NACE Code 7219 - Research and development for natural sciences and engineering; UNESCO Code 2510 - Biological oceanography, Chemical oceanography, Descriptive oceanography, Marine botanics, Marine Zoology, Sea bottom processes, Physical oceanography, Sea-air interactions, Marine Ices, Seaside and under-seaside processes, Marine underwater acoustics.

Operational Oceanography Area
- National Oceanographic and Environmental Data Center (RNOEDC)
- North-Western Atlantic, Mediterranean and Connecting Seas Tsunami Early Warning and Mitigation System (IOC)
Marine Environment Protection

- National Integrated Monitoring System (National Operator)
- National scientific responsibility for the implementation of MSFD
- Focal points for: Biodiversity, Pollution, Land-based Sources Pollution, ICZM, Fisheries and Other Marine Living Resources of the Black Sea Commission
- Focal points for: ACCOBAMS and Convention for Migratory Species (CMS)
- Residency and registered office of the Romanian National Committee of Oceanology/CNR-UNESCO since 2004
- Permanent Technical Secretariat of the National Coastal Zone Committee

Marine Living Resources and Fisheries Area

- Black Sea Fisheries Activity Center/Advisory Group for Environmental Aspects of Fisheries and other Marine Living Resources
- National scientific responsibilities for fisheries data collection and assessment of living resources
- National scientific responsible for the General Fisheries Commission for the Mediterranean/Working Group on the Black Sea of the GFCM
PlanCoast Project

NATIONAL INSTITUTE FOR MARINE RESEARCH AND DEVELOPMENT
“GRIGORE ANTIPA” - CONSTANTA

Romanian Coastal Zone - Monitoring Landmarks

Coastal tourist resorts

Romanian Coastal Zone - Protected Areas

Legend
- link_char
- landmarks
- Shoreline_2004
- managementzones
- lnm
- all_polygon

Legend
- touristic_resorts
- Buffer_zone
- managementzones
- managementzone
- lnm
- all_polygon

Legend
- s_fine_1fgh
- Line_poly
- imp_mand_waterway
- Grd_habit
- Zone*RajeleTuzla
- imp_polygon

0 10 20 40 Kilometers

0 12.5 25 50 Kilometers
Project PN 09-320302 Preparation of the informational support and database updating to sustain the elaboration of Integrated Maritime Spatial Planning Strategy
Project PN 09-320302

http://www.rmri.ro/Home/Publications.Recherches Marines.html
The PERSEUS oceanographic information management system provides user-friendly and fast access to physical, geochemical and biological data of the Mediterranean and Black Seas’ ecosystems. The database includes both data collected by PERSEUS (100 cruises or 8,000 CTD casts) and previous European projects such as SESAME, MyOcean, SeaDataNet and EMODnet. The database will contain data for almost 8,000 cruises by the end of the project in December 2015. About 98% of the data is freely available to any user after online registration. Other data can be obtained through negotiation with data providers.

The overall scientific objectives of PERSEUS are to identify the interacting patterns of natural and human-derived pressures on the Mediterranean and Black Seas, assess their impact on marine ecosystems and, using the objectives and principles of the Marine Strategy Framework Directive as a vehicle, to design an effective and innovative research governance framework based on sound scientific knowledge.
EU-FP7 Project PERSEUS
Policy oriented environmental research in the southern European Seas

New tools expected to contribute to the MSFD and to the implementation of science-based management towards achieving Good Environmental Status (GES). Two broad conceptual approaches: (i) establishing modelling systems in an “Ecosystem end to end” (E2E) perspective; and (ii) addressing the basin and the coastal scale using both the E2E models and upgraded remote sensing capabilities. These techniques will be used on a time span covering the first two decades of the 21st century, as suggested by MSFD,
Field work on pressures and processes

- Changes in environmental parameters and impacts on plankton
- Pelagic fish
- Food web interactions (including jellyfish)
- Mapping habitat types with emphasis on sea grass meadows
- Impact of coastal development and urbanization on shallow water habitats
- Demersal fish aggregations; analysing functional community changes
- Non-indigenous Species
- Pollution - Contaminants
- Pollution - Bioaccumulation
- Litter
- Noise

Impacts of environmental parameters on food web
- Primary productivity - planktonic biomass
- Non-indigenous Species
- Pollution - Contaminants

2012-2015

Figure 1: Predicted fish species distribution around the Balearic Islands in 2012, expressed as the number of pixels within each bin.

