The Bulletin of the European Water Resources Association

EWRA news

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EWRA news: The bulletin of EWRA

Responsible: Prof. G. Tsakiris, President of EWRA
Editor: B. Charalambous, Secretary General of EWRA
Assistant Editor: Dr D. Alexakis
Publishing Editors: D. Tigkas & H. Vangelis
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Invitation to Catania

G. Tsakiris
President of the European Water Resources Association

The global endorsement of the concept of Integrated Water Resources Management (IWRM) is mainly concerned with the achievement of global water security. This practically means that the desired outcome of IWRM is to secure that all people have access to sufficient safe water for their needs at affordable cost, provided that at the same time the natural environment and its resources are protected and enhanced.

In order to accomplish this goal of global water security, formidable challenges are ahead, as water demands are increasing and water availability and water quality deteriorates. Given the complexity of water systems and their interactions with the economic, social, climatic and environmental systems, the scientific community is in front of huge tasks in an attempt to achieve sustainability of water systems and prosperity of the society in a fast changing world.

The European Water Resources Association, with its systematic programme of activities (journals, symposia, conferences, publications), aims at assisting the scientific community to formulate holistic and adaptive procedures for enhancing the management of water resources. In these efforts the final outcome is to achieve better water resources governance through policy formulation, capacity building, stakeholders' participation and international cooperation.

Recently the EU directives on the water policy indicated a paradigm shift in water resources management giving emphasis to sustainability of ecosystems, paving the way from technocratic to collaborative management.

(cont. page 2)

In this context the 6th International Symposium of EWRA in Catania is mainly dedicated to the assessment of the EU Water Directives implementation in the member states and other countries outside EU. Technological and management advances are also presented in an attempt to improve existing methodologies for more effective water resources governance.
From the invited speeches, the original contributions and the discussions of about 200 distinguished authors and participants, significant results are expected to be derived. Also, a large number of selected contributions will be further processed for publication in the journals of EWRA in order to achieve a greater impact on the scientific and professional audiences.
For the excellent organisation of the 6th International Symposium of EWRA I have to sincerely thank the Organising Committee for their perfect work as well as the Scientific Committee and the EWRA Secretariat for contributing to the success of the Symposium. I would also like to thank the University of Catania for hosting this event and all the participants and contributors.
I wish to all the participants, fruitful discussions and enjoyable stay in Sicily. Finally, we renew our appointment to the International Conference of EWRA in Porto (Portugal) in two years from now.

Prof. George Tsakiris
President of EWRA
Director of the Centre for the Assessment of Natural Hazards & Proactive Planning, National Technical University of Athens
E-mail: gtsakir@central.ntua.gr

Assessing Climate Change Impacts at River Basin Scale by Integrating Global Circulation Models with Regional Hydrological Simulations

Ch. Skoulikaris and J. Ganoulis

Climate simulation is conducted at a global scale by several Meteorological Institutions using atmosphere-ocean coupled General Circulation models (AO-GCM). The simulation results from GCMs indicate that the global predicted average precipitation should increase during the 21st century in the Northern Hemisphere and particularly at mid-high latitudes. On the other hand, the results at lower latitudes, such as the Mediterranean region, present year to year fluctuations in precipitation with an obvious decreasing trend. The impacts of these climate variations is bound to affect all water related sectors, such as water supply, irrigation systems, renewable energy sources and industrial production, as well as ecosystems.
The present study aims to assess climate change impacts by using the coupling of refined scale General Circulation Models, known as Regional Climate Models (RCMs) with spatial distributed hydrology models, as shown in Figure 1. In this study, the Climate Local Model (CLM) regional model, which was developed by the Max Plank Institute for Meteorology in Germany, was applied. The results of simulations of CLM under various green house gases emissions scenarios were used as forcing conditions for running the spatial distributed hydrological model MODSUR-NEIGE (MODélisation des transferts de SURface en présence de NEIGE, in French), developed by the École de Mines, Paris, France.. The specific advantage of this coupling is that it takes into account the topographic, geologic and land use characteristics of the river basin, and adapts the climatic data to these spatial conditions.

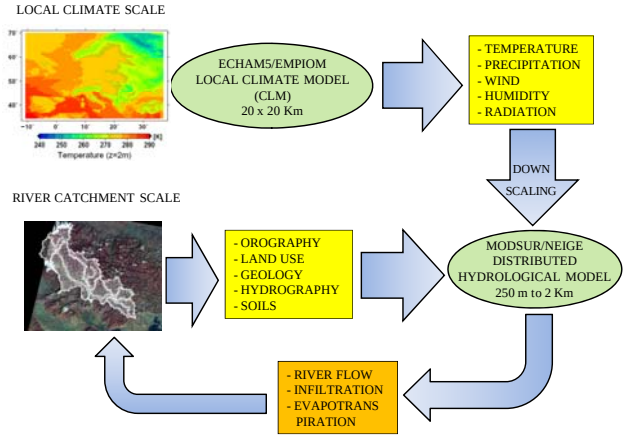


Figure 1. Schematic representation of the dynamic downscaling methodology of coupling regional climate models with hydrological models.

