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# IAHS Publications

Hydrological Sciences Journal *HSJ*, ISSN 0262-6667
Benchmark Papers in Hydrology Series ISSN 1993-4572
Proceedings and Reports Series the Red Books, ISSN 0144-7815
Special Publications the Blue Books, ISSN 1024-4891

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# Benchmark Papers in Hydrology Series

This series collects together, by theme, the seminal scientific papers that provided the foundation for modern hydrology, with commentaries detailing their significance. *Excellent resources for graduate and post-graduate teaching*

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### STREAMFLOW GENERATION PROCESSES

Keith J. Beven

**BM1** 2006 See p. 6 (surface water/PUB)

IAHS AISH **www.iahs.info**

The International Association of Hydrological Sciences (IAHS) produces a variety of publications in fulfilling its mission to disseminate the results of hydrological research and practice worldwide.

This catalogue provides descriptions of books published since 2007, grouped by subject, on pages 1–8 and bibliographic details of books published since 2005 on pages 8–9. Information about all books, including abstracts of papers, is available at the IAHS website (click on Publications) or via the Bookshop. The older Red Books (Publs 1–290, i.e. 1922–2004) are free to view as pdfs at the IAHS website. Print copies of many older volumes are still available.

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*www.iahsmembers.info/shop.php*

## Hydrological Sciences Journal

*Editors* Zbigniew W. Kundzewicz *&* Demetris Koutsoyiannis

*Hydrological Sciences Journal* (*HSJ*) provides a forum for original papers and discussion of significant developments in hydrological science and practice, and related disciplines.

The current Impact Factor is 1.541, and the Five-Year Impact Factor is 1.934

Institutions and libraries should order direct from Taylor & Francis: www.tandf.co.uk/journals/thsj, or their usual agent.

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(October 2012)

# hydrology – general

## Changes in Flood Risk in Europe

NEW

Zbigniew W. Kundzewicz

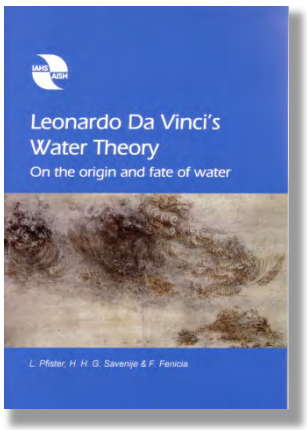

Floods are the most prevalent natural hazard in Europe. But, has flood risk increased in the continent? How, where, and why? Are climate change impacts apparent? How do socio-economic trends and associated land-use change impact flood risk? This interdisciplinary book, authored by an international team, offers:

- A comprehensive overview of flood risk in Europe, past and present, and future
- National/regional chapters covering Central Europe, Western Europe, Southern Europe and Northern Europe, the Alpine region and the Iberian Peninsula.
- A focus on detection and attribution of change with respect to climate change and its impacts, water resources and flood risk, the re-insurer's view point, and future projections of flood risk.
- Rectification of common-place judgements, e.g. "climate is warming so floods should become more frequent and intense"; observations do not always confirm this expectation.

**Special Publ. 10 2012 978-1-907161-28-5 516 + xvi pp. £85**

## Leonardo Da Vinci's Water Theory: On the origin and fate of water

Laurent Pfister, Hubert H. G. Savenije & Fabrizio Fenicia




Leonardo Da Vinci (1452–1519) was not only one of the greatest artists of his time, he was also a great engineer and scientist. A large part of his scientific work was dedicated to understanding the movement, circulation and physical characteristics of water in its different forms. This book makes Leonardo Da Vinci's contributions to the science of water accessible to a wider public and compares his ideas with our present knowledge.

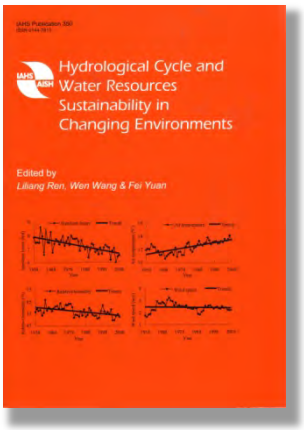
Fascinating, revealing and inspiring, Leonardo Da Vinci's Water Theory opens up a new history to the study of water.

