

From the editor

**Dear reader,**

the past six months have revealed exciting activities which we would like to present in our December issue. The IWRM status seminar and our international IWRM conference have the pole position – events most of you have contributed exciting talks to. Thereafter, on a little trip around the world we will start in Asia passing by the Middle East and the World Water Week in Stockholm going on to the German city of Dessau, where many postgraduates have participated in interdisciplinary discussions this year again. Further – with the nexus topic in mind – we are happy about our colleagues' account on "Sustainable Land Management", a further funding priority of the Federal Ministry of Education and Research. The relevance of the water topic, presented in this account, reveals how important it is that scientists from land and water management stay in touch. In addition, our conference guide and the category publications contain the latest news on current events and publications.

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We wish you a lovely time before Christmas and all the best

*Your IWRM networking project*

— Review

## IWRM status seminar

When the German Federal Ministry of Education and Research (BMBF) had launched the funding priority "Integrated Water Resources Management" (IWRM) in 2005, the question arose what sustainability research related to water can contribute to reaching the Millennium Development Goals of the United Nations. A successful transfer of technology and knowledge, the development of integrated planning instruments, the adjustment of water technologies and manifold contributions to capacity development had been stipulated. Meanwhile, the funding priority IWRM has evolved into a pillar of the general programme "Research for Sustainable Development" (FONA) and is funded by the German Federal Ministry of Education and Research with more than 120 million Euro.

At the status seminar on 14<sup>th</sup> October 2011 in Dresden, the moment to draw conclusions has come: In cooperation with its partners from the IWRM model regions, the German water community has advanced significantly. The 14 research projects presented excellent results: It was possible to develop and apply new scientific models within the IWRM model regions which enabled researchers to totally understand regional water systems. Based on catchment area studies, applicable systems for decision support have been developed. They illustrate complex cases and facilitate water management by local public authorities. Owing to a long-range cooperation with the partners, it was possible to establish pilot



Research for Sustainable Development (Photo: Klaus-Dieter Sonntag).

and demonstration facilities (e. g. test-sewage treatment plants or drinking water treatment plants) with German know-how. This opens the door to international water markets in the long run.

The status seminar has notably shown how sustainable water management can work within the IWRM model regions and how international cooperation can be strengthened. Transferring the project results into long-term national

strategies, reforming administrative structures and disseminating the developed technologies will be an essential task in the future. •

Further information is available at:

[www.bmbf.wasserressourcen-management.de/en/723.php](http://www.bmbf.wasserressourcen-management.de/en/723.php)

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– Review

## International IWRM conference of the Federal Ministry of Education and Research “Management of Water in a Changing World”



Wilfried Kraus of the Federal Ministry of Education and Research (BMBF) during his inaugural address (Photo: Klaus-Dieter Sonntag).

On 12<sup>th</sup> & 13<sup>th</sup> October 2011, the international IWRM conference “Management of Water in a Changing World: Lessons Learnt and Innovative Perspectives” took place in Dresden. 365 representatives from science, politics, administration, development cooperation and industry from 40 countries discussed in over 20 sessions, alongside an exhibition with 90 posters and a dozen of booths of the IWRM projects lessons learnt of almost 10 years of IWRM research and implementation within the IWRM funding priority.

The aim of the conference was to put the research results of the IWRM funding priority in the context of the international experiences in order to deduce lessons learnt and develop innovative ideas for the future. Discussed were different IWRM related topics as well as linkages between these topics

and comprehensive problems related to IWRM. With regard to the topics, questions related to innovative technologies and their implementation, managing water resources within changing environments, indicators for a successful water resources management, instruments for decision support, financing strategies for IWRM, governance prerequisites for a successful IWRM and Capacity Development instruments came up. In a panel discussion, exciting key notes as well as in revealing closing remarks, linkages have been identified and further problems have been discussed. The discussions revealed the following questions: What are the prerequisites for a successful interdisciplinary cooperation? How can communication between scientists and practitioners be improved? What are the premises for a successful implementation of scientific system solutions?

