



Newsletter I March 2010



Introduction

The Black Sea Catchment is internationally known as an area of ecologically unsustainable development and inadequate resource management. This has led to severe environmental, social and economic problems.

The **EnviroGRIDS @ Black Sea catchment project** addresses these issues by bringing together several emerging information technologies that are revolutionizing the way we are able to observe our planet.

The project is developing a system that **aims to assist governments and communities to track and respond to environmental trends in the Black Sea catchment.**

EnviroGRIDS is building a **data-driven view of Black Sea catchment** that feeds into models and scenarios to explore its past, present and future. The outputs of the projects will provide spatially

explicit data and knowledge to nourish and promote the **Group on Earth Observation System of Systems (GEOSS)**.

EnviroGRIDS will particularly target the needs of the **Black Sea Commission (BSC)** and the **International Commission for the Protection of the Danube River (ICPDR)** in order to help bridging the gap between science and policy.

The project aims at:

- **Building the capacity of scientists** to assemble such a GEOSS system in the Black Sea Catchment;
- **The capacity of decision-makers to use it;**
- **And the capacity of the general public to understand the important environmental, social and economic issues** at stake.

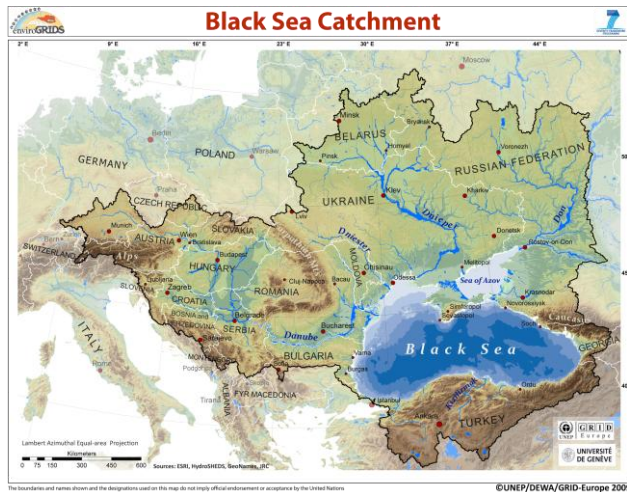
EnviroGRIDS has successfully started off in April 2009. During the first six months, there has been a substantial amount of work achieved. In the coming month of May 2010, the first general assembly will take place in Bucharest and Tulcea (Romania).

The Black Sea catchment

The Black Sea is an inland sea between Europe and Asia. The water catchment area of the Black Sea stands at 2.2 million km²; covering 23 countries and is inhabited by more than 160 million people.

The catchment represents a very important water source for the region. It is essential for supporting trade, industry and sustaining life.





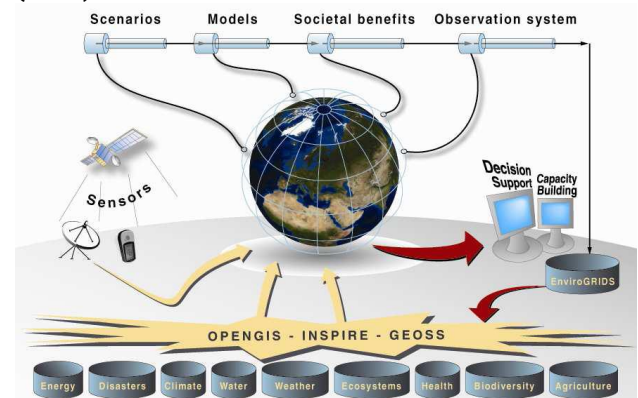
However, in recent times it has been adversely affected by human activity, not least from developments on its tributary rivers. The onset of climate change suggests that trends are set to continue, and with this background in mind, a new study is seeking to harness technology to improve the management of this vital resource.

GEOSS

GEOSS is an international voluntary effort, supported by the GEO secretariat, that aims to connect geospatial and Earth Observations infrastructures and acting as a gateway between producers of environmental data and the end users, with the aim of enhancing the relevance of Earth observations and to offer public access to comprehensive, near-real time data, information and analyses on the environment. EnviroGRIDS is now an official task in the GEOSS work plan.

To enable a thorough approach in the collection of data and to ensure proper usage of the collected data, the work that needs to get done has been divided among several work packages.

