



International Association of Hydrogeologists

Annual Report for the year 2012-2013

IAH NETWORK ON COASTAL AQUIFER DYNAMICS AND COASTAL ZONE MANAGEMENT (CAD-CZM)

After the CAD-CZM Commission meeting held on September 14, 2010 in Krakow during the IAH Congress, following the decisions taken by IAH Council it was decided to propose to continue Commission activities as a network, so as to favour the collaboration among IAH members and non-members involved in SWI and SGD research and management from all around the world.

The IAH Network aims at promoting the development of tools for gaining a better understanding of the specific hydrological process dynamics in coastal areas and for improving the assessment, development and management of water resources endangered by saltwater intrusion.

The network responds to the interest expressed in the recommendations issued on different occasions by UNESCO and IAEA for studying coastal areas in the frame of joint programs in cooperation with other international agencies.

Special emphasis is placed on education, specifically the organization of teaching and training activities, and promoting greater and closer international cooperation in order to accelerate progress and train qualified practitioners for optimizing action especially in developing countries.

Programme

UNESCO, Division of Water Sciences, approved the initiative and offered to collaborate. In fact, it was ascertained that the documentation available on coastal areas at UNESCO's is to be updated.

IAH Members are warmly invited to participate in the work of the CAD-CZM Network and propose future activities. The network is open to non member specialists, which might be encouraged to join IAH, and contribute to development of knowledge on coastal water resources management.

In most cases, intensive groundwater abstraction has produced seawater intrusion and significant piezometric level lowering. Common management actions include remediation by artificial recharge, decrease and relocation of extractions and freshwater injection or extraction of saltwater, and in some cases seawater and brackish groundwater desalination, although generally no management actions occur. Legal and regulatory framework to protect groundwater resources are generally scarce or nonexistent, though in some cases constitute the support of an effective management plan.

The major challenge is the lack of awareness of society regarding aquifer common problems, and also underfunding for scientific investigation. Sustainable groundwater use

must rely on adequate evaluation of aquifer characteristics. In this respect, international integration could improve promotion of sustainable management in endangered coastal ecosystems.

The most relevant subjects concerning saltwater intrusion in coastal aquifers, such as geochemistry, applied geophysics, case studies, aquifer management, submarine groundwater discharge, impacts of increased water demand on coastal water resources and ecosystems, effects of sea level rise and climate change, variable density flow and transport modeling, and new developing methods to characterize coastal groundwater systems.

Attention will be focused also on the monitoring and catchwork techniques for the development of alternative resources represented by submarine springs in karstic environment. The development of monitoring networks for controlling SWI through the acquisition of parameters aiming at quantifying the fresh-salt water equilibrium state is in progress.

Organization

The institution of IAH regional groups is envisaged and encouraged. In fact, research on coastal aquifers dynamic is carried out in all continents and it would be very useful and convenient to favour mutual exchange of information and publicize it.

Cooperation

Cross-coordination with other commissions will be developed by exchanging information by E-mail contacts, meetings at workshops and conferences, cooperating in specific programmes, and preparing publications.

Activities

A questionnaire on the main topics of possible research was prepared in collaboration with Yossi Yecheili and Christian Langevin, vice-directors of the network. The questionnaire was conceived as a tool to be distributed to collect data on the major coastal aquifers of the world.

In November 2011, on the occasion of a preparatory for the World Water Forum, it was proposed to UNESCO-IHP, which decided to adopt it to gather information on the coastal aquifer of the extra EU Mediterranean countries involved in the UNESCO-IHP Sub-component 1.1 on "Managing Coastal Aquifer and Groundwater" of the GEF UNEP/MAP "Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem (Med Partnership)", focused on Mediterranean Coastal Aquifers.

During the 6th World Water Forum, held in Marseille in March, 2012, coastal aquifer management aspects were treated in the side events on *Groundwater and climate change with a focus on Mediterranean coastal aquifers*, coordinated by UNESCO-IHP, and on *Developing effective regional agreements for cooperation and peace in transboundary surface and groundwater resources management*, coordinated by the UNESCO Chair for the International Network of Water-Environment Centres for the Balkans (INWEB), Aristotle University of Thessaloniki (AUTH), Greece.

In the project steering committee meetings of the UNESCO-IHP GEF UNEP/MAP held in Thessaloniki, Greece, from 20-21 February 2012, Akdeniz University, Antalya, Turkey, from 4-5 October 2012, on *Assessment of Risk and Uncertainty related to Coastal Aquifers Management in the Mediterranean*, the questionnaire was validated with the data

given by the hydrogeologist and water resources experts official representatives of Croatia, Bosnia-Herzegovina, Montenegro, Turkey, Palestine, Egypt, Lybia, Tunisia, Algeria, and Morocco.

Future developments

UNESCO-IHP might adopt the questionnaire also for similar projects to be launched on other continents.

We would like to organize the information collected with the questionnaire in a data base, possibly linked to Google Map. The development of a data base on all main world coastal aquifers affected by salt water intrusion is in progress.

Given the difficulty of gathering a representative number of commission members on the occasion of IAH meetings, an effort will be made to organize regular conferences via internet with different regional groups so as to define local problems. National chapters will be invited to propose their representatives in the commission.

Commission activities will be published in IAH eNews or News and Information.

IAH Members are warmly invited to participate in the CAD-CZM Network and propose future activities.

July 28, 2013

Report submitted by

Giovanni BARROCU,

Chairman of the IAH CAD-CZM Commission