In the end it became clear that – basically – the analysis of system solutions within water management has evolved a great deal in the past 10 years. However, putting these solutions into practice remains a major challenge. In order to tackle the present and future problems related to water effectively, scientists and practitioners will have to cooperate even more. Besides communicating scientific system solutions, more implementation research is necessary. In this context, Prof Norbert Jardin from IWA stressed his expectation to develop better methods to implement scientific results. In his opinion, instead of exploring basic connections in further projects it is more important to develop implementation strategies.

Detailed results of the discussions can be found on the conference homepage. It contains the lecturers’ presentations in sessions and plenary events and – very soon – the overarching conclusions which have been elaborated by the IWRM networking project on the basis of manifold input by the conference participants. The conference homepage also contains a statement of the steering committee of the IWRM conference in Dresden for the conference “Nexus Water, Food and Energy” which took place in Bonn in November. The statement alludes to the integration of the IWRM topic in trans-policy discussions in Bonn.

Furthermore, eight conference attendees as for instance Wilfried Kraus from the BMBF and Bai-Mass Taal from AMCOW expressed their opinion on IWRM in audio interviews. They discuss among others implementation problems of IWRM strategies and the relationship between science and praxis. The interviews are – as the conference photos – available at the conference homepage. •

Further information is available at:  
[www.bmbf.iwr2011.de](http://www.bmbf.iwr2011.de)

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Participants of IWRM 2011 (Photo: Klaus-Dieter Sonntag).



Interested audience at IWRM 2011 (Photo: Klaus-Dieter Sonntag).



## – Review

## IWRM seminar at the World Water Week in Stockholm

This year, the IWRM networking project organized a seminar at the World Water Week in Stockholm. On 21<sup>st</sup> August, German and international water experts discussed the results of their work related to the session topic „Integrated Management of Urban Water Buffering: From Research to Implementation“.

The seminar has been organized together with six further partners from research and development cooperation. It dealt with integrated concepts for urban water supply and wastewater disposal and their implementation in transition and developing countries in Asia, Africa and the Middle East. The aim was to exchange the results of international research initiatives and the experiences of development cooperation. Accounts on mega cities came up as well as project presentations on semi-urban regions. The focus was on the 3R concept (3R for water recharge, retention and reuse) that is also applied within the IWRM funding priority.

Dr. Jutta Deffner from the CuveWaters project and Dr. Roland A. Müller from the SMART project illustrated implementation challenges and strategies in exciting talks. Further, Dr. Katja Sigel from the MoMo project chaired an

interesting discussion on participation processes in IWRM. During the seminar, the participants especially stressed the importance of integrated land and water management as well as the role of adjusted participation processes for implementing acceptable integrated system solutions.

Starting in 1991, the World Water Week is an international conference related to water resources management which takes place every year. It is organized by the Stockholm International Water Institute (SIWI) and is supported by numerous institutions. This year's World Water Week (21<sup>st</sup> – 27<sup>th</sup> August 2011) was related to “Responding to Global Changes: Water in an Urbanising World”. More than 2000 water experts discussed water related problems and possible solutions of an increasing urbanisation. In addition, current programmes and initiatives of different international organisations, NGOs, companies and countries were presented on an exhibition space accommodating approximately 50 exhibitors. Thus, the World Water Week acts as an outstanding interface to the praxis and as an essential platform for public relations on an international basis. •

Further information is available at:

[www.bmbf.wasserressourcen-management.de/en/692.php](http://www.bmbf.wasserressourcen-management.de/en/692.php)  
[www.worldwaterweek.org](http://www.worldwaterweek.org)

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Dr. Roland A. Müller (UFZ) reports on implementation research in the SMART project (Photo: Peter Tvärberg/SIWI).