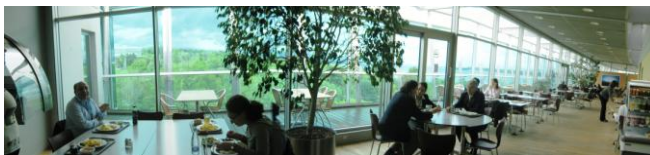
These range from working on the Spatial Data Infrastructure (WP2), creating spatially explicit scenarios on climate change, demography and land use (WP3), modeling the hydrology of the catchment with the SWAT package (WP4), to explore the impact of expected changes on so-called societal benefit areas through pilot studies (WP5) to actively convey the gained knowledge to the public and decisions makers (WP6) and finally to disseminate the activities of the project (WP7).



WP1: Management (N. Ray)

The KICKOFF in Geneva was an intense moment for all partners with many presentations and discussions and interesting visits to the International Environmental House, the World Meteorological Organization, the secretariat of the Group on Earth Observation, the UN Headquarter, the Botanical Garden and CERN super computer center and the LHCb experiments.





The management team also prepared the project WEBSITE that is being used to present the project and its partners, the news, events and deliverables (www.envirogrids.net). The EMDESK web based system was also acquired by UNIGE to manage the entire consortium.

WP2: Grid-enabled SDI (G. Giuliani)

A GAP ANALYSIS on Earth Observation Systems and data sets is being finalized by BSC and ICPDR partners, with a deliverable planned for May 2010.

An exhaustive and pedagogical deliverable on geospatial INTEROPERABILITY standards, tools and approach was produced as a guideline for the project partners after month 6 and is available on the project website. Similar deliverables were also



produced on SENSORS, REMOTE SENSING and GRID technologies.

A web interface to search and write metadata of GIS layers according to the INSPIRE European standard was developed by ARXIT.

A meeting was held in Geneva in January 2010 with all the partners involved in SDI and Grid technology, and the coupling of both.

Meanwhile, UNIGE became an official member of the Open GIS Consortium (OGC), which is encouraging other partners of the enviroGRIDS project to become members as well.

Finally, a DATA POLICY was prepared for the project that will be discussed and indorsed during the first annual assembly.

WP3: Scenarios (E. Ivanov)

A three day meeting was held in Geneva in December 2009 with the task-leading partners involved in building scenarios according to different socio-economic development paths that will be established per regions sharing similar political and economical situation at present. S. Goyette from UNIGE is exploring methods to downscale the results of Regional Climate Models to extrapolate into the future the temperature and rainfall time series observed from weather stations.

H. Dao from UNIGE is developing methods to downscale DEMOGRAPHIC data at a hectare resolution from national census data.





A. Barbosa from UAB is exploring ways of modeling LAND COVER changes into the future.

E. Ivanov is exploring techniques for linking climate, demography and land-cover in a loose modeling framework able to assess relations between them and related key environmental factors.

A range of spatial and statistical time-series data are being collected to support present situation assessment as well as back-casting and fore-casting of land-use pressures and environmental responses in groups of countries of the Black Sea Basin.

DOWNSCALING appears therefore to be the key approach to bring the present and future data at the right scale in order to be able to use it either as input into hydrological models or as necessary variables to assess population vulnerability.

WP4: SWAT (K. Abbaspour)

The necessary DATA to run the SWAT model over the entire catchment of the Black Sea is being gathered. GIS layers for elevation (SRTM), land cover (GlobCover and Corine) and Soils (FAO) have been prepared. Meteorological and hydrological data are still very difficult to access and all partners from the consortium should help in this process. A comparison of SWAT outputs with the output of the MONERIS model presently used by ICPDR is being prepared.

A first SWAT MODEL was developed by E. Rouholanejad with the available data. The code of SWAT is under GRIDIFICATION by the IHE team while CERN and EAWAG are looking at gridifying the SWAT-CUP application for the calibration and uncertainty analysis of SWAT. A first test by L.



Kokoszkieicz from CERN to run a SWAT model over the EGEE infrastructure was successful.

A SWAT WORKSHOP was organized in Delft by A. van Griensven in September 2009 and was attended by several enviroGRIDS partners.



WP5: Societal benefit areas (S. Sözen)

As most of the activities in this work package are starting on the second year, S. Sözen asked each partners to clarify the objectives and methods of their task in a new ROAD MAP for this work package. Health data of the last 10 years including death cases from water related illnesses are being gathered. A new approach combining downscaling of key input variables (population, climate, land cover, hydrology) with upscaling of indicators is also being developed by UNIGE to assess the sustainability and vulnerability of the Black Sea catchment and its sub-catchments.

