



**International Conference on
Integrated Water Resources
Management 2016**

18–20 May 2016 | Bochum, Germany

Programme book



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Title: Flooded parts of the city of Cologne 1995, by courtesy of the Hochwasserzentrale Cologne, Germany.

2 Preface

**Preface: The spatial dimensions of water management -
Redistribution of benefits and risks**
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Many spatial aspects of hydrology and water management are discussed in these proceedings of the 7th International Water Resources Management Conference of IAHS-ICWRS.

The main topics of the conference, specified in the call for papers, were:

1. Spatial aspects of water supply and the redistribution of benefits from water
2. Floods and spatial aspects of flood risks
3. Spatial aspects of water scarcity
4. Scale problems of water management – when the summation of individual measures becomes a problem
5. Hydrological regionalization issues
6. The spatial dimension in socio-hydrology

The response of the scientific community was very unevenly distributed. The most submissions were dedicated to the topics 2 and 4. Floods are hotspots of applied hydrology and so many different research questions were raised in these contributions, e.g. methods for design flood estimations, impact assessments and operational flood forecasting.

The second main component of the conference were hydrological regionalization issues. It became evident that after the completion of the PUB-Initiative of IAHS, which was summarized by Günter Blöschl at the conference, many research activities are

still going on to transfer hydrologic information from gauged to ungauged basins by new methodological approaches.

Surprisingly, the "classical" fields of water management, water supply and water scarcity, were less represented. This could be caused by two reasons: there are some tools available which are widely used (e.g. stochastic optimization) but not further improved, or (and this seems to be more probable) there is a low interest to apply new scientific tools in practical water management to optimize existing systems or to improve the planning of new ones. Nevertheless very interesting and (in some cases) sophisticated methodological approaches were presented in this field at the conference under the topics 1, 3 and 4.

With regard to future challenges of water research, dynamic interactions and feedbacks between water and people become more and more important. One part of the conference was dedicated to these questions. Unfortunately the interesting presentations and discussions cannot be reflected completely in the proceedings. Nevertheless the participants got a comprehensive overview about the problems of socio-hydrology and the need for interdisciplinary research.

This conference was organized the second time at the Ruhr-University

Bochum. In September 2006 scientists from all over the world met in Bochum for the 3th IWRM Symposium. In that time the conference accounted for the heterogeneity of world water problems by addressing the basic questions of Integrated Water Resources Management. Now, ten years later, the coherence between surface and groundwater, water quality and quantity or water and ecosystems are widely accepted aspects of modern water management. However the differences between hydrological conditions and the human expectations are still in the focus of research. More and more we become aware that water management is not able to serve societies in the solution of their water problems in a sustainable way if interactions and feedbacks between hydrological conditions and societies are not considered.

The stationarity assumption has long been compromised by human disturbances in river basins. The dynamics of changing societies will face water management with new and unexpected problems. To give an example: If a water poor country like Jordan with 6 Million inhabitants host 1.5 Million refugees, the long-term planning of water management issues will be overtaken by operational constraints. I hope that we will be able to find ways to direct our research activities towards these new problems of a fast changing world. Conferences like this one can make a contribution in this direction.



Prof. Dr. Andreas H. Schumann
Institute of Hydrology, Water Management
and Environmental Engineering

General information

Location

The International Conference on Integrated Water Resources Management 2016 (IWRM2016) is held at the Ruhr-University Bochum (RUB), Institute of Hydrology, Water Resources Management and Environmental Engineering

Rules of conduct

- Smoking is prohibited in the entire building except in the areas designated for smokers.
- It is prohibited to copy any presentation from the desktops in the lecture rooms.
- Please switch off any mobile phones in the lecture rooms.
- It is prohibited to take photos of any scientific material at the conference.

Official language

The official language of the conference is English. Simultaneous interpretation is not provided. It is therefore expected that authors are able to present their research more or less fluently in the English language.

Insurances

The organizers cannot accept liability for personal accident, loss or damage to private property, which may be incurred as a result of the participation in the conference. Participants are, therefore, advised to arrange appropriate insurance cover. This should extend not only to travel but also to cancellation costs.