## – News from the projects

## Implementing innovative concepts in the IWRM Indonesia project

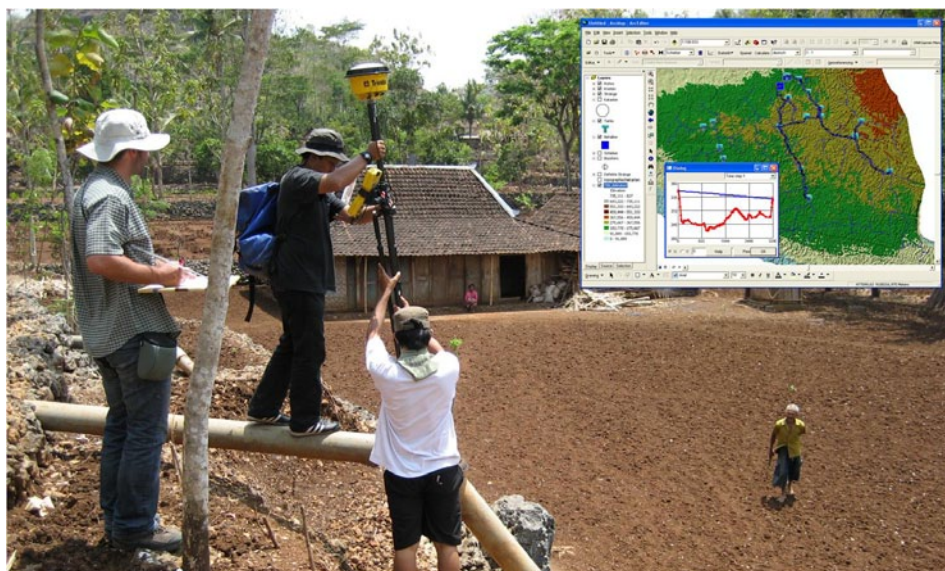
More than 25 % of the world's population lives in karst areas or depends on water supply from the karst aquifers. Due to the high permeability of the karst, people living in karst regions are often suffering from acute water shortage, especially during dry seasons. The hydrogeologic boundary conditions influence negatively the entire water cycle. The German-Indonesian IWRM joint project, concentrating on the karst region Gunung Sewu, Java, Indonesia, focuses on developing and implementing innovative concepts and adapted technologies to solve this problem, taking into account the socio-economic and -cultural boundary conditions of the target region.

The construction of an underground water extraction system, which is operated independently by the Indonesian operational team, enables the supply of 80,000 people with drinking water the whole year. This has already improved the situation in the project region sustainably. Furthermore, an alternative concept of an underground water extraction system has been developed which will be used for the buildup of a demonstration plant. The implementation of this plant will be accomplished in cooperation with local university partners. This demonstration plant could be used as a learning object for Indonesian students both during construction phase and during operation

(technology transfer). Therefore it will support the capacity development measures and these students can become potential multipliers for the future development.

In order to guarantee an energetically respectively economically efficient distribution of the extracted water, plans for restoring respectively optimizing the existing supply infrastructure have been developed. These measures will be implemented in cooperation with local authorities as of 2012. Due to the high vulnerability of karst aquifers and the risk of contaminating drinking water, the technologies ensuring water quality have to live up to high standards. The findings, provided by a comprehensive quality monitoring, are the basis for concepts for drinking water treatment as well as wastewater disposal on the basis of locally available components. These concepts have been put into practice in field laboratories. The transfer of technology is constantly attended by comprehensive capacity development measures which, in terms of a multi-level approach, attain the local population as well as the responsible authorities, scientific bodies and involved industrial partners. All training, workshops and campaigns to raise awareness related to the water-topic are attended by sustainability examinations like life cycle cost analysis and life cycle assessments of the developed and implemented technologies. •

Data collection as the basis for simulation to improve the water distribution network (Photo: Institute for Water and River Basin Management, Karlsruhe Institute of Technology).



Further information is available at:

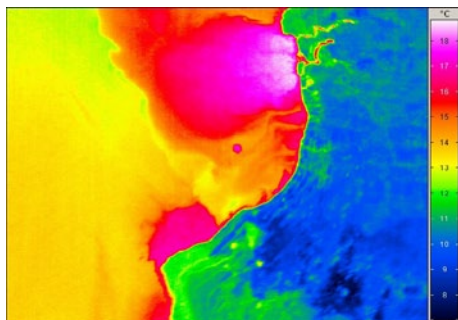
[www.iwrm-indonesien.de](http://www.iwrm-indonesien.de)

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– Life in the Dead Sea

## IWRM-SUMAR (Sustainable Management of Water in Arid and Semi-arid Regions)



Thermographic picture of the western coast of the Dead Sea at Darga – The water inflows can be recognised by the red color (Picture: SUMAR project).