**Special Publ. 9 2009 978-1-901502-34-3 92 + xx pp. £25.00**

## Hydrological Cycle and Water Resources Sustainability in Changing Environments

NEW

*Editors* Liliang Ren, Wen Wang & Fei Yuan




Proceedings of the IWRM2010 Methodology in Hydrology symposium held in China, presents research describing the hydrological cycle in changing environments and identifying impacts by various factors, the use of quantitative methodology for water resources assessment, and eco-hydrological approaches to water resources sustainability.

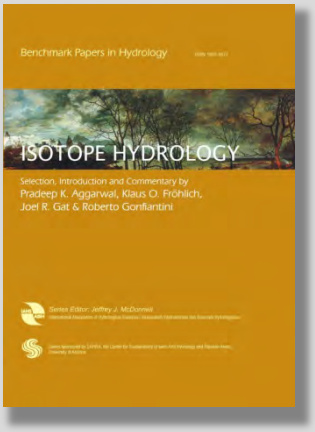
1 Hydrological processes in a changing environment
2 Water resources assessment and management
3 Ecohydrological approach to water resources sustainability
4 Water environment
5 Subsurface water and groundwater
6 Uncertainty in hydrological modelling
7 Hydrological data mining and data assimilation
8 Hydrological data retrieval by remote sensing methods
9 Hydrological modelling supported by multi-source information

**Publ. 350 2011 978-1-901502-25-4 772+ xii pp. £129.00**

## ISOTOPE HYDROLOGY

NEW

*P. K. Aggarwal, K. O. Fröhlich, J. R. Gat & R. Gonfiantini*
*ISBN 978-1-907161-29-2 (2012)*
*BM8 A4 format, hardback, 486 pp, £70.00*




The potential of using stable isotopes of water was recognized in the 1930s, but not fully explored until the 1950s. Improvements in measurement techniques have facilitated use of isotopes in many contexts, and isotope hydrology has become mainstream. The benchmark papers in this development are reprinted with commentaries by the authors, under the topics:

A. Fundamental,
B. Atmospheric Water Cycle
C. Palaeoclimates
D. River and Lake Hydrology
E. Groundwater.

## Land Subsidence, Associated Hazards and the Role of Natural Resources Development

*Editors* D. Carreón-Freyre, M. Cerca & D. I. Galloway;
*Technical Editor* J. Jesús Silva-Corona

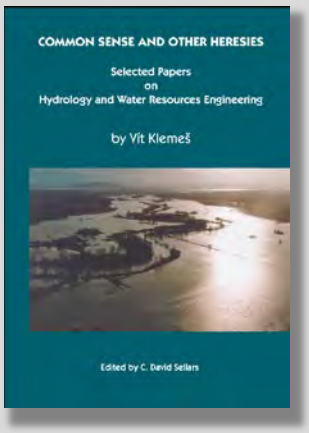
Land subsidence is a global problem affecting urban centres and engineering facilities (e.g. mining, water distribution and storage, roads) worldwide, but the mitigation and solution of each case demands knowledge of the affected area. Multidisciplinary research into land subsidence phenomena, caused naturally or by groundwater extraction, demonstrates a growing need to incorporate new perspectives in risk analysis and planning of urban development in susceptible areas.

**Publ. 339 2010 978-1-901502-12-4 522+ xiv pp. £97.00**

## Common Sense and Other Heresies: Selected Papers on Hydrology and Water Resources Engineering *by Vít Klemeš*

*Editor* C. David Sellars

*Second Edition with a new Foreword, and Prolegomena by Demetris Koutsoyiannis*



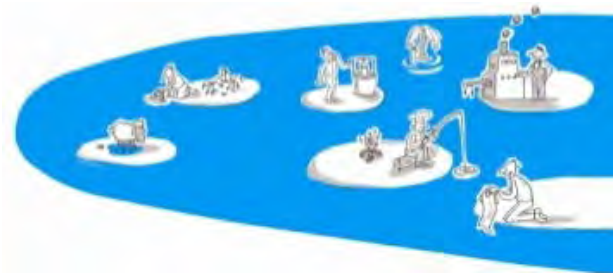

An insight to the science and practice of hydrology. Reading Klemeš's (1932–2010) work continues to be a refreshing, enlightening and inspiring experience. Includes his classic contributions:

– Dilettantism in hydrology: transition or destiny
– Of carts and horses in hydrologic modelling
– Statistics and probability: wrong remedies for a confused hydrologic modeller

**CWRA/IAHS 2011 978-1-896513-18-8 378 + xvii pp. $50 (Canadian)**

Order from the Canadian Water Resources Association, *www.cwra.org*

## Hydrocomplexity: New Tools for Solving Wicked Water Problems



*Editors* S. Khan, H. H. G. Savenije, S. Demuth & P. Hubert

Human activities have become major drivers of change in the Earth's biosphere, resulting in deterioration of water quality, overexploitation of freshwater resources, hydrological hazards and landscape degradation, and affecting the functioning of ecosystems and their ability to provide the goods and services on which human well-being depends. Water problems are complex and wicked. There is a need for community-based transdisciplinary management tools to provide better understanding of water as both an abiotic resource and as a service delivered by ecosystems.

**Publ. 338 2010 978-1-901502-11-7 272 + x pp. £55.00**

## River Basins – from Hydrological Science to Water Management

*Editors* Ioulia Tchiguirinskaia, Siegfried Demuth & Pierre Hubert

A review of the practice and realities of undertaking research for river basin management (how to involve the public as stakeholders, building trust with decision-makers, the research funding situation), the tools we have available (hydrological models, how good are they, how can we reduce uncertainties and explain them to policy makers), their application, and the current situation regarding water monitoring, research and management in El Salvador, India, Romania, Russia and South Africa. The authors' main conclusions and recommendations are summarized in a final section which proposes issues for future consideration in hydrological research and management.

**Publ. 323 2008 978-1-901502-69-5 154 + xii pp. £40.00**

## Special Issues of *Hydrological Sciences Journal* (*HSJ*)

### The Court of Miracles of Hydrology

*Guest Editors* Charles Perrin & Vazken Andréassian

*HSJ* 55(6) (*2010*) (available from Taylor & Francis)

### Water Crisis: From Conflict to Cooperation

*Guest Editor* Bellie Sivakumar

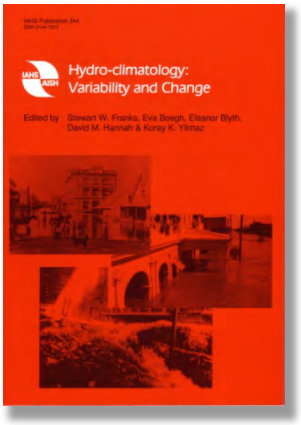
*HSJ* 56(4) (*2011*) (available from Taylor & Francis)

# climate/hydrology

## Hydro-climatology: Variability and Change

*Editors* Stewart W. Franks, Eva Boegh, Eleanor Blyth, David M. Hannah & Koray K. Yilmaz

Illustrates the scientific and practical value of considering hydrological phenomena and processes in a climate context to improve understanding of controls, process interaction, and past and future variability/change. Contributions deal with understanding hydrological systems given historic observed climate variability, or utilise climate models to project future climate scenarios and then assess the resultant hydrological consequences. Human interventions – water storages, extraction, irrigation, land-use change – i.e. the societal context, are also considered. The inter-disciplinary approach reveals information and perspectives that go beyond the study of climate and hydrology alone.




**Publ. 344 2011 978-1-901502-19-3 254 + x pp. £58.00**

## Climate and the Hydrological Cycle

*Editors* Marc Bierkens, Han Dolman & Peter Troch

An in-depth overview of the role of the hydrological cycle within the climate system, including climate change impacts on hydrological reserves and fluxes, as well as the controls of terrestrial hydrology on regional and global climatology. This book fills the need for a text about the interface between the two disciplines.