WP6: Observation systems (D. Gorgan)

The BSC-OS Web Portal is being developed to address the specific needs of DATA PROVIDERS, SPECIALISTS, DECISION MAKERS, and CITIZENS. CCSS is further developing its solution to support data management through Uniform Resource Management platform, and CRS4





explores the outputs of SWAT hydrological models by the Collaborative Working Environment. A meeting was held in Cluj-Napoca in October 2009 to discuss some hydrological case studies concerning SOMES River and DANUBE DELTA. The IHE team is working on developing the hydrological models and UTC has explored solutions for the GRID based execution of the HEC-HMS and SWAT models.

UTC and UNIGE became members of g-OWS working group, and started to develop solutions for interoperability between the GEOSPATIAL and GRID infrastructures.

The aim will be to get the involvement of citizens in long term river basin planning and to give access to near real time environmental data and information through attractive and simplified interfaces. Another aim is to build a network of national GEO nodes.

WP7: Dissemination (J. Cools)

The first task of the work package that is lead by SORESMA was to prepare FACTSHEETS in 14 languages, available from the project website. A nice MOUSE PAD presenting the map of the Black Sea catchment was also produced and will be distributed to promote the ideas of the project.

This work package also financed the preparation of a fine vulgarization paper in color in the INTERNATIONAL INNOVATIONS journal aiming at presenting the general objectives of the project to a wide audience.

Finally, this work package was in charge of organizing the first series of CAPACITY BUILDING



WORKSHOPS that will take place in Bucharest in May 2010 (more details on the last page).

Public Deliverables (months 1-12) (available from www.envirogrids.net)

- D2.1 Interoperability guideline
- D2.2 Data storage guideline
- D2.3 Sensor data use and integration guideline
- D2.4 Remote sensing data use and integration guideline
- D7.1 Project flyer replaced by an article in Scientific Innovations
- D7.2 This newsletter and a first policy letter on SDI and GEOSS

Publications

- Bektaş Balçık F. et al. 2009 - Designing an Observation and Assessment System Supporting Sustainable Development in Black Sea Catchment Area. National GIS Congress, İzmir Turkey (in Turkish).
- Giuliani G. et al. submitted - Grid-enabled Spatial Data Infrastructure for environmental sciences: challenges and promise. International Journal of Grid Computing and eScience
- Giuliani G. et al. submitted - Sharing environmental data through GEOSS. International Journal of Applied Geospatial Research
- Kuzin S.A. et al. 2009 - Application of grid-enabled data storage and computing infrastructure for tackling environmental problems of the Black Sea basin. Proceedings of the Conference Environmental Safety: Problems and Solutions - Alushta, Crimea, Ukraine
- Lecca G. et al. submitted - Grid technology for hydrological applications. Journal of Hydrology
- Lehmann A. et al. 2009 - Connecting the EnviroGRIDS Black Sea Catchment Observation System to ICZM. Proceedings Medcoast 09, Sochi, Russian Federation.
- Lehmann A. et al. 2009 - The Black Sea Catchment Observation System built on a grid-enabled Spatial Data Infrastructure, in "INSPIRE, GMES and GEOSS Activities, Methods and Tools towards a Single





Information Space in Europe for the Environment" K. Charvat et al. eds.

Medinets V. et al. 2009. Investigations of Dnister basin in framework of FP7 enviroGRIDS project. Proceedings of the Conference Transboundary river basin management and International cooperation for healthy Dnister, Odessa, Ukraine

A final word from the coordination team

From the point of view of the coordination team, the project had a very dynamic start. While it remains a serious challenge to launch such a large integrative project, it is even a bigger challenge to coordinate the action of about 100 researchers across 27 organizations and 15 countries.

The project manager Nicolas Ray and the coordinator Anthony Lehmann had several occasions to visit directly the different partners to get a better understanding of their work and present capacities. Their curiosity took them for instance on a very interesting trip from Georgia, through Turkey and into Ukraine in June 2009, visiting seven partners (Geographic, BSC, IBSS, AZBOS, USRIEP, TNU, ONU). This trip was a very intense human and scientific experience thanks to the great organization of each visited partners.

While celebrating the first year of the enviroGRIDS project, the coordination team wishes to thank all the partners for their great contributions to this very challenging project. The second year will be essential for our success. We expect therefore even more involvement and great motivation from all partners in 2010.