In the arid areas around the Dead Sea drinking water is scarce. The regeneration of ground water does not coincide with the consumption of water. In consequence, not only the local ground water level is continuously falling. Also, less and less water is flowing into the Dead Sea so that its level is sinking by approximately 1.10 m each year. This has far-reaching effects on wells with drinking water and fountains in the area which are falling dry step by step. The few remaining feeder rivers into the Dead Sea originate from surface fountains and underground submarine fresh water fountains. Through latter huge amounts of fresh water which would be important for supplying the population are lost on the one hand. On the other hand, this inflow into the Dead Sea prevents its sea level from falling even faster. In order to understand how much and where fresh water from submarine fountains flows into the Dead Sea, scientists from the Helmholtz Centre for Environmental Research – UFZ, Department Cathyd, had organised a flight campaign together with colleagues from the Federal Institute for Geosciences and Natural Resources. During many nights of delicate work, the whole western coast has been photographed with infrared cameras and at the same time pictures have been taken out of the air during the day. This method enabled the scientists to draw an area-wide chart including the surface and underground water inflows into the Dead Sea for the first time. Direct measurement and sampling by divers of the Max Planck Institute (MPI) in Bremen enabled scientists to measure the inflowing water types in order to determine their origin and the history more accurately. A surprise was the discovery of lower life forms (algae, bacteria) in the Dead Sea along the submarine inflows. •

Further information is available at:  
[www.ufz.de/index.php?en=17692](http://www.ufz.de/index.php?en=17692)

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– Interfaces to further funding priorities of the Federal Ministry of Education and Research

## Cross-sectoral topics and relation to water in “Sustainable Land Management”

The global and regional changes pose a great challenge for science, economics, policy and society worldwide. Addressing climate change, conflicts between food and energy supply, biodiversity loss, demographic changes as well as intensive land transformation calls for innovative and regionally adaptive solutions. The funding measure of the Federal Ministry of Education and Research (BMBF) “Sustainable Land Management” aims at establishing the necessary knowledge base for decision-making. Science and practice are working together on action strategies, technologies and system solutions in selected regions. Different joint projects are examining the interaction between land management, climate change and ecosystem services.

The joint projects (see figure) in the internationally oriented module A of the funding measure are being comprehensively coordinated and supported by the scientific coordination project GLUES (Global Assessment of Land Use Dynamics, Greenhouse Gas Emissions and Ecosystem Services). Like in the IWRM funding priority, in this project manifold **cross-sectional topics** such as the availability of data from the joint projects are being addressed. The scientific coordination project has developed a geodata infrastructure that can be accessed free of charge (Geoportal GLUES-GDI). A further example for cross-sectional tasks is the support by GLUES in the field of capacity building and stakeholder involvement in order to support the implementation of results.

The joint projects SuMaRio, TFO and LUCi are directly related to the water management topic: **“The Future Okavango (TFO)”** aims at a knowledge based and sustainable resource management and land use in the catchment area of the Okavango river. This concerns the countries Angola, Botswana and Namibia. Research focuses on the Okavango basin with its diversity of forest savannas and wetlands which are connected to the river. The region is a global hot spot of fast changes and land use conflicts. The regional examinations will link interdisciplinary research to the transboundary needs of stakeholders and land users.

The comprehensive aim of **SuMaRio (Sustainable Management of River Oases along the Tarim River/China)** is to support the oasis management along the Tarim river in northwestern China influenced by climatic and social changes. The contribution to water management is the research approach to irrigation methods for soils which suffer from salinisation. A further aim of this research is to examine to what extent it is possible to exchange the vegetation of salinised soils with domestic plants.

**LUCi** aims at developing appropriate strategies for sustainable land use in central Vietnam. In doing so, the regional socio-economic development, the national planning strategy, the current climate scenarios, emissions of greenhouse gas, potential carbonate sinks as well as the state of natural water and land resources have to be taken into account. •

Further information is available at:  
[www.sustainable-landmanagement.net](http://www.sustainable-landmanagement.net)

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The map presents the allocation of joint projects in different regions of the world (module A of the BMBF funding measure “Sustainable Land Management”).



