upgrading of the Common Data Index (CDI) system to SeaDataNet V1 level:

MARIS has continuously been working on coordinating and effectuating the population of the CDI meta-database and data access service, because MARIS is also managing the SeaDataNet CDI V1 service. The CDI V1 service for the Black Sea region has been set-up as a virtual subset of the overall SeaDataNet CDI collection with its own dedicated user interface. For the user interface two versions have been implemented:
• Quick search, easy to use for any user:
http://www.blackseascene.net/v_cdi_v2/browse_Step.asp
• Extended search, for more experienced users with additional demands:
http://www.blackseascene.net/v_cdi_v2/search.asp

For the user interfaces the new Black Sea SCENE look & feel has been adopted.

Implementing the CDI services has a central portal component, undertaken by MARIS and local components at each of the data centres. The implementation and operation of the local components was shared with the WP8 activities, providing transnational access to data sets.

These activities concern all 41 Black Sea Data holding partners in the UBSS consortium. The following contractual agreements have been made:
• All Data Centres in the Upgrade Black Sea Scene projects have agreed by contract to give a metadata overview of their data holdings and to give online access to these data.
• This implicates that all Data Centres (6 NODC's PLUS 35 other Data Centres from the Black Sea region) must become connected to the Common Data Index V1 infrastructure.

All CDI partners have followed the same steps:

All CDI partners have followed the same steps:
- Create CDI test files for first test and import in test database
- Install the Download Manager on Internet server
- Convert local files or database data to ODV
- Supply CDI production files
- Load all ODV files to DM and make system operational

Almost all partners from the Black Sea region have achieved their connection and inclusion in the CDI V1 service. A few partners have not been able to reach this stage. Also partners such as BENA and BSNN were not connected as data centres, but have contributed to the operational UBSS portal with complimentary information services.

The CDI partners have installed the Download Manager component and have populated the CDI directory with their CDI entries. Via the CDI V1 online shopping mechanism users can get access to the associated data sets in ODV format that are managed at the data centres themselves.
These Data Centres are now providing operational CDI and data access services as part of the WP8

services. The collection has ca. 158.000 data set entries so far.
WP8 will show the access status per partner.

3.6 Achievements WP6: Training and Capacity Building (Deliverable D6.1?D6.6)

Objectives:
• To train and build capacity of data managers of all Black Sea partners in the use and application of tools and formats from SeaDataNet for populating and updating the EDMED, EDMERP, CSR, EDMO and CDI V1 meta-databases.
• To train and transfer expertise to IT experts / technicians of all data holding Black Sea partners for the installation and configuration of the software components, which have been developed in SeaDataNet for the CDI V1 system
• To train and build capacity of data managers of all Black Sea partners in overall data management, data quality control and data file conversions.

WP6 was divided over the following sub work packages:
• WP6-1: Preparation, coordination and validation of the training and capacity building programme
• WP6-2: Training course 1 for data managers on populating the meta-databases
• WP6-3: Training course 2 for technicians on installing and configuring the CDI V1 system components and tools
• WP6-4: Training course 3 for data managers on quality control, file format conversion and viewing services

I) A summary of progress towards objectives and details for each task;

The Training Workshops were dedicated to adopting and applying the SeaDataNet V1 standards and tools. The programme consisted of lectures, each time followed by hands-on training exercises, especially in using the SeaDataNet software tools and online services. All presentations are available on the Extranet.

Extranet.

Following the original planning, the following training courses were foreseen:

• COURSE 1 (Deliverable 6.1): Populating the metadata bases - WP6-2 (for data managers)
• COURSE 2 (Deliverable 6.3): Installing and configuring the CDI V1 system components and tools - WP6-3 (for technicians)
• COURSE 3 (Deliverable 6.5): Use and application of data management tool kit software developed in SeaDataNet for data checking & processing – WP6-4

However it seemed more effective to combine Course 1 and Course 2 because then both data managers and technicians could be trained and instructed together which is very useful for the further implementation. This was further worked out and moreover the resulting training course was combined with the SeaDataNet and Up-grade Black Sea SCENE project.

Training implementation

• COURSE 1 & 2 merged, organized in October 2009
• COURSE 3: Originally planned for Month 16, but considering COURSE 1+2 in Month 10 it was shifted to the 3rd Year of the project (held in March 2011).

Training course 1 & 2 Ostend Belgium
• Participants: 65 from Upgrade Black Sea SCENE, Up-grade Black Sea SCENE, and SeaDataNet
• Trainers/presenters: 6 provided by core partners from SeaDataNet (MARIS, IFREMER, HCMR and AWI)
• Duration: 4 days (26 – 29 October 2009)
• Venue: UNESCO/IOC Project Office for IODE, Oostende, Belgium.

Course content
• Present State of Infrastructure and Background Information
• General description of data management procedures (the different steps and offline tools)
• Metadata online tools and CDI configuration and practical use
• Data analysis and analysis tools
• 10 individual presentations, + practical exercises to illustrate concepts taught.

Training course 3 Ostend Belgium
• Participants from UBSS and SeaDataNet project
• Duration 4 days
• Venue: UNESCO/IOC Project Office for IODE, Oostende, Belgium.

Course 3 content
• Present State of Infrastructure and Background Information
• Further training on tools and methods for converting, quality control, and analysis of datasets from various disciplines
• Hands on experience with tools and procedures.

II) Highlight clearly significant results;

The programmes and lectures of each course have been compiled into the combined Deliverable 6-2_6.4 and Deliverable 6-6.