Figure 2: A map showing the distribution of a particular fish species in different regions.

Figure 3: A legend explaining the colors used in the maps.

- To support management of human activities and their effects in EU waters by providing tools for integrated MSFD and other environmental legislation in selected regions and based on existing sampling across various disciplines.

- To develop a new concept and decision-making tools for integrated environmental monitoring for the MSFD to support management of human activities and their effects in EU marine waters, based on existing sampling across various disciplines (physical, chemical, biological, etc) and scope the potential for joint programs (within and between Member States).
**Overall goal** is to support efforts to protect and restore the environmental quality and sustainability of the Black Sea.

**Additional specific objectives:**
- to improve availability and quality of chemical and biological data to provide for integrated assessments of the Black Sea state of environment, including pressures and impacts (in line with MSFD)
- to increase number and size of protected areas in the Black Sea as well as to increase their degree of protection

**Results:**
- Diagnostic Report II - designed to guide revision of national monitoring programs, as required by the MSFD, and improve the data reporting and DPSIRR assessments in the MISIS beneficiary countries (Bulgaria, Romania and Turkey).
- Overview of the marine monitoring programmes in Romania, Bulgaria and Turkey – basis for the actual revision of the monitoring programmes in all Black Sea states, scheduled for 2015-2016.
- Advance the harmonisation process - intercalibration exercises have been organised for nutrients, chlorophyll, contaminants, phytoplankton, zooplankton, zoobenthos.
- Joint survey on the Romanian-Bulgarian-Turkish waters (June 2013) - State of Environment of the Western Black Sea – coastal, shelf and open waters – taking into consideration the MSFD requirements
“MSFD Guiding Improvements in the Black Sea Integrated Monitoring System“, Project Nr. 07.020400/2012/616044/SUB/D2

- MISIS WebGIS application (http://smartatlas.misisproject.eu/smartatlas/) with data/information related to the MSFD was created

- **MPA Review** - review of the existing and planned protected areas in the Black Sea (Bulgaria, Romania, Turkey) with a special focus on possible deficiencies regarding law enforcement and implementation of management plans

- **Scientific Report of State of the Environment of the Stradzha – Igneada MPA**

- **Draft Management Plan** for the Stradzha – Igneada MPA

- **MISIS results connected with Maritime Spatial Planning**
  - Information for marine environmental status evaluation
  - Improved marine monitoring system to be integrated in the general activities undertake in Maritime Spatial Planning
  - Review of the existing and planned protected areas in the Black Sea (Bulgaria, Romania, Turkey) to be used in MPS implementations
“STRENGTHENING THE REGIONAL CAPACITY TO SUPPORT THE SUSTAINABLE MANAGEMENT OF THE BLACK SEA FISHERIES” (SRCSSMBSF)- 88

Cooperation between the Black Sea riparian countries to know and rationally manage the marine ecosystem and its resources, carrying out diagnostics of fish stocks status as well as advice on management strategies.

Specific Objectives

- Harmonization of methods and tools to assess the present state of fish stocks by scientific surveys, holistic models;
- Alignment of the common methods for sampling, processing and interpretation data from fisheries and stock assessment using analytic models;
- Awareness of the fishery organizations and decision–makers from national fisheries regarding the need to use in the management strategies of the advice from research and joint – regional stock assessment.