General contact

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Scientific committee

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Christophe Cudennec, France
Jörg Dietrich, Germany
Nicola Fohrer, Kiel
Nick van de Giesen, The Netherlands
Salvatore Grimaldi, Italy
Uwe Haberlandt, Germany
Alberto Montanari, Italy
Heribert Nacken, Germany
Magdalena Rogger, Austria
Dan Rosbjerg, Denmark
Jose Luis Salinas, Austria
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Abstract management & registration

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Wednesday, May 18th 2016

The registration desk (only for pre-registered participants) opens at 08:45 am (Building ID, floor 04, room 471)

Lecture Room:
Building ID, floor 04, lecture hall HID

Opening

09:30–10:30

Welcome by the University
Welcome by the President of IAHS
Greetings of the German hydrological communities

SP1 Spatial aspects of water supply and the redistribution of benefits from water

10:30–11:00

Historical development and current tasks of water management in the Emscher - Ruhr - metropolis
Teichgräber, Burkhard

11:00–11:30: IWRM2016-30

Water spatial allocation through large water transfer project in China: demands and challenges for adaptive management of changing environment (invited)
Xia, Jun

11:30–11:45: IWRM2016-95

Towards an optimal integrated reservoir system management for the Awash River Basin, Ethiopia
Müller, Ruben; Gebretsadik, Henok Yirgu; Schütze, Niels

11:45–12:00: IWRM2016-65

Spatial relationships between sources of micropollutants and drinking water supply in the Rhine basin - consequences for water management
Moser, Andreas; Stamm, Christian; Scheidegger, Ruth; Bader, Hans-Peter; Fenicia, Fabrizio; Ingold, Karin; Herzog Laura

12:00–13:00 Lunch break

SP2 Floods and spatial aspects of flood risks

13:00–13:30: IWRM2016-13

1+1 ≠ 2 in flood risk calculus: on the role of spatial interactions in flood risk assessment and management (invited)
Vorogushyn, Sergiy; Nguyen, Dung Viet; Schröter, Kai; Kreibich, Heidi; Falter, Daniela; Hundecha, Yeshewa; Apel, Heiko; Merz, Bruno

13:30–13:45: IWRM2016-76

Changes in flood quantiles at gauge Neu Darchau (Elbe River) from 1873 to 2013
Mudersbach, Christoph; Bender, Jens; Netzel, Fabian

13:45–14:00: IWRM2016-111

Long term prediction of flood occurrence
Aguilar, Cristina; Montanari, Alberto; Polo, María-José

14:00–14:15: IWRM2016-82

Comparison of floods non-stationarity detection methods: an Austrian case study
Salinas, Jose Luis; Viglione, Alberto; Vogel, Richard; Hecht, Jory; Blöschl, Günter

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14:15–14:30: IWRM2016-9

Impact of Urbanization on Rainfall-Runoff Processes: Case Study in the Liangshui River Basin in Beijing, China
Xu, Zongxue; Zhao, Gang

14:30–14:45: IWRM2016-20

A framework of integrated hydrological and hydrodynamic models using synthetic rainfall for flash flood hazard mapping of ungauged catchments in tropical zones
Lohpaisankrit, Worapong; Meon, Günter; Tingsanchali, Tawatchai

14:45–15:00: IWRM2016-48

Up-scaling of multi-variable flood loss models from objects to land use units at the meso-scale
Kreibich, Heidi; Schröter, Kai; Merz, Bruno

15:00–15:30 Coffee break

15:30–15:45: IWRM2016-33

Comparison of three approaches to extreme precipitation analysis in a basin scale
Akbari, Hassan; Afrooz, Amirhossein; Rakhshandehroo, Gholam Reza

15:45–16:00: IWRM2016-77

Small-scale (flash) flood early warning in the light of operational requirements: Opportunities and limits with regard to user demands, driving data, and hydrologic modeling techniques
Philipp, Andy; Kerl, Florian; Büttner, Uwe; Metzkes, Christine; Singer, Thomas; Wagner, Michael; Schütze, Niels

16:00–16:15: IWRM2016-54

A flexible and efficient multi-model framework in support of water management
Wolfs, Vincent; Tran Quoc, Quan; Willems, Patrick

16:15–16:30: IWRM2016-51

Improving predictions of the effects of extreme events, land use, and climate change on the hydrology of watersheds in the Philippines
Benavidez, Rubianca; Jackson, Bethanna; Maxwell, Deborah; Paringit, Enrico

