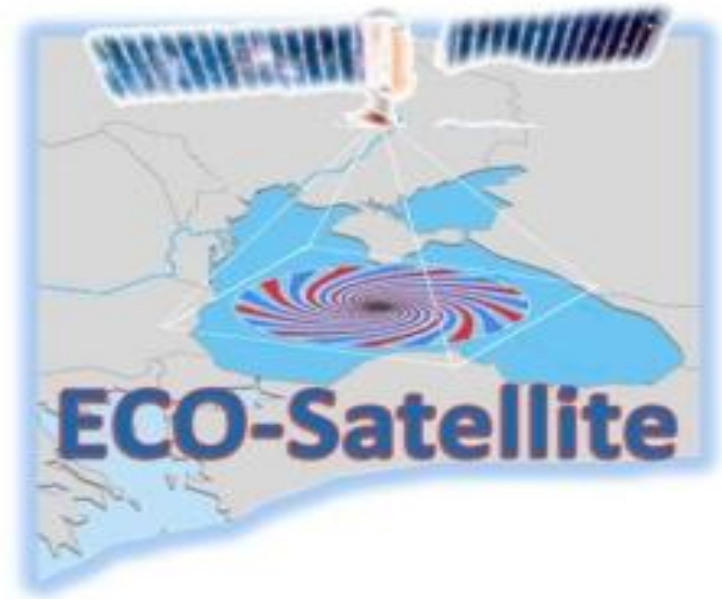

ECO-SATELLITE

September 2013

DEVELOPMENT OF A COMMON INTRAREGIONALMONITORING SYSTEM FOR THE ENVIRONMENTAL PROTECTION AND PRESERVATION OF THE BLACK SEA

The ECO-Satellite environmental monitoring system

The ECO-Satellite environmental monitoring system was developed in the frame of the homonymous project by scientists specialized in different disciplines.

Although the system is a result of multidisciplinary collaboration, significant effort was made in order to provide the end-users with a system that is simple to use, provides useful and straightforward decision support tasks and appeals to a broad range of users (for example scientists, policy makers, civil servants, etc.). This integrated multi-level system is based on the technological assets provided by satellite Earth observation data and Geo-Informatics innovative tools and facilities, as well as on the development of a unified, easy to update geodatabase including a wide range of appropriately selected environmental parameters.

The system is designed in a way that is easily expandable and adaptable for environmental management in local, regional, national and trans-national level and as such it will increase the capacity of decision makers who are related to Black Sea environmental policy.

Environmental Data

The ECO-Satellite system contains multiple layers of information related to the environment for the two test areas of the ECO-Satellite project, i.e., the Danube Delta (Romania and Ukraine) and the Axios-Loudias-Aliakmon Delta (Greece). Both current and historical data have been included from terrestrial and satellite sources. The environmental data include, among others:

- biological parameters (e.g., macrophytes, phytoplankton, fish species, zooplankton, etc.),
- land cover and habitats maps,
- in-situ vegetation identification information,
- mean sea level models,
- location of mussel farms,

The ECO-SATELLITE project is co-financed by 90% from the **"Black Sea Basin Joint Operational Programme"** and by 10% from national resources. The total budget of the project is 650.000,00. The Grant amount is 585.000,00 €.

The "Black Sea Basin Joint Operational Programme" is co-Financed from the **European Union** through the European Neighborhood and Partnership Instrument and the Instrument for Pre-Accession Assistance.

More information about the Black Sea Basin Joint Operational Programme could be found at: http://www.blacksea-cbc.net

- protected areas (e.g., Natura 2000, etc.),
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- physico-chemical parameters (e.g., dissolved oxygen, temperature, etc.),
- water quality information from permanent stations,
- tide gauge stations data and
- terrain and bathymetry models.

Data Analysis (decision support tasks)

All the aforementioned information may be viewed and analyzed in various ways (charts, queries, table views, vector and raster entities) through the ECO-Satellite system by using standard Geographical Information System (GIS) tools as well as assessed through a specially designed Decision Support component, which includes 13 decision support tasks that are listed next:

1) Evaluation of the ecological status of a water body
2) Examination of water quality of freshwater body in relation to the support of fish life
3) Examination of water quality of saltwater body in relation to the growth and reproduction of shellfish
4) Examination of quality of water for bathing
5) Examination of water quality of a surface body in relation to specific pollutants and physiochemical parameters
6) Comparison of measured values at environmental stations against user-defined threshold values
7) Evaluation of water quality based on the trophic index
8) Evaluation of the water quality and trophic conditions using phytoplankton indexes
9) Evaluation of the water quality and trophic conditions using zooplankton indexes
10) Assessment of the Ecological Class using macrophyte's morphofunctional indexes
11) Evaluation of the water quality and trophic conditions using meiobenthos indexes

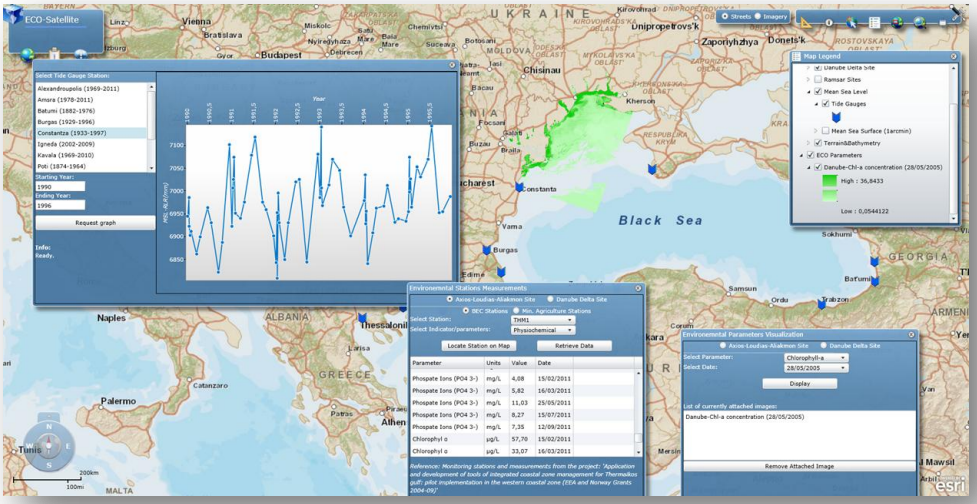

Image 1: Data representation capabilities of the ECO-Satellite system

12) Evaluation of the water quality and trophic conditions using macrozoobenthos indexes
13) Evaluation of water quality from mussel settlements

Legal Framework

The design of the system and especially of the Decision Support component was based on a common framework formed by the following legislative documents:

- Ramsar Convention, the Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora)
- Water Framework Directive (Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy)
- Marine Strategy Framework Directive (Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy)
- Council Directive on the quality of fresh waters needing protection or improvement in order to support fish life (Freshwater Fish Directive) – Council Directive 78
- Council Directive on the quality of water in estuaries and other areas were shellfish grow and reproduce (Shellfish Waters Directive), repealed by the codified Directive on the quality required of shellfish

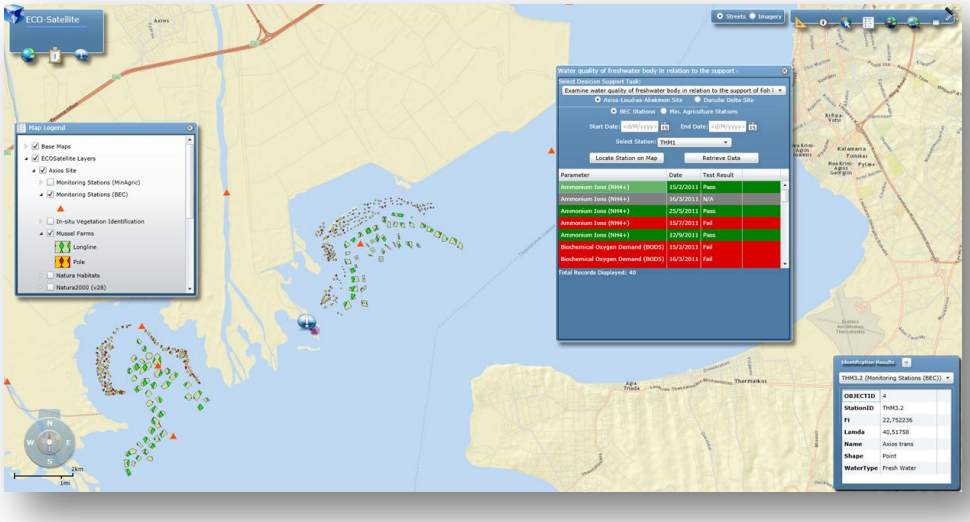

Image 2: ECO-Satellite Decision Support component— Examining the water quality in support of fish life using a Pass/Fail analysis for a specific environmental monitoring station

waters - Council Directive 79/923/EEC and Directive 2006/113/EC/659/EEC
- Council Directive concerning the quality of bathing water (Bathing Water Directive) - Council Directive 76/160/EEC
- Directive establishing a framework for Community action in the field of water policy (Water Framework Directive) - Directive 2000/60/EC

How to get access

The ECO-Satellite Environmental Monitoring System may be accessed online by clicking on the "WebGIS" button found in the ECO-Satellite Project Website (http://www.eco-satellite.eu). Prior to using the system, it is necessary for the end-user to have an account in it. A username and password may be provided upon request by contacting the lead partner of the ECO-Satellite project (k.michailidis@rdfcm.gr).

Additionally, a web-browser that supports the Microsoft Silverlight plugin is necessary. Therefore prior to using the system end-users should install Microsoft Silverlight (at least version 4), while Microsoft Internet Explorer is the recommended browser. There are no other software requirements for using the ECO-Satellite system. On the other hand and in terms of hardware, any modern computer may be used.

Training Material

In order to assist end-users to make better use of the system and get easily acquainted with it, the ECO-Satellite project partners have prepared some accompanying training material, which may be found online on the ECO-Satellite project website (http://www.eco-satellite.eu).

The training material focuses on methods and applications of Geographical Information Systems (GIS), Remote Sensing, Altimetry and Bathymetry, Environmental Monitoring and Water Quality Monitoring from in-situ measurements and telemetric stations and Water Quality Assessment as well as on the use of the ECO-Satellite system. The use of the system is demonstrated through video presentations that provide step by step instructions on exploiting the available functionality and tasks.

All the above mentioned training material was used in the Training Seminars on the Use of the ECO-Satellite system that took place in Varna during the 5th and 6th of June of 2013 with 49 participants from 4 different countries. The seminar participants had the opportunity to learn about the capabilities of the ECO-Satellite system and practice on its use as well as provide valuable feedback to the project team.

ECO-SATELLITE WEBSITE

For further information, you can visit the ECO-SATELLITE website on: http://www.eco-satellite.eu/

Visitors are recommended to register in order to have access to training material via the e-learning platform.

Up Coming Events

The next event of the ECO-SATELLITE project is the **final (4th) technical meeting** of the partners that will take place in Thessaloniki on the 12th and 13th of September 2013.

The responsible partner for the organisation of the meeting is the Decentralized Administration of Macedonia and Thrace (DAMT) in Greece. All partners shall attend the meeting.

MORE INFORMATION

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