Contract Number 1.2.1.6570.88 MIS – ETC 303 2011-2013
“STRENGTHENING THE REGIONAL CAPACITY TO SUPPORT THE SUSTAINABLE MANAGEMENT OF THE BLACK SEA FISHERIES” (SRCSSMBSF)- 88

- Meetings of specialists in assessment from the Black Sea coastal countries
- Working visits and trainings of specialists
- Report on state of the Black Sea Fisheries
- Inventories of the national authorities, focal points, scientists and non-governmental organizations concerned with fisheries
- Awareness materials
Outputs and results

- National reports on methods for sampling, processing and interpretation data from fisheries and stock assessment using analytic models;
- A best-practice guideline for stock assessment using scientific surveys;
- Manual of protocols on methods used for assessing fish stocks in the Black Sea by analytic methods realised in English by Ukrainian partner YugNIRO translated in Bulgarian, Romanian, Turkish, and Ukrainian/Russian;
MareFrame seeks to remove barriers that currently prevent a more widespread use of an Ecosystem-based Approach to Fisheries Management (EAFM) by developing:

- Novel data based on new tools and technologies
- Ecosystem models and assessment methods based on indicators of Good Environmental Status (GES)

A Decision Support Framework (DSF) adapted to the needs of decision makers, managers, operators, and other stakeholders that will support the implementation of the new Common Fisheries Policy (CFP), Marine Strategy Framework Directive (MSFD) and Habitats Directive (HD)
MareFrame seeks to remove barriers that currently prevent a more widespread use of an Ecosystem-based Approach to Fisheries Management (EAFM) by developing:

- Novel data based on new tools and technologies
- Ecosystem models and assessment methods based on indicators of Good Environmental Status (GES)
- A Decision Support Framework (DSF) adapted to the needs of decision makers, managers, operators, and other stakeholders that will support the implementation of the new Common Fisheries Policy (CFP), Marine Strategy Framework Directive (MSFD) and Habitats Directive (HD)

7 CASE STUDIES

6 Ecosystem MODELS:
- GADGET
- Ecopath with Ecosim (EWE)
- FishSums
- Multi-species prod. models
- Size spectra
- Atlantis
Towards COast to COast NETworks of marine protected areas (from the shore to the high and deep sea), coupled with sea-based wind energy potential in other words...CoCoNet
Currents are the engines that guarantee the functioning of the ecosystems into the cells.

Our impacts change biodiversity and ecosystem functioning.

The history of the systems must be known: impacted systems are weaker.
The CoCoNet rationale

- MPAs are not enough: We need networks
- Global warming and other human impacts are changing our ecosystems radically
- We need to abandon combustion (that’s why OWF)
- Sustainable development means that Good Environmental Status is reached (and not only in MPAs)
- Biodiversity and Ecosystem Functioning are the pillars of GES

- **Descriptor 1.** Biodiversity is maintained
- **Descriptor 2.** Non-indigenous species do not adversely alter the ecosystem
- **Descriptor 3.** The population of commercial fish species is healthy
- **Descriptor 4.** Elements of food webs ensure long-term abundance and reproduction
- **Descriptor 5.** Eutrophication is minimised
- **Descriptor 6.** The sea floor integrity ensures functioning of the ecosystem
- **Descriptor 7.** Permanent alteration of hydrographical conditions does not adversely affect the ecosystem
- **Descriptor 8.** Concentrations of contaminants give no effects
- **Descriptor 9.** Contaminants in seafood are below safe levels
- **Descriptor 10.** Marine litter does not cause harm
- **Descriptor 11.** Introduction of energy (including underwater noise) does not adversely affect the ecosystem
The natural patterns and processes are being matched with human expectations in terms of economic development and current legislation at national level.