Acknowledgements

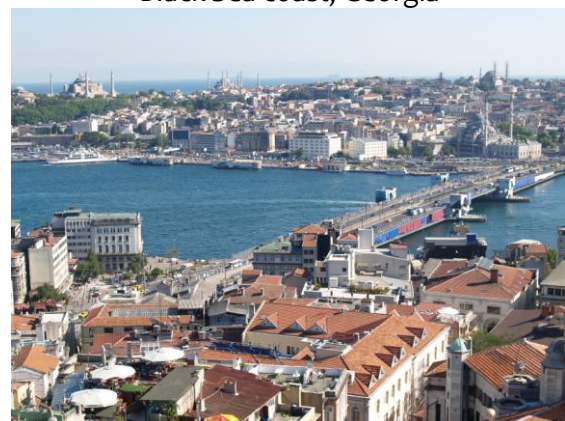
The European Commission, project under call FP7-ENV-2008-1, grant agreement No. 226740.



Geographic, Tbilissi, Georgia

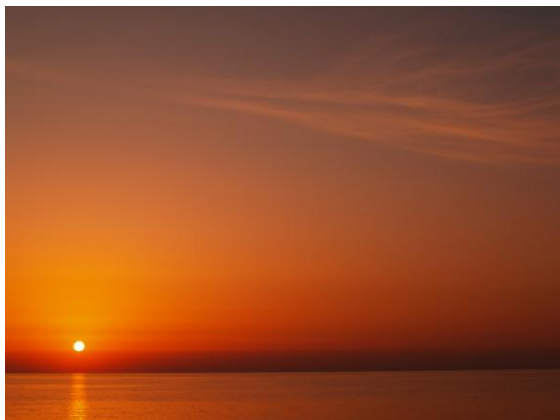


Black Sea coast, Georgia



Istanbul, Turkey





Black Sea between Istanbul and Sevastopol



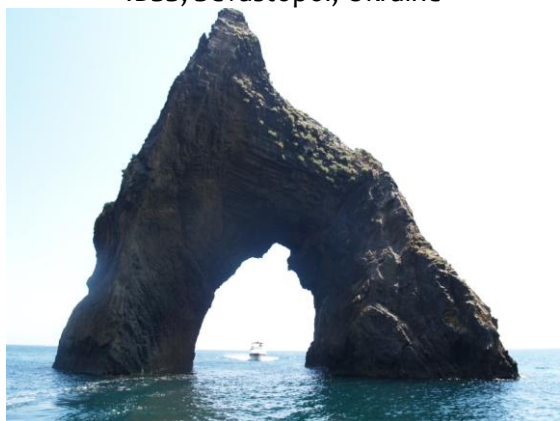
TNU, Simferopol, Ukraine



IBSS, Sevastopol, Ukraine



AZBOS, Melitopol, Ukraine



Karadag Reserve, Ukraine



ONU, Odessa, Ukraine

Photos by Nicolas Ray





Three Workshops in May 2010

From the 3rd until the 7th of May three workshops will be organized and the annual project consortium meeting will be held. The workshops are open for people interested in GEOSS.

Interested people can register before April 16th 2010. More information and registration at the conference website: www.envirogrids.net. Or contact the conference secretariat via envirogrids@soresma.be. Registration is free of charge.

Monday, 3rd of May 2010, 8:30 – 17:00, University of Agronomical Sciences, 59, Bd. Marasti, Bucharest, Romania: “Bringing GEOSS services into practice” aims at teaching participants how to install, configure and deploy a set of open source software that allows them to publish and share their data and metadata through GEOSS using OGC web services & ISO standards.

The workshop will cover interoperability, hands-on experience with web portals, information access, open source software and data sharing through web services and GEOSS registries.

Grant application:

We can offer a grant of maximum 500 euro (limited to 10 applicants). To apply for a grant you have to send in a motivation letter and a short CV to the conference secretariat. Forms and instructions at www.envirogrids.net. Be aware that application forms are due at the 1st of April 2010.

Tuesday, 4th of May 2010, 8:30 – 11:30, Aula of the Romanian Academy Library, 125, Calea Victoriei, Bucharest, Romania: “GEOSS for decision makers in the Black Sea area” will provide a high level overview of GEOSS and data interoperability as they relate to the needs of senior government officials and decision makers in the Black Sea area.

3-4 of May, University of Agronomical Sciences 59, Bd. Marasti, Bucharest, Romania: “GEPIC Training” (internal workshop). The workshop will focus on how to effectively use GEPIC.

The enviroGRIDS partners:

