



PARTNER SEARCH FORM

DATE: 17.12.2010
PROJECT INFORMATION
TITLE: Integrated Framework for the protection of water resources and coastal zones in the Black Sea basin ACRONYM:
<p>SUMMARY: The geo-region of the Black Sea basin includes four of the five longest rivers in Europe. Due to the meromictic characteristics of the sea, the epilimnion is especially vulnerable to pollution. Riverine inputs of nutrients are the main cause for eutrophication. Impacts from heavy metals, pesticides and pathogens are frequently reported on local scale.</p> <p>The input of nutrients has remarkably decreased in the 1990ies and the ecological state is reported to enhance. The re-increase of economic activities in riparian transitional countries poses the challenge to preserve the Black Sea from increased pollution. At the same time, the constantly increasing tourism at the Black Sea coasts demands good sea water quality while increased water consumption threatens freshwater resources.</p> <p>Water management and quality of the big Black Sea tributaries was focused in various research projects. In contrast coastal mesoscale watersheds are so far hardly considered, neglecting the fact that water management administration and action planning of preventive measures is carried out on the mesoscale. Within the project an integrated assessment framework for water quality and resources will be developed and established for coastal watersheds under different socio-economic and natural boundary conditions.</p> <p>The main aim of the project is to develop and establish a monitoring and exploration system that addresses water quality and quantity of the different terrestrial water cycle stages as well as their impact on the receiving coastal zone. In principle nutrients, pathogens and trace substances are focused and prioritized according to local boundary conditions. In order to capture these multiple types, sources, and pathways of pollution, advanced sampling and analysis concepts are applied.</p> <p>The design of the monitoring and exploration system will be based on a preliminary mass flow analysis and the statistical design of experiments approach. Available data on human activity in the catchment is allocated, emission loads are estimated, and the dynamics of the receiving system determines the observation regime. By that, the lag of observation length is compensated with attributive and process oriented measurements. Isotopic fingerprinting in the different subsystems enables source detection. Emissions from urban systems are observed for wet and dry weather conditions with adaptive dynamics. Subsurface pathways are considered depth-specific so that transport and transformation processes are quantified. The impact on freshwater resources as well as coastal water body can be evaluated based on the immission principle.</p> <p>By the application of the assessment framework at different pilot sites with different boundary conditions, enables transferability of the approach and its results to other sites under similar conditions. The setup and design approach of the monitoring and exploration system will be further adapted for the application within the wider geo-region. The results of the measurement campaign may be used directly for vulnerability mapping and action planning as well as for the setup of an integrated model as base for a decision support system of future development and management options.</p>
KEYWORDS*: water management, mass flow balance, ground- and surface-water quality, monitoring, concept of measures for a good ecological state of surface and seawater as well as the good chemical state of groundwater
CALL: BS-ERA.NET 2010
NAME(S) of the PARTNER(S) INVOLVED: Technische Universität Dresden, Institute for Groundwater Management (IGW), Head: Prof. Rudolf Liedl, Institute for Urban Water Management (ISI), Head: Prof. Peter Krebs

SCIENTIFIC AND TECHNOLOGICAL EXPERTISE OFFERED*:

The IGW offers a stable isotope laboratory that provides $\delta^{14}\text{N}/^{15}\text{N}$ isotope analyses as well as $\delta^{18}\text{O}/^{16}\text{O}$ and $\delta^2\text{H}/^1\text{H}$ isotope analyses for investigations on different sources of nitrate pollution as well as the origin and composition of ground- and surface water. Furthermore, the application of a depth-specific sampling device to obtain vertically discrete water samples over a broad range (vadose zone, capillary fringe, groundwater) is intended. With this, water- and mass fluxes can be investigated.

The research group of Urban Water Management has a strong focus on integrated water management approaches. Online process-oriented monitoring of water quality and quantity in technical water systems and surface water bodies (liquid and solid phase), modelling of water quality on river catchment scale and optimization of the urban water system count among the core competencies of the Institute.

PARTNER SOUGHT

SCIENTIFIC AND TECHNOLOGICAL EXPERTISE REQUESTED: Research institute or company with experiences in ground- and surface water sampling, local public authorities to provide data with respect to infrastructure, water demand and (hydro)geology of the designated investigation area

EXPECTED CONTRIBUTION TO THE PROJECT:**ORGANISATION TYPE*:**

☒ Higher Education ☒ Research Institute
☐ R&D Company ☐ SME ☐ Other

HOW MANY PARTNERS ARE REQUIRED?**CONTACT PERSON**

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