## — Review

## IWRM Summer School 2011

Due to the positive response to the first event, the Summer School has been repeated in 2011. Postgraduates of the IWRM funding priority met again between 8<sup>th</sup> and 12<sup>th</sup> August in Dessau-Roßlau. The participants were from the projects IWAS Brasilia, CUVE Waters Namibia, SMART and IWRM Indonesia. They exchanged topics

and methods and discussed about IWRM approaches in different model regions. Here, interesting assignments and current scientific results from the field of groundwater protection and recharge, pesticides in agriculture, sediment discharge and dynamics, coupled modelling as well as virtual water (Water Footprint) came up. The event comprised talks, soft skill courses as well as different social activities. At the Federal Environmental Agency the participants got introductory information on IWRM and on German water resources management. Postgraduates followed with presentations and discussions related to their own research projects. The participants intensively learnt and trained how to present their papers professionally at for instance international conferences. In addition, they had a particular interest in the presentation of the IWRM interactive e-learning module which is currently being

developed by the International Water Research Alliance Saxony (IWAS) and the German bureau of the UNESCO-International Hydrological Programme (IHP). It serves as an education and training method at the administrative and university level and is supposed to support the conventional learning and teaching methods. Further, a IWRM management game took place. In this game, the postgraduates represented different stakeholder groups and debated their interests in sustainable water management. The social programme comprised a visit to the biosphere reserve "Mittlere Elbe", to the Bauhaus city of Dessau-Roßlau as well as jovial sit-ins by the campfire. •

The Federal Environmental Agency (UBA) in Dessau (Photo: Katja Bunzel).



More information is available at:

[www.bmbf.wasserressourcen-management.de/en/722.php](http://www.bmbf.wasserressourcen-management.de/en/722.php)

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## Publications of the funding priority

**Birkmann, J. (2011):** First and second order Adaptation to natural hazards and climate change. *Natural Hazards*. DOI: 10.1007/s11069-011-9806-8.

**Brunsch, A. / Adji, T.N. / Stoffel, D. / Ikhwan, M. / Oberle, P. / Nestmann, F. (2011):** Hydrological Assessment of Karst Area in Southern Java with Respect to Climate Phenomena. *Asian Trans-Disciplinary Karst Conference 2011, Yogyakarta, Indonesia*.

**Priess, J. / Schweitzer, C. / Wimmer, F. et al. (2011):** The consequences of land-use change and water demands in Central Mongolia. *Land Use Policy* 28(1), S. 4–10.

**Röhrig, J. (Ed.) / Werner, W. (2011):** Policy Framework for Small-Scale Gardening. *CuveWaters Papers*, No. 8.

## Overview of events

### International Conference on Traditional Knowledge for Water Resources Management

21<sup>st</sup>–23<sup>rd</sup> February 2012 in Yazd, Iran

<http://conference.icqhs.org/Index.php/tkwrw/2012>



### Cooperation for Waste Issues: 9<sup>th</sup> International Conference

28<sup>th</sup>–29<sup>th</sup> March 2012 in Kharkiv, Ukraine

[http://waste.ua/cooperation/index\\_en.html](http://waste.ua/cooperation/index_en.html)



### IFAT Entsorga 2012

7<sup>th</sup>–11<sup>th</sup> May 2012 in Munich, Germany

[www.ifat.de](http://www.ifat.de)



### International Young Water Professionals Conference 2012

10<sup>th</sup>–13<sup>th</sup> July 2012 in Budapest, Hungary

[www.iwahq.org](http://www.iwahq.org)



### World Water Week

26<sup>th</sup>–31<sup>st</sup> August 2012 in Stockholm, Sweden

[www.worldwaterweek.org](http://www.worldwaterweek.org)



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Federal Ministry  
of Education  
and Research

#### PUBLISHING INFORMATION

**Publisher** — Helmholtz Centre for Environmental Research, UFZ, Brückstraße 3a, 39114 Magdeburg, Germany  
**Editorial staff** — Sabrina Kirschke, Dr. Ralf B. Ibsch, Christian Stärz, Prof. Dr. Dietrich Borchardt, networking project of the IWRM funding priority  
**Layout and setting** — SHORT CUTS GmbH, design + communication, Mehringdamm 55, 10961 Berlin, Germany  
**Photos** — Katja Bunzel, Klaus-Dieter Sonntag, Peter Tvärberg/SIWI, Institute for Water and River Basin Management, Karlsruhe Institute of Technology and SUMAR-Projekt