The canvas of this study is the Mesta/Nestos river basin, which is almost equally shared between Bulgaria, where the headwaters are located, and Greece where the river flows into the Aegean Sea. The basin forms part of the worldwide UNESCO-HELP initiative. The outputs clearly demonstrate that climate change results in a significant decrease of the river flow with consequences for hydroelectric and agricultural production. The river flow will be inadequate to meet agricultural demands for water during the irrigation period, which coincides with the warmest period of the year.

Prof. J. Ganoulis is the Director of the UNESCO Chair and Network INWEB, International Network of Water / Environment Centres for the Balkans, which is hosted by the Aristotle University of Thessaloniki, Greece
E-mail: iganouli@civil.auth.gr

Dr. Ch. Skoulikaris is the General Secretary of the UNESCO Chair and Network INWEB and Associate Researcher of the Department of Civil Engineering at the Aristotle University of Thessaloniki, Greece
E-mail: hskoulik@civil.auth.gr

The hidden role of sediments in the Water Framework Directive (WFD 2000/60/EC)

D. Alexakis

The sediments are a dynamic and integral part of river basins reflecting the average chemical composition of the surface materials (soils, sediments and rocks). Depending on the environmental condition changes, the sediments could be considered as potential sources for hazardous chemicals either as a potential sink. Another role of sediments is that their deeper layers are like a memory device or a "hard-disk" which records contamination history of a river basin.

The importance of contaminated sediments is widely recognized by the European Commission as a problem for water quality across the European Union because it is clear that there is a direct link between sediment quality and achieving a good status of all European waters.

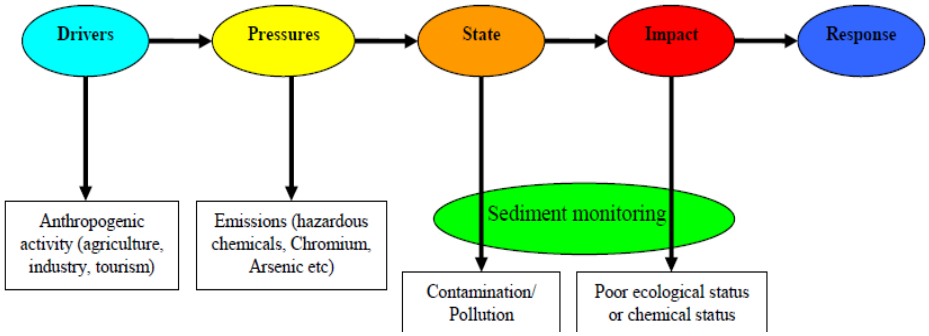


Fig.1 The DPSIR (Drivers-Pressures-State-Impact-Response) methodological approach indicating the position of sediment monitoring

Throughout the Water Framework Directive (WFD; 2000/60/EC) "water" is refereed to on 373 occasions; while "sediment" is mentioned 7 times. In the Article 2 of the WFD an environmental quality standard (EQS) is defined as the concentration of the chemical substance in water, sediment or biota that should not be exceeded for protecting human health and the environment. Moreover, Article 16 states that proposals for quality standards, which will be applied to the concentrations of the priority substances in the water-sediments-biota, should be submitted by the commission.

Anthropogenic activities (Drivers) such as agriculture, tourism, industry etc, lead to increasing pressures on the river basin as these activities result in controlled or accidental emissions of hazardous chemicals to "soil-sediment-water system". Due to their properties, many of these hazardous chemicals are rapidly adsorbed by sediments escaping detection by water monitoring. Consequently, in order to improve the final ecological quality determination the monitoring of sediment must also be included. Moreover, even if any mitigation measures were taken to the primary contamination sources (agriculture, industry etc) by controlling the emissions of hazardous chemicals, the contaminated soils and sediments may become a secondary source of hazardous chemicals.

An example of the determination of the contamination degree in the five levels of the WFD: "High"; "Good"; "Moderate"; "Poor"; "Bad" is provided by trace metals in sediments. The index of geoaccumulation (Igeo) can be used to assess the quality of sediments, which compares the measured concentration of trace metal "M" with its background concentration. The classes of Igeo are ranging from uncontaminated ($I_{geo}<1$) to extremely contaminated ($5<I_{geo}$). The I_{geo} indicating the level of contamination found in various sediments and soils is widely recognized worldwide even in studies related to the WFD.