At the end of the Workshops a survey was held under the participants with the following score, which underlines that all participants were very satisfied:
- Course Quality: +++
- Set-up meeting room: ++ /+++ (airco)
- Hardware: ++ /+++ (no major technical difficulties/interruptions)
- Catering: +++
- Transport: ++

3.7 Achievements WP7: Public Awareness and Outreach, Promotion, Dissemination and Exploitation (Deliverable D7.1?D7.4)

Objectives:
• To reach out, promote and disseminate the Black Sea SCENE network, its objectives, activities and virtual data & information infrastructure
• To get feedback from potential end-users regarding required types of data & information
• To establish a feasible plan for the exploitation of the virtual Black Sea SCENE data & information infrastructure

WP7 is divided in the following sub-work packages:
• WP7-1: Public Outreach
• WP7-2: Promotion and dissemination
• WP7-3: Exploitation
• WP7-4: Promotion and dissemination conference

I) A summary of progress towards objectives and details for each task;

WP7-1: Public Outreach

Public Outreach for the UBSS project took place through activities by the network organisations of the following partners :

IO-BAS: Centre of Excellence for Sustainable Development and Management of the Black Sea Region, established at partner IO-BAS within the framework of EU-FP5.
The overall objective of CESUM is restructuring the research and expert activities of the Centre targeted to long-range sustainable development of the Black Sea region in the context of environmental, economic and social problems for harmonization with the EC standards through increased regional and international co-operation and networking
Based on knowledge of the State of the Art of the Black Sea ecosystem the environmental objectives of the Centre are:

the Centre are:
- To improve the Black Sea scientific bases (methodologies and scientific tools) for assessment of the Black Sea ecosystem health through regional and international co-operation;
- To elaborate ecological criteria and standards on water quality and living resources, crucial for the adoption of regional regulations for harmonization with the EC Environmental Policy;
- To provide feasible options for mitigation of negative impacts and co-ordinate efficient implementation of environmental rehabilitation measures;
- To develop a Strategy for Sustainable utilization of chemical, living, non-living and recreational resources and management of Black Sea ecosystem.
- To increase the level of public concern by shaping the adjustment and the public opinion on the solution of the Black Sea ecological problems and raise the role of the young generation in this process.

This centre is sustainable operational and fulfills a pro-active role in the promotion and dissemination of the UBSS project results as well as supports and strengthens the sustainability after project end.

Balkan Environmental Association BENA, including membership of institutes from all Black Sea countries.

The primary scopes of B.EN.A. are the following:
• To examine and appraise the current problems of environmental protection on a regional, national and international basis
• To advise the regulatory bodies of the various Balkan countries about decisions concerning the evaluation of the risk of chemicals and physical agents
• To develop international cooperation on reducing transboundary pollution. Also, to engage in activities on transboundary pollution, as that affects public health.
• To develop strategies and options for the environmental protection of the Balkan rivers, lakes and wetlands.
• To develop the environmental quality management systems for the Balkan region, including Black Sea.
• To develop international programs for the restoration and the sustainable improvement of the ecological safety of cross-border regions.
• To plan and organize scientifically events and other activities on environmental issues.

BENA undertakes many outreach activities such as organisation of conferences and exhibitions. Where possible and applicable BENA has included outreach activities for the UBSS project.

Black Sea Commission Secretariat BSCS, representing governmental and environmental stakeholders of the Black Sea region, with a well organized infrastructure. The secretariate included references to the UBSS project and results in its own outreach activities.

Black Sea NGO Network BSNN, established in 1998 and registered in 1999, is a regional association of NGOs from all Black Sea countries. The BSNN members, currently over 60, are brought together by the common concern for the decreasing environmental quality of the Black Sea and the need for the adoption of democratic values and practices in the Black Sea countries that follow the ideals of sustainability. BSNN is an independent, non-political, non-governmental, non-profit voluntary association of NGOs from the six Black Sea countries: Bulgaria, Georgia, Romania, Russia, Turkey and Ukraine, the goal of which is the facilitation of the free flow and exchange of information, resources and experience for the accomplishment of its Mission that is: "to contribute to the protection and rehabilitation of the Black Sea, including the Azov

of its Mission that is: "to contribute to the protection and rehabilitation of the Black Sea, including the Azov Sea, and to the sustainable development of the Black Sea countries through increased participation of NGOs, governments, businesses and other institutions, as well as the general public"

WP7-2: Promotion and dissemination

BENA together with other WP7 partners compiled the initial Promotion and Dissemination Plan, which is available as Deliverable 7.1. wherein it is recognised that a distinction should be made between different audiences for promotion & dissemination messages:
• End-users, who are searching for Black Sea data sets for their own research and activities. These users must be informed of the UBSS products and services and how they can make use of these.
• Decision makers, who should be convinced that the UBSS infrastructure is a very essential tool for management and research and those conditions should be created for sustained operation of the UBSS infrastructure. These decision makers comprise at least the members of the Black Sea Commission.

Based on the dissemination and promotion plan a large number of basic activities have been carried out to

support communication of the UBSS project and its results to both target communities. These are described with their results in the paragraph on results.

In addition WP7-1 and 7-2 Activities took place by individual Partners BENA, BSNN and CESUM

Black Sea NGO Network (BSNN): http://www.bsnn.org/index.html

• The BSNN partner, has been regularly involved in interactive communication through the FORUM module stimulating public discussions, end-user consultation, promotion and dissemination
• Raising of Public awareness by mass media
• BSNN has presented the UBSS project in conventional mass media communications.
• Promotion and Dissemination including Raise of Public Awareness is taking place through the Black Sea NGO Network (BSNN), located in Varna, Bulgaria – regional association with over 60 member NGOs.
• Promotion and dissemination actions carried out through the BSNN communication tools and network
• Dedicated UBSS news spots published annually on the BSNN website at www.bsnn.org ; available at http://www.bsnn.org/project_black_scene_upgrade.html
• Set Information of topical items about UBSS is at http://www.bsnn.org/topical.html
• Set information about Upgrade BSS published annually in the BSNN Newsletter Black Sea Shared; The newsletter Issue 45 with information about the project can be downloaded from http://www.bsnn.org/newsletter.html
• Developed Promotion and dissemination plan of UBSS at regional NGO events platforms- meetings such as: the Black Sea NGO Network, the Black Sea NGO Forum, the meetings of marine EU and neighborhood networks – European Seas Environmental Cooperation, Ocean 2012 coalition, the marine biogeographic seminars for the Mediterranean and the Black Sea etc.
• The BSNN has, also, been promoted to regional NGO events and meetings with presentation and poster from BSNN and all standard project promotion and dissemination tools. *The presentations and poster are available and can be provided upon request.
• Promotion at regional and international events with NGO participation - The BSNN has presented the UBSS project at 5 international events attended by BSNN experts with poster and power point

UBSS project at 5 international events attended by BSNN experts with poster and power point presentation.