16:30–16:45: IWRM2016-18

Visualising DEM-related flood-map uncertainties using a disparity-distance equation algorithm
Brandt, S. Anders; Lim, Nancy Joy

Poster session

17:00–19:30

Room: Building ID, floor 04, Room 471

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Thursday, May 19th 2016

Lecture Room: Building ID, floor 04, lecture hall HID

SP2 Floods and spatial aspects of flood risks

08:30–08:45: IWRM2016-47

Effects of anthropogenic land-subsidence on inundation dynamics: The case study of Ravenna, Italy
Carisi, Francesca; Domeneghetti, Alessio; Castellarin, Attilio

08:45–09:00: IWRM2016-86

Hydrological and hydraulic models for determination of flood-prone and flood inundation areas
Aksoy, Hafzullah; Kirca, V. S. Ozgur; Burgan, H. Ibrahim; Kellecioğlu, Dorukhan

09:00–09:15: IWRM2016-66

Improvement of operational flood forecasting through the assimilation of satellite observations and multiple river flow data
Castelli, Fabio; Ercolani, Giulia

09:15–09:30: IWRM2016-91

Spatial coherence of flood clustering across Germany
Merz, Bruno; Nguyen Viet, Dung; Vorogushyn, Sergiy

09:30–09:45: IWRM2016-62

Vehicles instability criteria for flood risk assessment of a street network
Arrighi, Chiara; Huybrechts, Nicolas; Ouahsine, Abdellatif; Chassé, Patrick; Oumeraci, Hocine; Castelli, Fabio

09:45–10:00: IWRM2016-85

An Update on Multivariate Return Periods in Hydrology
Gräler, Benedikt; Petroselli, Andrea; Grimaldi, Salvatore; De Baets, Bernard; Verhoest, Niko

10:00–10:30 Coffee break

SP3 Spatial dimensions of water scarcity

10:30–11:00: IWRM2016-44

Quantification of resilience to water scarcity, a dynamic measure in time and space (invited)

Simonovic, Slobodan; Radhakrishnan, Arunkumar

11:00–11:15: IWRM2016-74

Integrated management of water resources demand and supply in irrigated agriculture from plot to regional scale

Schütze, Niels; Wagner, Michael

11:15–11:30: IWRM2016-87

Local irrigation systems, regional hydrological problems and the demand for overarching solutions at the example of an irrigation system in the P.R. of China

Nijssen, David; Schumann, Andreas; Monnikhoff, Bertram

11:30–11:45: IWRM2016-117

Managing saltwater intrusion in coastal arid regions and its societal implications for agriculture

Grundmann, Jens; Al-Kathri, Ayisha; Schütze, Niels

11:45–12:00: IWRM2016-73

Scaling issues in multi-criteria evaluation of combinations of measures for integrated river basin management

Dietrich, Jörg

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12:00–13:00 Lunch break

SP4 Scale problems of water management - when the summation of individual measures becomes a problem

13:00–13:15: IWRM2016-75

Adaptation strategies in alluvial aquifer under future climate change
Salami, Hemmat; **Nassery, Hamidreza;** Massah Bavani, Alireza

13:15–13:30: IWRM2016-108

Reservoir impacts downstream in highly regulated river basins: implications for IRBM and adaptive actions in the Ebro delta and the Guadalquivir estuary in Spain

Polo, María José; Rovira, Albert; Garcia-Contreras, Dario; Contreras, Eva; Millares, Agustín; Aguilar, Cristina; Losada, Miguel Ángel

13:30–13:45: IWRM2016-113

Sustainable land and water management of river oases along the Tarim River
Disse, Markus

13:45–14:00: IWRM2016-60

Artificial Neural Networks forecast inflows and its effect on the operation of the Ubonratana reservoir, Thailand
Chiamsathit, Chuthamat; **Adeloye, Adebayo;** Soundharajan, Bankaru-Swamy

Technical Excursion

14:00–19:00

Short course: Geostatistical predictions of streamflow indices: Theory and Practice