Furthermore, the selection of matrices (water, sediment or biota) to be studied is not clearly defined by the WFD when designing the surveillance monitoring. Needless to say, that the monitoring network should be designed so as to provide a pragmatic and comprehensive overview of chemical and ecological status.

Concluding, the role of sediment monitoring under the WFD is very important and sediment monitoring may be used: (i) to assess the source of contamination over the river basin; and (ii) to assess the long-term impacts of natural and anthropogenic factors on water quality.

Dr D. Alexakis is an Associate Researcher at the Lab. of Reclamation Works and Water Resources Management of the National Technical University of Athens and Assistant Editor of the EWRA news Bulletin
E-mail: dial@survey.ntua.gr

EWRA – 6th International Symposium 'Water Engineering and Management in a Changing Environment' (Catania, Italy, 29 June – 2 July 2011)

Water is essential for human, animal and plant life and is also a key driver of economic and social development. Protection of water resources and promotion of a sustainable water use are therefore main cornerstones of environmental policies worldwide. Although important progress on water management, infrastructure, technologies and legislation have been made over the past decades in many developed and developing countries, further efforts are still required to properly face major concerns such as floods and droughts, water scarcity, water pollution, as well as access to safe sanitation, which can be further intensified by climate change, population growth and urbanization.

The objective of the 6th International Symposium of the European Water Resources Association, which is organised in cooperation with the Italian Hydrotechnic Association, is to provide an open forum for analyzing the main challenges for an effective water resources management, also able to adapt to climate change impacts. Particular emphasis will be devoted to the developments in the application of EU policies on water resources management (i.e. Water Framework Directive 2000/60, Floods Directive 2007/60 and Water Scarcity and Droughts Strategy), as well as to the latest advancements in water engineering all over the world.

Programme

Wednesday June 29th
Afternoon
15:00-15:30 Registration and welcome coffee
15:30-16:00 Welcome ceremony
16:00-16:45 Invited lecture: Breaking the hydro-illogical cycle: progress or status quo for drought preparedness (*Donald Wilhite*, University of Nebraska-Lincoln, USA)
16:45-18:30 Session 1: Drought monitoring, forecasting and mitigation
16:45-18:30 Session 2: Modelling of rainfall and flood extreme events

Thursday June 30th
Morning
08:45-09:30 Invited lecture: WFD river basin management planning in the context of climate change adaptation – policy and research trends (*Philippe Quevauviller*, University of Brussels, Belgium)
09:30-11:00 Session 3: Water Framework Directives implementation
09:30-11:00 Session 4: Water quality management: monitoring and control of contaminants in surface waters
11:00-11:30 Coffee break
11:30-13:30 Session 5: Assessment of climate change: impacts on water resources
11:30-13:30 Session 6: Water resources management
13:30-15:00 Lunch

Afternoon
15:00-15:45 Invited lecture: Water quality models for river and stream. State of the art and future perspectives (*Marcello Benedini*, Italian Hydrotechnical Association)
15:45-18:00 Poster session and coffee break
18:00-19:00 EWRA general assembly
20:30 Social dinner

Friday July 1st
Morning
09:00-09:45 Invited lecture: Facing challenges on water resources management when searching for a sustainable adaptation to climate change focusing agriculture (*Luis S. Pereira,* Technical University of Lisbon, Portugal)
09:45-11:00 Session 7: Irrigation: use of marginal resources
09:45-11:00 Session 8: Modelling of natural and dambreak floods: hydraulic modelling
11:00-11:30 Coffee break
11:30-13:15 Session 9: Irrigation management: hydrological, hydraulic and economic issues
11:30-12:30 Session 10: Drought characterization
12:30-13:30 Session 11: Assessment of changes in climatology
13:30-15:00 Lunch

Afternoon
15:00-15:45 Invited lecture: Integrating hydrological and global circulation models for studying climate change impacts at the river catchment scale (*Jacques Ganoulis*, UNESCO)
15:45-18:15 Session 12: Water quality management: control and treatment of xenobiotic compounds in wastewater
15:45-18:15 Session 13: Innovations in water supply and distribution systems
18:15-18:45 Closing ceremony

Saturday July 2st
Technical visit

Detailed information

Organisation is supported by the secretariats of Civil Engineering of Catania University and the secretariat of the Laboratory of Reclamation Works and Water Resources Management (School of Rural and Surveying Engineering of NTUA).