• Promotion within campaigns dedicated to dates on the environmental calendar – IBSD October 31 and other events, the International Day of Biodiversity Protection, World Water Day etc. – Seven dates on the environmental calendar – IBSAD, Water Day, Biodiversity Day (and International Year of Biodiversity), World Water Monitoring Day, Wetlands Day, Earth Day, EU Maritime Day have been used for project UG BSS promotion and dissemination.

• Results/outputs: Improved access of the public to information on Black Sea issues and metadata; improved knowledge and use of data & metadata

– 560 direct beneficiaries, scientists, environmental NGO consultants, experts, partners and associates working on the information, NGOs using the UBSS information;

– indirect beneficiaries – about 260 – 280 visitors of the website per month, total about 3500; public involved in celebrations of days on the environmental calendar – about 12 000 people.

Promotion & Dissemination through Balkan Environmental Association (BENA)

• Raising of Public Awareness by mass media: B.EN.A. in collaboration with EURO Channel TV Station in Bucharest, Romania realized interviews regarding the introduction, promotion and dissemination of UBSS Project infrastructure and services

• In Ukraine: partner UkrSCES - translated UBSS article into Ukrainian language (to be published)

• Round tables, mutual meetings with decision makers organized under various occasion: round tables and mutual meetings with the representative of decision makers using the opportunity to attract the interest of the Up-grade Black Sea SCENE project.

Round tables, mutual meetings with decision makers/ governmental authorities-ministries

Mutual meetings with:

- Romanian Ministry of Environment and Forests
- Romanian Ministry of Tourism and Development - State secretary
- Municipality of Constanta
- Constanta Chamber of Industry, Commerce and Trading,
- Constanta County Council – Black Sea Cooperation and Quality Management Department
- Municipality of Galati
- Municipality of Bucharest
- Municipality of Varna
- Municipality of Katerini
- Istanbul Metropolitan Municipality, Turkey
- Istanbul Metropolitan Planning (IMP), Turkey

Also with:

- OIL Terminal Constanta
- Constanta Ports Administration
- Galati Ports Administration
- Romanian Naval authority
- Romanian Water Authorities Dobrogea Littoral Branch

Scientific Research Community:

- Mutual meeting in the frame off scientific community:

  National Institute for Industrial Ecology – ECOIND Bucharest

- National Institute for Industrial Ecology –ECOIND Bucharest
- National Institute for Environmental Protection (ICIM) Bucharest
- Romanian Academy of Sciences
- University of Bucharest – Faculty of Geography
- Polytechnic of Bucharest – Faculty of Chemistry
- "Ovidius" University – Faculty of Natural Sciences Constanta
- "Lower Danube" University of Galati, Faculty of Fishery
- Museum Complex of Natural Sciences Constanta

Promotion & Dissemination through CESUM

• Presentations at high level international Fora:
- GES and the Black Sea - ICES-JRC WG01 – Biodiversity: Marine Strategy Framework Directive - Definition of Good Ecological State Meeting – Oslo, 28-29, May, 2009
- Meeting of the ICES WG on Phytoplankton and Microbial Ecology, 02- 07 March, 2010, Aberdeen - Discussion on QC/QA approach for phytoplankton data – S. Moncheva (member of the WG for the Black Sea)
- Black Sea GIG – Bulgaria-Romania working meeting with the Black Sea Basin Directorate representatives – IO-BAS and NIMRD – Constanta - intercalibration of biological data, 14 February, 2010

• Meeting with High level National officials
- Meeting of the Advisory Committee to the Ministry of Environment and Water – 26 November, 2009, Bucharest
- Meeting of National Focal points to the Black Sea Commission on the Black Sea ecological Problems – 04 January, 2010 – Ministry of Ministry of Environment and Water
- Meeting of Black Sea Basin Directorate Council with representatives of Black sea municipalities

• Knowledge dissemination by presentations at Conferences and research papers to scientific journals
- IMDIS – 2010
- 39 CIESM Congress, 10-14 May, 2010, Venice , Italy
- Black Sea-2010 – 6 abstracts submitted

WP7-3: Exploitation:

As part of WP7-3 an exploitation and maintenance plan (Deliverable 7-3) has been formulated and agreed to secure the operation and maintenance of the Upgrade Black Sea SCENE (UBSS) infrastructure and its services (both in content and technical components) and to arrange possible exploitation of system developments. Therefore within the Consortium discussions have taken place on the possibilities, and terms of reference, for a cost-effective and sustainable exploitation and maintenance of UBSS and its virtual data and information infrastructure. This has resulted in the underlying Exploitation and Maintenance plan which includes:

• General exploitation considerations
• Potential exploitable results
• Maintainable components and content

• Maintainable components and content
• Common Data Policy and UBSS License agreement

This is concluded by an exploitation agreement which is undersigned by all UBSS partners to secure the sustainable maintenance of the UBSS infrastructure and its services.

WP7-4: Promotion and dissemination conference

Together with the Commission on the Protection of the Black Sea against Pollution (Black Sea Commission) and the Ministry of Environment and Natural Resources of Ukraine a large Conference was organised by the UBSS project to disseminate and promote the results of the project and to discuss scientific progress. The Conference was named: Black Sea Outlook: Drivers, pressures, state, impact, response and recovery indications, towards better governance of Black Sea environmental protection. This 3rd Bi-annual BS Scientific Conference and UP-GRADE BS-SCENE Project Joint Conference took place from 1 to 4 November 2011 in Odessa, Ukraine. It was organised by UBSS partners together with the Black Sea Commission Secretariate while the local organisation was undertaken by the Ukrainian

Scientific Centre of Ecology of the Sea (UkrSCES) on behalf of the Ministry of Environment and Natural Resources of Ukraine. The Conference was preceded by the International Black Sea Day with several local and European speakers.
The Conference was a great success because a total of 236 Abstracts were received from which 50 oral presentations were selected by the Organising Committee together with an International Scientific Committee. Submitters were also requested to submit posters which resulted in 146 posters, divided over the 6 sessions (Posters: S1-37; S2-30;S3-9;S4-23;S5-20;S6-27).

The Conference was attended by more than 300 participants that enjoined a lively Conference with high quality presentations from many key scientists and managers from the Black Sea region and from greater Europe in a great ambiance of the Bristol hotel in Odessa - Ukraine.

From the Conference Deliverables 7-4 have been produced with Conference proceedings giving details on the following:
• Scope and programme with speakers and links to presentations
• Reports of all sessions
• Overview of Posters with links to posters
• Composition of Organising Committee, International Scientific Committee and Local Organising Committee
and a Book of Abstracts has been prepared by the Black Sea Commission Secretariate. This can be downloaded from the Black Sea Commission Secretariate website:
http://www.blacksea-commission.org/_3BSCConf.asp#BookOfAbstracts

The programme with copies of all presentations are available from the UBSS website at:
http://www.blackseascene.net/content/content.asp?menu=0000058_000000
Furthermore the Black Sea Commission Secretariate is providing a section at its website with the programme, all presentations, selection of posters received as digital files:
http://www.blacksea-commission.org/_3BSCConf.asp
The Book of Abstracts is included in the UBSS reporting as Deliverable D7.4, Book of Abstracts

The Book of Abstracts is included in the UBSS reporting as Deliverable D7-4_Book-of-Abstracts.

II) Highlight clearly significant results;

The following Deliverables have been produced:
• Deliverable 7-1: Dissemination and Promotion plan
• Deliverable 7-2_7-3: Expoitation and maintenance agreement
• Deliverable 7-4: Black Sea Outlook Conference with Proceedings and Book of Abstracts.

The main promotion and dissemination activities have been:

• Launch and operation of the Up-grade Black Sea SCENE web portal (www.blackseascene.net) providing free access to
- Project information, including description, objectives and results
- Up-grade Black Sea SCENE data & information Service
- Promotion in related websites like IODE Ocean Portal, SeaDataNet, Black Sea SCENE, etc.

- UBSS newsletters
- UBSS leaflets and posters
• Project leaflets and posters (in Russian and English language) distributed among potential stakeholders, national and international conferences and workshops
• 5 electronic newsletters are distributed to a large number of potential end-users and stakeholders. The newsletters can also be accessed by www.blackseascene.net.
• Articles in newspapers
• Activities of partner BENA (implementation of lectures in BENA conferences, articles in BENA journal JEPE, interviews with newspapers and press media)
• Activities of partner BSNN (articles in BSNN newsletters, presentations in national and international conferences)
• Activities of partner IO-BAS through CESUM (workshops, lectures and papers in conferences)
• Promotion and dissemination activities of the Black Sea country partners
• Black Sea Commission Secretariat: representing all Black Sea countries at all levels (governmental, scientific, industrial and society). BSCS has promoted and disseminated Up-grade Black Sea SCENE, its Network and Information Service through the thereto-available channels.
• The same approach has been applied by the Black Sea Commission Secretariat for the Black Sea countries.
• IOC global network: The IOC-IODE Project Office is partner in Up-grade Black Sea SCENE. One of his tasks within Up-grade Black Sea SCENE is dissemination of information on the Up-grade Black Sea SCENE facility to the scientific community worldwide, and the promotion of the Up-grade Black Sea SCENE Service to all potential users worldwide. Therefore IOC-IODE engaged its IOC global network. This is a worldwide service oriented network consisting of over 60 oceanographic data centres in as many countries. Also IODE disseminated information on Up-grade Black Sea SCENE to other IOC programmes such as Ocean Science, Global Ocean Observing System and the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM).
• SeaDataNet Infrastructure: Partner MARIS was charged with the task within Up-grade Black Sea SCENE to secure the compatibility and interoperability with the SeaDataNet Infrastructure. As such MARIS promoted and disseminated the Up-grade Black Sea SCENE development to members of the

MARIS promoted and disseminated the Up-grade Black Sea SCENE development to members of the SeaDataNet (including Black Sea SCENE and Up-grade Black Sea SCENE) Infrastructure. The SeaDataNet Infrastructure is already covering all EU member States, Black Sea countries, North African and some Middle-East countries.
• Organisation of a highly successful Joint UBSS-Black Sea Commission Conference "Black Sea Outlook" in November 2011 in Odessa - Ukraine with more than 300 participants, 236 Abstracts, 50 oral presentations, and 146 posters. Presentations are available through the UBSS portal, the Black Sea Commission Secretariate portal and via the Conference Book of Abstracts.

3.8 Achievements WP8: Operation Transnational Scientific Access Services of Black Sea partner's installations (Deliverables D8-1 and D8-2)

Objectives:
• To provide data & information discovery and delivery services through the Black Sea SCENE data & information infrastructure, its portal and connected institute systems

The WP8 transnational access activity involves the operation of the Black Sea SCENE discovery and delivery services by 41 data holding institutes, located within the Black Sea Region, and the portal. The services to be provided are:
• Public access to meta-databases for Black Sea scientists, and scientific literature, publications and reports
• Public access to Black Sea socio-economic data
• Public access to the following meta-directories: European Directory of Marine Environmental Datasets (EDMED), European Directory of Marine Environmental Research Projects (EDMERP), European Directory of Marine Organizations (EDMO), Cruise Summary Reports (CSR), specifically relevant for the Black Sea region and institutes.
• Regulated access to the distributed Black Sea data sets in a standardized way through the Common Data Index (CDI) service
• Regulated download facilities for data sets through the Common Data Index (CDI) service
• Public access to data-viewing services

The aim is that the data centres in the UBSS project form a distributed network of data centres responsible for the management and delivery of their own data sets in the agreed exchange formats. In order to support the relevant infrastructure at each of the data centres each partner will receive a contribution from the project towards the costs of providing and maintaining these services.

The UBSS project has a duration of 36 months and a major part of the activities have been dedicated to adapting SeaDataNet tools and services for UBSS services, for instructing UBSS partners in the formats, the application of tools, and how to connect to the UBSS infrastructure. Thereafter a considerable project period has been required by UBSS partners for producing metadata and data entries in the agreed formats and for installing and configuring their connection to the operational UBSS infrastructure. The majority of UBSS data centres is now operational with its WP8 services and thus eligible for claiming WP8 funds. As a rule it was agreed that partners should have provided operational access to their data sets via the UBSS CDI Data Discovery and Access service during at least a full year (running from 1st January 2011 to end of the project) to be eligible for a full budget claim. Each day less on the target period

2011 to end of the project) to be eligible for a full budget claim. Each day less on the target period implicates a withholding of the claimable budget of 1/365 * the WP8 budget. Partners already fully operational before 1st January 2011 can claim WP8 costs fully.

The overview below gives the official dates as established for each UBSS partner as being in production. These dates have thus been used as basis for calculating and instructing partners for WP8 claims in this 2nd reporting period. At the end of the project 35 data centres are fully operational connected to the UBSS e-infrastructure and which have data sets available in the CDI data discovery and access service. A further 3 partners (BSNN, BENA and TUV) have set up complimentary information services which are operational. Only 3 data centres (CMP, GeoEcoMar and IL-RAS) did not succeed to get the services connedcted and operational.

I) A summary of progress towards objectives and details for each task

For the operation of the infrastructure, all data holding Black Sea partners make use of their local hardware and software systems that has been adapted and extended, where needed, for being able to

function as nodes in the overall Black Sea SCENE infrastructure. Locally at the data centres, the basic data management facilities consist of:
1. Hardware and software for managing data sets ; computers, data servers, disks, back-up facilities, commercial or open source software for databases;
2. Specific software packages for quality checking, analysis and presentations of data sets;
3. Local computer networks and interconnectivity to internet to enable communication and publishing via a web site;
4. Technical personnel, skilled in operating and maintaining the local computer systems, and taking care of back-up's;
5. Data management personnel, skilled in providing assistance and support to users;
6. Software components and tools, derived from SeaDataNet, and locally installed for supporting the discovery and delivery services of the Black Sea SCENE V1 infrastructure.

The public access to meta-databases for Black Sea Scientists, Publications, Socio-economic data, EDMED, EDMERP, EDMO and CSR is arranged via central services, that are operated by MARIS, MSU and RIHMI-WDC. As described under WP4 and WP5 these central services have been upgraded in the reporting period and are now at V1 level. Furthermore all partners have been working on upgrading existing entries for these directories to V1 level and generating new entries. So these services have become operational as part of WP8.

The central Black Sea Common Data Index (CDI) service has also been upgraded by MARIS during the project to V1 level as part of WP4/5, while Black Sea Data Centres have been active in upgrading their existing CDI entries to V1 level and generating new entries as part of WP4. Also these Data Centres have undertaken local system activities to install and configure SeaDataNet components (see point 6 above) to become fully connected. These activities have been undertaken as part of WP4 and 5.

I) Highlight clearly significant results;

It was planned that all 41 Black Sea Data holding partners should become fully connected and provide

It was planned that all 41 Black Sea Data holding partners should become fully connected and provide operational CDI and data access services around Month 24.

All partners should have followed the same steps:
- Create CDI test files for first test and import in test database
- Install the Download Manager on Internet server
- Convert local files or database data to ODV
- Supply CDI production files
- Load all ODV files to DM and make system operational

The aim was that the data centres in the UBSS project would form a distributed network of data centres responsible for the management and delivery of their own data sets in the agreed exchange formats. In order to support the relevant infrastructure at each of the data centres each partner will receive a contribution from the project towards the costs of providing and maintaining these services.

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adapting SeaDataNet tools and services for UBSS services, for instructing UBSS partners in the formats, the application of tools, and how to connect to the UBSS infrastructure. Thereafter a considerable project period has been required by UBSS partners for producing metadata and data entries in the agreed formats and for installing and configuring their connection to the operational UBSS infrastructure. The majority of UBSS data centres is now operational with its WP8 services and thus eligible for claiming WP8 funds. As a rule it was agreed that partners should have provided operational access to their data sets via the UBSS CDI Data Discovery and Access service during at least a full year (running from 1st January 2011 to end of the project) to be eligible for a full budget claim. Each day less on the target period implicates a withholding of the claimable budget of 1/365 * the WP8 budget. Partners already fully operational before 1st January 2011 can claim WP8 costs fully.

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Via the CDI V1 online shopping mechanism users can get access to the associated data sets in ODV format that are managed at the data centres themselves. These Data Centres are now providing operational CDI and data access services as part of the WP8 services. This concerns ca. 158.000 data set entries so far.

A table in the Appendix gives an overview of the connected partner's installations:

3.9 Achievements WP9: Determining the quality of all datasets & harmonizing their delivery formats (Deliverables D9.1 and D9.2)

Objectives:
• To investigate and establish the scientific data quality of data sets, that are managed by the Black Sea partners, following a common standard
• To ensure that the data sets can be delivered with standard data formats and using common vocabularies

The Black Sea partners manage a large volume of data sets for a multitude of disciplines with data sets dating back several decades. This Joint Research Activity aimed at a fundamental review and evaluation of the quality of these data sets, which will require scientific knowledge of parameters and regional processes. The scientific data quality of each data set has been established, following a common standard. Therefore all data sets underwent quality control, adopting common quality control procedures for types of data.

The quality control has been done both by automatic checks and visual inspection to ensure consistency. Also various cross checks and plots were undertaken to evaluate the spatial distribution and variability of

the data sets. This way the scientific quality of each data set has been assessed and indicated with a quality flag from a standard scale.

This included, for example, checks on the accompanying information/metadata (including description of parameters and their units), automatic range checking of each parameter, visual inspection of the time series (e.g. time series plot, histograms, current vector scatter plot, progressive vector diagram, etc.), harmonic analysis (where appropriate), flagging spikes and suspicious data (or correct the data after consultation with the data supplier), check for fouling problems, check against other data collected at the same site/nearby sites and climatology, check corrections/calibrations applied, and check latitude/longitude not on land.

Sufficient documentation has been compiled to accompany each data series so as to ensure that the data are adequately qualified and may therefore be used with confidence by a secondary user. Such documentation is stored alongside the data, and where applicable, covers instrument and mooring details, data sampling/processing and a report on data quality. This information provided major input for the compilation of the metadata, as required for the Common Data Index (CDI) meta-database (see WP4).

The screening and documenting of the quality of all data sets was a large and challenging activity for all Black Sea partners that are managing data sets. It is absolutely essential to ensure that the Black Sea SCENE infrastructure will contain a high quality, harmonized base of data sets. This will ensure a much better basis for developing of environmental policy development and strategies (quality status report of the Black Sea), decision making and administration of the Black Sea ecosystem.

It should be noted that part of the QA activities were already foreseen in the other UBSS activities, where partners had to prepare EDMED and CDI metadata descriptions for their data sets and had to convert their data sets to the standard ODV4 format e.g. using the NEMO software. The latter will enable partner to analyze and visualize their data sets with the ODV analysis software that will give more insight in the actual data quality.

