Climate induced changes on the Hydrology of Mediterranean Basins - 1st CLIMB Stakeholder Workshop in the Nile Delta

- Side Event at the 15th IWTC 2011, Alexandria, Egypt -

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Objectives

The CLIMB workshop invites local, regional and national stakeholders (from municipalities to industries) and policy bodies involved in the water sector to express their research needs and recommendations with regard to climate change impacts and adaptation in the Nile Delta. This event, the first of its kind in a scheduled series of workshops, is meant to initiate a sound and meaningful dissemination process for the scientific findings of the EU-funded CLIMB project, developed in accord with the stakeholder community. It is intended to endorse the expansion of networks and collaboration between scientists and the stakeholder community to reinforce the development of sustainable water management mechanisms under the projected challenging climate change conditions.

The conduction of this workshop in the framework of the IWTC offers great opportunities to raise awareness and interest among water practitioners for the perspectives of climate change impacts on water resources in the Nile Delta, to foster trans-disciplinary discussion and to establish an enduring dialogue between scientists and stakeholders.

Background

Climate change research for the Mediterranean region is showing large scientific consensus that climate change is impacting the area in a manifold and distinct fashion. Recently observed trends and projections from climate model ensembles indicate a strong susceptibility to changes in the hydrological regimes, an increasing general shortage of water resources and consequent threats to water availability and management. Such threats are resulting from decreasing groundwater resources, strongly increasing drought risk or flash floods, advancing sea-level rise, and their impact on key strategic sectors of regional economies with consequent macroeconomic and social implications. It shows that the magnitude of change contains a strong capacity to aggravate tensions that may lead into conflict among different socio-economic actors. However, it must be clearly stated that

current uncertainties in climate projections and subsequent (hydrological) model chains, a yet incomplete understanding of the impact of a climate change signal on (micro- and macro-) economic mechanisms or the lack of an elaborate and integrated human security conceptual framework are imposing strong limitations on water-related decision-making under conditions of climate change. This is particularly true due to the general lack of regional data and the yet unresolved mismatch of spatial and temporal scales of operation from different scientific perspectives. Very little knowledge is available about the quantification of these changes, which is hampered by a lack of suitable and cost effective hydrological monitoring and modeling systems. In particular, current projections of future hydrological change, based on regional climate model results and subsequent hydrological modeling schemes, are very uncertain and poorly validated.

In the Nile Delta, rising sea levels, and adjunct coastal erosion and flooding, impose a remarkable threat to water resources and security, especially near important coastal aquifers, which are endangered by salt water intrusion and thus enduring contamination. This is particularly true where the effects of eustatic sea level rise mix with strong near-coastal subsidence due to anthropogenic activity, where extensive withdrawal of groundwater (and other resources), diminishing river sedimentation and natural isostatic causes give reason to expect pronounced and harmful impacts on coastal and deltaic water resources and the population. It must be assumed that water quality will deteriorate due to higher water temperatures and changes in extremes, including floods and droughts. These developments are projected to have negative impacts on ecosystems and human health, water system reliability and operating costs, food availability, water access and utilisation as well as the operation of water infrastructure, such as irrigation systems, which are of greatest importance in the Nile Delta to sustain the regions agricultural productivity.

The conditions required to develop and implement appropriate adaptation strategies are still lacking and must be overcome rapidly. This can only be realized in close cooperation between scientists and the stakeholder community.

The CLIMB project

In its 4-year design, the EU-project CLIMB (FP7-ENV-2009-1, www.climb-fp7.eu), a network of excellence comprising 19 partners from 9 countries (Germany, Egypt, Tunisia, Turkey, France, Italy, Austria, Palest. Adm. Areas, Canada), analyzes ongoing and future climate induced changes in hydrological budgets and extremes across the Mediterranean and neighboring regions. The work plan is targeted to selected river or aquifer catchments (e.g. the Nile Delta), where the consortium employs a combination of novel field monitoring and remote sensing concepts, data assimilation, integrated hydrologic modeling and socioeconomic factor analyses to reduce existing uncertainties in climate change impact analysis. Advanced climate scenario analysis is utilized and available ensembles of regional climate model simulations are audited and downscaled. This process provides the drivers for an ensemble of hydrological models with different degrees of complexity in terms of process description and level of integration. The results of hydrological modeling and socio-economic factor analysis are applied for the development of a GIS-based Vulnerability and Risk Assessment Tool, serving as a platform for dissemination of project results, including communication and planning for local and regional stakeholders. An important output of the research in the individual study sites will be the development of recommendations for an improved monitoring and modeling strategy for climate change impact assessment. These shall be presented and discussed during the workshop.

For participation, please contact:

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