Website: www.ewra2011.dica.unict.it
E-mail: ewra2011@dica.unict.it

Water Supply Systems: Preventive Maintenance and Technological Innovations (16th September 2011, Athens, Greece)

The European Water Resources Association (EWRA) announces a one day conference and exhibition which will be held in Athens, Greece on 16th September 2011.

The aim of the event is to bring together leading edge technologies in the field of the management of potable water distribution network. Water Utilities around the world have over the years been paying greater attention to the condition of one of their most valuable assets, the buried pipe network. However, due to poor or indeed lack of maintenance and rehabilitation this valuable asset is in a very critical condition as most water networks are gradually ageing.

The one day conference will address issues such as preventive maintenance for water distribution network and present cutting edge technologies and equipment which form part of an efficient and effective strategy for proper operation and maintenance of a water supply network.

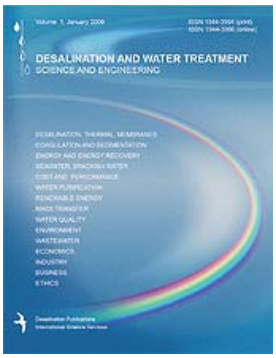
Programme

09:00-09:30 Registration-Welcome greetings
09:30-10:30 Project presentation
10:30-11:00 Coffee break
11:00-14:00 Invited speakers & partners contributions
14:00-15.30 Lunch break
15:30-17:00 Technological innovations
17:00-17:30 Coffee break
17:30-18:30 Discussions and conclusions

The conference is organised by the Centre for the Assessment of Natural Hazards & Proactive Planning of the National Technical University of Athens in the framework of PM4WAT project (Leonardo DaVinci). Details of the conference will be published soon. Please visit regularly the EWRA website www.ewra.net for more details.

Desalination and Water Treatment Science and Engineering

In response to the growing body of research on water treatment and desalination, Desalination Publications, spearheaded by Editor Miriam Balaban, has launched the peer-reviewed journal Desalination and Water Treatment. Begun in 2009 and available in both print and online, DWT is dedicated to research and application of desalination technology, environment and energy considerations, integrated water management, water reuse, wastewater and related topics. With monthly issues averaging 350 pages, Desalination and Water Treatment is required reading for scientists and researchers working in this fast moving field.

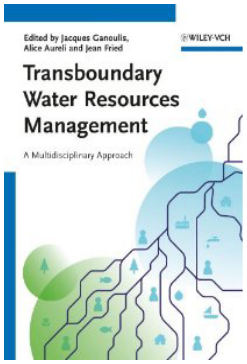


Since its launching over 2,000 articles were submitted to DWT and of these 1,184 articles were published in 28 volumes. Volume 1, in which full text can be viewed without a subscription, is listed below. The DWT website can be viewed at www.deswater.com.

IMPACT FACTOR: Desalination and Water Treatment journal is included in the Web of Science, SCI and Current Contents so that it will get an impact factor expected in June 2011.

Transboundary Water Resources Management: A Multidisciplinary Approach

Ganoulis J., Aureli A., Fried J. (Editors)
Publication Year: 2011
Published by: Wiley-VCH
ISBN-10 : 3527330143
ISBN-13 : 978-3527330140
Binding : Hardback
Pages : 456



On a national basis, water resources management is a complex issue mainly of water sharing and conflict resolution between various stakeholders and different national administrations. When waters cross international borders, this becomes even more challenging. International guidelines and programmes are analysed, such as the EU Water Framework Directive (EU-WFD) 2000/60 and the UNESCO Internationally Shared Aquifer Resources Management (UNESCO-ISARM) initiative. This handbook includes both the latest methodologies for and practical examples of effective management of transboundary water resources. It applies a multidisciplinary approach by combining environmental science and hydrology with political and economic approaches, in line with new EU and UNESCO recommendations. By providing a theoretical framework as well as abundant case studies from many sites from around the world, this book provides engineers, geologists, hydrologists and decision-makers with all the knowledge they need for their daily work.

Water Security in the Mediterranean Region: An International Evaluation of Management, Control, and Governance Approaches (NATO Science for Peace and Security Series C: Environmental Security)

Scozzari A., Mansouri B. (Editors)
Publication Year: 2011
Published by: Springer
ISBN-10 : 9400716222
ISBN-13 : 978-9400716223
Binding : Hardback
Pages : 420

The present book reports the proceedings of a three-day Advanced Research Workshop on subject areas such as Law Studies, Hydrogeology, Monitoring and Information Technologies, Geophysics, Geochemistry, Environmental Sciences, Systems Engineering, Economics and Social Studies. The workshop explores different aspects of the environmental security assessment process, focusing on the management, monitoring and assessment of water resources and giving an overview of the related scientific knowledge.