I) A summary of progress towards objectives and details for each task;

The DQC activities were focused on 4 types of data:
• physical marine data
• marine biological data
• marine pollution data
• marine biodiversity data

The methodology agreed for WP9 included that a DQC manual has been prepared for each of these 4 data-types with selected experts and based upon international practices. All relevant Black Sea data holders participated in thematic workshops (by type of data) for validating their datasets, following tools and procedures recommended in the DQC manuals. The goal of the thematic workshops was to achieve an overall insight in the quality of the Black Sea data sets, that partners manage and to achieve data sets, that have been validated and quality controlled in a comparable way. The SDN quality flags has been included in the validated datasets.

The activities of WP9 resulted in:
• Guidelines about the DQC and formatting methodology
• Harmonized and quality controlled data sets of the Black Sea partners

II) Highlight clearly significant results;

Overall achievements

3 guidelines for the DQC for the agreed parameters:
• Deliverable 9-1-2: Data Quality Control for physical oceanography datasets
• Deliverable 9-1-1: Data Quality Control for Marine Biodiversity
• Deliverable 9-1-3: Quality Control Of Biological Data – Phytoplankton

Moreover a first draft was prepared of Data Quality Control and Chemical Oceanographic Data Collections

• Implementation of the guidelines for the DQC for the agreed parameters using the recommended tools were carried out through dedicated training workshops.

• All the available data sets for the agree parameters screened and reformatted, including DQC

Within WP9 the following achievements/results were realized

• Establishment of expert groups for DQC: identified the types of parameters: physical, biological, chemistry, pollution and biodiversity.
• Application of SeaDataNet tools used: NEMO, ODV 4, DIVA
• Organized expert meetings for biological data held in Nov 2009, May and October 2010 to finalize the Biological DQC guideline
• Finalized versions for the DQC guideline for the 3 data types

• Finalized versions for the DQC guideline for the 3 data types
• Use of the DQC guidelines prepared for Data Quality Assessment of partner's data
• EMODNET chemical QC procedures adopted, particularly for the non-classical chemical data.
• UBSS partners converted their data sets to the standard ODV4 format using the NEMO and Med2MedSDN tools software.
• ODV express training for DQC to the partners dealing with the UBSS biological QC, April 2011.
• Conversion of data files checked for consistence with the ODV SDN spreadsheet, implementing missing values.
• Conversion of non-classical data to ODV SDN format.
• Conversion of defined biological parameters (total abundance for phytoplankton, zooplankton and benthos) as discussed in April 2011 to ODV format.
• 1sttraining workshop for physical data – Sevastopol, June 2010, tools: ODV, MHI, QC-DAMAR.
• DQC training workshop for physical, chemical and biological data, April 2011.
• GE-BICH/IODE meeting January 2011
• Quality Control Standards: SeaDataNet quality control flags based on the prepared guidelines

3.10 Achievements WP10: Developing new data visualization services (Deliverables D10.1 and D10.2)

Objectives:
• To develop new, innovative data visualisation services

The development of WP10 was led by partner MSU. WP10 introduced the use of OGC services such as WMS, WFS and WCS in the virtual Up-grade Black Sea SCENE data & information infrastructure. WP10 has a narrow relation with WP5.

I) A summary of progress towards objectives and details for each task;

MSU has been exploring the OGC standards and services and how to apply these for the Upgrade Black Sea SCENE infrastructure and its services. This resulted in a new technical set-up for operating OGC services. The core GIS functionality is provided by MMS - Minnesota Map Server, while the Open Layers Library has been used for programming new user interfaces.

II) Highlight clearly significant results;

These developments have resulted in adding the new OGC compliant mapping functionality (WMS and WFS) in the EDMO, EDMED and EDMERP directories. Moreover the OGC compliant mapping functionality has been included in the EDMED directory whereby the number of EDMED records in specific geographic regions is indicated by color differences.

The significant results of WP10 can best be shown by screen shots of the developed visualization services. These are included in the Appendix.

Also implemented as extra service in the Black Sea infrastructure is an overall catalogue of map services for serving out various maps of the Black Sea via a central portal (MSU). The map sources are operated by Black Sea partners (WMS services) such as IBSS, UKRSCES, SIORAS, SOI, etc.

by Black Sea partners (WMS services) such as IBSS, UKRSCES, SIORAS, SOI, etc.
Direct URL: http://subsite.blackseascene.net/blackseascene/atlas.html

Potential Impact:
4.1 Potential impact

Fostering improved cooperation between marine scientists from the Black Sea region, end-users and stakeholders involved in environmental protection and sustainable development of the Black Sea is one of the targets of the UBSS project.

Complementarity between participants
The participants from the Black Sea region involved within Up-grade Black Sea SCENE all have a common interest, namely: the protection, rehabilitation and sustainable development of the Black Sea ecosystem. Through Black Sea SCENE these participants have generated and executed a common, joint approach and strategy to solve problems regarding the Black Sea ecosystem. Moreover, through improvement of exchange, overview, availability and accessibility of quality controlled and comparable

data and information, an appropriate basis has been created for environmental/socio-economic research, policy development and decision making and raise of public awareness for taking remediation action to protect, rehabilitate and sustainable develop the Black Sea ecosystem.

Up-grade Black Sea SCENE activities were targeted on strengthening and extending close cooperation between the Black Sea marine environmental and socio-economic institutes, universities, NGO's and private companies, as well as with other European marine environmental infrastructures, aiming at additional (not competitive) and where possible joint activities to strengthen the scientific input for approaching and solving the Black Sea ecosystem problems.
Moreover, through involvement of the Black Sea Commission Secretariat as member/partner of the Black Sea SCENE infrastructure, closer and stronger cooperation between the secretariat and the Black Sea institutes has been realized. A large number of the Black Sea region partners are involved in the activities of the Black Sea Commission Secretariat as well in the Black Sea Environment Programme.

Through the Up-grade Black Sea SCENE project the participants are able to generate and execute a common, joint approach and strategy to solve problems regarding the Black Sea ecosystem. Moreover, through improvement of exchange, overview, availability and accessibility of quality controlled and comparable data and information, an appropriate basis has been created for environmental/socio-economic research, policy development and decision making and raise of public awareness for taking remediation action to protect, rehabilitate and sustainable develop the Black Sea ecosystem.