14:00–18:00

Room: Building ID, floor 04, room 401

Conference dinner

doors open at 19:00 o'clock

dinner (buffet) starts at 19:30 o'clock

end of the event at 23:00 o'clock

Location: Former colliery Holland

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Friday, May 20th 2016

SP5 Hydrological regionalization issues

08:30–09:00: IWRM2016-57
Predictions in ungauged basins - where do we stand? (invited)
Blöschl, Günter

09:00–09:15: IWRM2016-68
A regional look at the process oriented model selection for flood peak/volume relationships (invited)
Szolgay, Ján; Gaál, Ladislav; Bacigál, Tomáš; Kohnová, Silvia; Hlavčová, Kamila; Vyleta, Roman; Blöschl, Günter

09:15–09:30: IWRM2016-58
Transposing discharge measured time series: large comparison of top-kriging with geomorphology-based inverse modeling
de Lavenne, Alban; Skøien, Jon Olav; Cudennec, Christophe; Curie, Florence; Moatar, Florentina

09:30–09:45: IWRM2016-56
Basin compatibility and merging procedure for improving copula applications
Grimaldi, Salvatore; Petroselli, Andrea; Salvadori, Gianfausto; De Michele, Carlo

09:45–10:00: IWRM2016-50
The value of weather radar data for the estimation of design storms - an analysis for the Hannover region
Haberlandt, Uwe; Berndt, Christian

10:00–10:30 Coffee break

10:30–10:45: IWRM2016-69
Regionalization of post-processed ensemble runoff forecasts
Skøien, Jon Olav; Bogner, Konrad; Salamon, Peter; Smith, Paul; Pappenberger, Florian

10:45–11:00: IWRM2016-55
Spatial variability of the parameters of a semi-distributed hydrological model
de Lavenne, Alban; Thirel, Guillaume; Andréassian, Vazken; Perrin, Charles; Ramos, Maria-Helena

11:00–11:15: IWRM2016-71
Added-value from a multi-criteria selection of donor catchments in the prediction of streamflow series at ungauged pollution control-sites
Drogue, Gilles; Ben-Khediri, Wiem; Conan, Céline

11:15–11:30: IWRM2016-81
Natural streamflow simulation for two largest river basins in Poland: A baseline for identification of flow alterations
Piniewski, Mikolaj

11:30–11:45: IWRM2016-88
Climate, orography and scale controls on flood frequency in Triveneto (Italy)
Persiano, Simone; Castellarin, Attilio; Salinas, José Luis; Domeneghetti, Alessio; Brath, Armando

11:45–12:00: IWRM2016-90
Spatially-Smooth regionalization of flow duration curves in non-pristine basins
Ganora, Daniele; Laio, Francesco; Masoero, Alessandro; **Claps, Pierluigi**

12:00–13:00 Lunch break

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Peter-Loucks-Lecture

13:00–14:00:
Why we need a new paradigm for water resources modelling and management
Gober, Patricia

SP6 The spatial dimension in socio-hydrology

14:00–14:30: IWRM2016-40
Spatial Dimension of Socio-hydrology and the Heterogeneity of Human-Water Dynamics (invited)
Sivapalan, Murugesu; Konar, Megan; Srinivasan, Veena

14:30–15:00: IWRM2016-97
Social science contributions towards a sustainable, integrated and adaptive water resources management (invited)
Hansjürgens, Bernd

15:00–15:15: IWRM2016-100
Agrarian crisis in India: Smallholder (small farmer) Socio-hydrology explains farmers' suicides
den Besten, Nadja; Pande, Saket; Savenije, Hubert

15:15–15:30: IWRM2016-122
Modeling human-water-systems: Towards a comprehensive yet spatially distributed assessment of co-evolutions for river basins in Central Europe
Krahe, Peter; Nilson, Enno; Knoche, Malte; Ebner von Eschenbach, Anna-Dorothea

15:30–15:45: IWRM2016-118
Institutions in transitioning peri-urban communities: Spatial differences in groundwater access
Gomes, Sharlene L.; Hermans, Leon M.

15:45–16:00: IWRM2016-70
Human signatures derived from nighttime lights along the Eastern Alpine river network in Austria and Italy
Ceola, Serena; **Montanari, Alberto**; Parajka, Juraj; Viglione, Alberto; Bloeschl, Guente; Laio, Francesco

Panel Discussion: Socio-hydrology: neither hydrology nor sociology?

16:00–17:00

Closing ceremony

17:15–18:00

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