GYRES, EDDIES, FRONTS, UPWELLINGS, DOWNWELLINGS (THE CELLS OF ECOSYSTEM FUNCTIONING) ARE ALL CONDUCIVE TO THE ENHANCEMENT OF ECOSYSTEM FUNCTIONING AND ARE UNITS OF OBSERVATION AND CONSERVATION.
IMPACTS OF COCONET

From reductionistic to holistic approaches to understand the structure and function of ecosystems
Better management of the natural capital through networks of MPAs
Upgrade observation systems to cover biodiversity and ecosystem functioning (the pillars of GES)

- Assessing wind energy and the costs and benefits of OWF
- Build a coherent scientific community

The project aim is to establish a scientific and technological network for the implementation of an integrated informational system, to support the Integrated Coastal Zone Management activities, effective coastal ecosystem protection and conservation/rehabilitation of ecosystem in the Romanian Black Sea area.

- **Specific Objectives:**
  1. Development of an operational integrate informational system providing near-real/real time marine and coastal meteo-hydro-bio-geomorphologic information to increase the control capacity and awareness at regional scale;
  2. Provide baseline data and information to support management efforts to monitor and evaluate the marine coastal environment of Romanian waters;
  3. Provide information, assessments and forecasts of the coastal ecological state based on the remote and in situ coastal monitoring and Coastal-Marine Ecosystem-base Management Tools Network;
  4. Distribute the information, assessments and forecasts to relevant bodies and/or coastal stakeholders;
  5. Creation of a web-portal, as a innovative sustainable bridge for remote exchange and sharing of good practices among the environmental bodies.

---

**Objectives**

**Monitoring of special events**

- Baseline study for an integrated monitoring system extension: pollution sources and impact factor on the ecological state of the coastal system – environmental assessment of the complex marine and coastal systems/ ecological processes interactions specific to NW Black Sea Basin;
- Assessment of the coastal ecologic vulnerability under the actual global changes;
- Design and implementation of an integrated operational monitoring network for the marine/coastal hydrological, biological and ecological parameters;
- Harmonization of methods for marine and coastal hydro-bio-geodynamics data processing and data management;
- Informational system for continuous operational integrated coastal zone monitoring and management based on the ecosystem dynamic;
- Identification of the technical solutions and other possibilities of coastal rehabilitation, together with selection of measures for environmental quality which will be enforced as good practices to stakeholders/coastal communities;
- Development of manuals and training materials for the specific and general issues in the coastal area;
- Joint events by directions – socio-economics and Press-conferences for publicity and information conducted, together with Information materials for the implemented events made and disseminated to the public/coastal stakeholders/educational bodies on web PORTAL.

Ecological impacts of rapid geomorphologica phenomena
**Results and Outputs**

Implementation of GIS/RS technologies on marine/coastal processes interdependency in relations with elements of rapid changes enforced by human interventions/activities as well climatic ones:

The starting point in CZ planning and its sustainable management based on new technologies implementation, adapted to particular conditions, within shore sector of Romanian Black Sea.

**Musura sand spit**

**Monitoring of special events**

- Data collections, processing and analysis;
- Data Management through QA/QC procedures within data and information flux;
- Risk assessment and shore/ecosystem response to the actions of natural and anthropogenous factors;
- Natural Risk/sediment management on specific sectors: complex approach.

Conclusions

The project rationale: the need for implementation of the integrated information system having as purpose the development of the networking and cooperation within Romanian maritime/coastal zone on long-term aspects.

The creation of innovative bridge for remote exchange is based on the foreseen for extension and functioning united web-based informational environment/portal. This virtual system/network will be the linking section between the coastal communities and regional natural/socio economics factors. The informational environment will allow the inclusion of unlimited number of representatives of the local communities/environmental state agencies. The developing Web-data Portal will be an additional support, helping the access and usage.

The preliminary results of the project shown on the gradually extended web-site of the project, and its annual development - counted by index list of performance related to:

- Ecological Vulnerability Assessment by in situ measurements/experiments
- Sampling/measurements/investigation methodologies optimizations
- Optimizations of the operational management techniques in extreme based on web-GIS system
- Improvements/Recommendations for sustainable practices for ICZM, environmental quality conservation, MSP and coastal planning/risk mitigation
Much Good Luck
for MARSPLAN BS Project