Within the Black Sea region in general there is not appropriate coordinated environmental and socio-economic policy, management and administration. The achievements of 6FP Black Sea SCENE and 7FP Up-grade Black Sea SCENE resulted in:

• Establishment and sustainable operation of a Black Sea Scientific Network, a scientific research infrastructure of Black Sea environmental and socio-economic (private and public) research institutes, universities, NGO's and EU member state environmental research institutes, to realize adequate exchange and coordination of know how, expertise and data and information.

exchange and coordination of know how, expertise and data and information.
• Establishment and sustainable operation of a (quality controlled) Black Sea virtual data and information infrastructure (network) with remotely accessible databases of the Black Sea data holding centres.
• Creation of a solid and broad basis (infrastructure) for all existing data utilization and exchange within the future process of marine waters typology. It can be considered as the first step in the implementation of the WFD: collection of all existing marine abiotic data for proper designation of water bodies.
• Strong improvement of exchange, coordination and tuning of the scientific knowledge and expertise within the Black Sea region.
• Uniform data quality control procedures and data quality assessments methods.
• Tuning with the European directives and guidelines regarding environmental monitoring, integrated coastal zone management and data-management.
• Strong improvement of awareness and exchange of environmental (monitoring) and socio-economic data and information.
• Strong improvement of availability of appropriate and up to date overviews of quality controlled environmental and socio-economic data & information; realization of (remote) accessibility of the databases of data-source holders within the Black Sea area through the Black Sea Data & Information

Infrastructure
• Reinforcement of trans-national cooperation within Europe, discussion about interrelated problems and decision making processes

4.2 Contribution to the coordination of high quality research
High quality research on the marine environment of the Black Sea by regional scientists and by international scientists are benefiting considerably from the Up-grade Black Sea SCENE service, because it will facilitate the identification and access to available data and information. This effect is enlarged because the Up-grade Black Sea SCENE service will support interoperability with other European data management systems, and be compliant to the INSPIRE directive. Because that will make the system and its contents fit for use with various existing applications, enable a combined access to marine data on a wide geographical basis for all seas in and around Europe, and will provide an invitation to the international science community to participate in research for the Black Sea.

Interoperability and harmonization has been achieved by adopting common protocols, standards and formats, and by making use of already existing tools for data & information management, and by developing Up-grade Black Sea SCENE in coordination with on-going major EU-funded projects in marine data and information management, namely SeaDataNet and Black Sea SCENE and Up-grade Black Sea SCENE:

• SeaDataNet (http://www.seadatanet.org/) funded for a 5-year period (in the meantime succeeded by SeaDataNet II for another 4 years) under the Research Infrastructures programme of the EU 6th framework programme, aims at developing an efficient distributed pan-European marine data management Infrastructure for managing large and diverse data sets. It is undertaken by National Oceanographic Data Centres (NODCs) from 35 countries riparian to European seas. SeaDataNet is also engaged in the development of Marine Core Services under the GMES programme and has active collaboration with the MerSea community, focussing on ocean forecasting services, with the EuroGOOS community of ocean monitoring agencies, and with the Geographical Information community in Europe via the Humboldt project, contributing to the development of an European Spatial Data Infrastructure

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• Black Sea SCENE (http://www.blackseascene.net) funded for a 3-year period under the Research Infrastructures programme of the EU 6th framework programme, aimed at establishing a Black Sea Scientific Network of 25 leading environmental and socio-economic research institutes, universities and NGO's from the countries around the Black Sea and to develop a virtual data and information infrastructure. Black Sea SCENE was developed in mutual tuning with SeaDataNet and can be considered as a "satellite" project of SeaDataNet.

• Up-grade Black Sea SCENE (http://www.blackseascene.net) being follow up of Black Sea SCENE with extension of the partnership with 26 organizations. Up-grade Black Sea SCENE, a 3 years funded project, finalized 31 December 2011.

Up-grade Black Sea SCENE has adopted the approach by SeaDataNet and applied their principles of achieving inter-operability between data management systems and of achieving largely improved overview and access to data for users and their applications. Moreover there has been made use of the SeaDataNet infrastructure modules. This is e.g. very relevant in the field of metadata, the so-called discovery services, where Up-grade Black Sea SCENE made direct use of the SeaDataNet entry and management systems.

This gives a seamless communication between the SeaDataNet infrastructure and the Up-grade Black Sea SCENE service, supporting combined and efficient use of all data sources, covered within the systems, to users.

European Impact in general

Up-grade Black Sea SCENE is encouraging international cooperation between Black Sea countries and EU member states.

Up-grade Black Sea SCENE adopted international standards to ensure compatibility and easy integration of the Up-grade Black Sea SCENE data sets in the regular practice of ocean and environmental research through tuning with SeaDataNet, Black Sea SCENE and IOC. This will invite European researchers to participate in Black Sea research.

Up-grade Black Sea SCENE confirmed and promoted the international role of community research: consortium of European partners, but in close cooperation with Eastern-European research institutes.

Up-grade Black Sea SCENE strengthened the European Research Area (ERA) by establishing a critical mass of environmental and governmental source holders of marine datasets, experts in data management and data services and marine environmental scientists, that together developed and exploit a data service, that is of added-value to the research community and other groups in society, for example, engineers and coastal managers. This way the Up-grade Black Sea SCENE project addressed priorities of the commission concerning strengthening the European Research Area, because Up-grade Black Sea SCENE contributed to a valuable expansion of the European marine infrastructure serving European researchers.

4.3 Strategic impact

Up-grade Black Sea SCENE provides support to the European research community by providing an overview and accessibility of quality controlled, quality comparable and interchangeable marine

overview and accessibility of quality controlled, quality comparable and interchangeable marine environmental and socio-economic Black Sea data by integrating scattered marine databases and collections. These types of information are fundamental to many researchers working within the framework of the global change and ecosystems sub-priority, as well as to sustainable development and management of European marine ecosystems.

Through introduction of the EU environmental (WFD, ICZM, data quality control and data quality assessment) and data-management (ISO 19115, IOC) directives and guidelines, the involved Black Sea partners have tuned their activities and hereto related data-products to the level of EU and international standards.

The results of Up-grade Black Sea SCENE will contribute necessary data & information logistics for research on the sustainable development and rehabilitation of the Black Sea ecosystem, and its sustainable policy making, management and administration. It will contribute to the objectives of the "Research Infrastructures" Action, and will ensure more effective use of European research and European research infrastructures. It will confirm the international role of community research and allow wider European and world wide use of institutional data holdings within the Black Sea region, fundamentally improving the consistency of the pan-European research fabric in marine environmental sciences.

Integrated provision of infrastructure related services to the research community at European level
The results and achievements of Up-grade Black Sea SCENE will provide an essential contribution to the "Structuring the European Research Area" by providing a stronger and more innovative facility for end-users needing access to scientific knowledge and expertise, environmental and socio-economic data and information collected by scientific Black Sea institutions.

Black Sea SCENE provides integrated provision of infrastructure related services to the research community at a European level. Up-grade Black Sea SCENE will ensure that European and world wide researchers have access to the data and information they need to conduct their research in the most time-efficient and cost-effective way.

Contribution to standards
By exploring and harmonizing with EU practices on data quality control, data quality assessment and data-management, the involved Black Sea partners have assured a common approach and quality control for future datasets. Within the framework of WP4 Black Sea country partners adopted and implemented internationally agreed protocols for cataloguing environmental and socio-economic datasets, by collecting meta-data and populating standardized meta-directories, and preparing exchange formats for the data sets, managed by regional partners. These metadata comprise EDMED, EDMERP, EDMO, EDIOS, CDI and ISO 19115.

Contribution to policy developments
Up-grade Black Sea SCENE strengthens the contribution to necessary data & information logistics for research on the sustainable development and rehabilitation of the Black Sea ecosystem, and its sustainable policy making, management and administration. Through involvement of the Black Sea Commission Secretariat a direct dialogue is guaranteed regarding their data and information needs and their requirements towards the functionality of the Black Sea data and information infrastructure.

4.4 Main dissemination activities

A total overview of the dissemination activities carried out are shown in the achievements of WP7.

The main dissemination activities are:

The main promotion and dissemination activities have been:

• Launch and operation of the Up-grade Black Sea SCENE web portal (www.blackseascene.net) providing free access to
- Project information, including description, objectives and results
- Up-grade Black Sea SCENE data & information Service
- Promotion in related websites like IODE Ocean Portal, SeaDataNet, Black Sea SCENE, etc.
- UBSS newsletters
- UBSS leaflets and posters
• Project leaflets and posters (in Russian and English language) distributed among potential stakeholders, national and international conferences and workshops
• 5 electronic newsletters are distributed to a large number of potential end-users and stakeholders. The newsletters can also be accessed by www.blackseascene.net.

• Articles in newspapers
• Activities of partner BENA (implementation of lectures in BENA conferences, articles in BENA journal JEPE, interviews with newspapers and press media)
• Activities of partner BSNN (articles in BSNN newsletters, presentations in national and international conferences)
• Activities of partner IO-BAS through CESUM (workshops, lectures and papers in conferences)
• Promotion and dissemination activities of the Black Sea country partners
• Black Sea Commission Secretariat: representing all Black Sea countries at all levels (governmental, scientific, industrial and society). BSCS has promoted and disseminated Up-grade Black Sea SCENE, its Network and Information Service through the thereto-available channels.
• The same approach has been applied by the Black Sea Commission Secretariat for the Black Sea countries.
• IOC global network: The IOC-IODE Project Office is partner in Up-grade Black Sea SCENE. One of his tasks within Up-grade Black Sea SCENE is dissemination of information on the Up-grade Black Sea SCENE facility to the scientific community worldwide, and the promotion of the Up-grade Black Sea SCENE Service to all potential users worldwide. Therefore IOC-IODE engaged its IOC global network. This is a worldwide service oriented network consisting of over 60 oceanographic data centres in as many countries. Also IODE disseminated information on Up-grade Black Sea SCENE to other IOC programmes such as Ocean Science, Global Ocean Observing System and the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM).
• SeaDataNet Infrastructure: Partner MARIS was charged with the task within Up-grade Black Sea SCENE to secure the compatibility and interoperability with the SeaDataNet Infrastructure. As such MARIS promoted and disseminated the Up-grade Black Sea SCENE development to members of the SeaDataNet (including Black Sea SCENE and Up-grade Black Sea SCENE) Infrastructure. The SeaDataNet Infrastructure is already covering all EU member States, Black Sea countries, North African and some Middle-East countries.
• Organisation of a highly successful Joint UBSS-Black Sea Commission Conference "Black Sea Outlook" in November 2011 in Odessa - Ukraine with more than 300 participants, 236 Abstracts, 50 oral presentations, and 146 posters. Presentations are available through the UBSS portal, the Black Sea

presentations, and 148 posters. Presentations are available through the UBSS portal, the Black Sea Commission Secretariate portal and via the Conference Book of Abstracts.

4.5 Exploitation of results

Within the Up-grade Black Sea SCENE consortium discussions took place and agreement made on making a long-term arrangement for the operation and maintenance of the service. This agreement, signed by all Black Sea data source holders resulted in the Exploitation Plan of Deliverable D7-2/D7-3. The sustainable operation model annex exploitation plan/agreement includes:

• Organization model for operation of the service;
• Common Data Policy, taking into account the present differences in data policy between the partners involved (marine science-government-industry). The Common Data Policy will be the basis for a sustainable operation model annex exploitation plan/agreement.
• Service Level Agreement (SLA) with terms of reference and duties of operating partners for a sustained continuation of the Up-grade Black Sea SCENE Service, including maintenance and up-dating procedures

• Terms of reference and partners agreement on options for partly exploiting Up-grade Black Sea SCENE:
- Technical maintenance and exploitation of services developed in framework of the UBSS project by the technical partners.
- Technical maintenance and exploitation of the local technical connections to the UBSS infrastructure by all data centres.
- Content maintenance to be carried out by all partners that contribute to the various directories.
- Exploitation conditions for the technical components.

List of Websites:
www.blackseascene.net
Contact: Dick M.A Schaap - MARIS (dick@maris.nl)

Related documents

📄 final1-226592-1114219-d1-3-appendix-to-final-report.pdf

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