- Role of the hydrological cycle in the climate system
- Evaporation
- Physics of evaporation and atmospheric boundary layers
- Precipitation physics and rainfall observation
- Land surface hydrology
- Land surface schemes and climate models
- Arctic and snow hydrology
- Dynamics of glaciers, ice sheets and global sea level
- Feedback mechanisms: precipitation and soil moisture
- Feedback mechanisms: land use, hydrology and carbon
- Palaeohydrology: an introduction
- Groundwater palaeohydrology
- Global warming and the acceleration of the hydrological cycle
- Climate change and hydrological impact studies
- Remote sensing for hydrological studies

**Special Publ. 8 2008 978-1-901502-54-1 344 + xvi pp. £50.00**

***SEE ALSO***

### Water Quality: Current Trends and Expected Climate Change Impacts

*Editors* Norman E. Peters *et al.* See page 7 (water quality)

**Publ. 348 2011 978-1-901502-23-0 186 + xi pp. £50.00**

### Cold Regions Hydrology in a Changing Climate

*Editors* Daqing Yang *et al.* See page 5 (snow, ice, mountain hydrology)

**Publ. 346 2011 978-1-901502-21-6 208 + x pp. £52.00**

### Global Change: Facing Risks and Threats to Water Resources

*Editors* E. Servat *et al.* See page 7 (water resources & management)

**Publ. 340 2008 978-1-901502-13-1 704 + xiv pp. £115.00**

### Groundwater and Climate in Africa

*Editors* Richard Taylor *et al.* See page 4 (groundwater)

**Publ. 334 2009 978-1-901502-05-6 276 + xii pp. £65.00**

# ecohydrology/hydro-ecology

## RIPARIAN ZONE HYDROLOGY AND BIOCHEMISTRY

T. P. Burt, G. Pinay & S. Sabater

Study specifically of riparian zones is relatively new in hydrology, and while the oldest of the 36 benchmark papers selected for this volume dates to 1936, several of the others were published in the 1970s and 1980s. They are grouped under the topics: Landscape ecology, Hydrology of the riparian zone, Linking riparian zone hydrology to solute transport, Biogeochemical processes and methods, Riparian buffering of surface and subsurface flows, and In-stream processes. Together, the reprinted papers and the editors' commentaries map the breakthroughs in the development of this important subdiscipline.

**BM5 2010 978-1-907161-09-4 Hardback, 490 + x pp. £65.00**

## Ecohydrology of Surface and Groundwater Dependent Systems: Concepts, Methods and Recent Developments

*Editors* Martin Thoms, Kate Heal, Eva Bøgh, Antonio Chambel & Vladimir Smakhtin

An outcome of a symposium of the same name organized by the IAHS international commissions on Continental Erosion, on Groundwater, and on Surface Water, and the International Association of Hydrogeologists (IAH). The articles provide an exciting contribution to the field of Ecohydrology. As a collection they represent an expansion of this emerging field of science, from its initial focus on the relationships between water and vegetation in different landscape settings, to one that considers:

- Ecohydrology of riverine landscapes,
- Ecohydrology and groundwater systems, and
- Ecohydrology and catchment land-use issues.

**Publ. 328 2009 978-1-901502-99-2 240 + viii pp. £51.00**

## SEE ALSO

### Revisiting Experimental Catchment Studies in Forest Hydrology

*Editors* A. A. Webb *et al.* See page 6 (surface water/PUB)

**Publ. 353 2012 978-1-907161-31-5 240 + viii pp. £56.00**

### Conceptual and Modelling Studies of Integrated Groundwater, Surface Water, and Ecological Systems

*Editors* Corinna Abesser *et al.* See page 4 (groundwater)

**Publ. 345 2011 978-1-907161-20-9 274 + xii pp. £62.00**

Special Issues of *Hydrological Sciences Journal* (*HSJ*)

**Advances in Ecohydrological Modelling with SWAT**

*Guest Editors* Valentina Krysanova & Jeffrey G. Arnold

HSJ 53(8) *(2008)* (available from Taylor & Francis)

**Ecosystem Services of Wetlands**

*Guest Editor* Michael Acreman

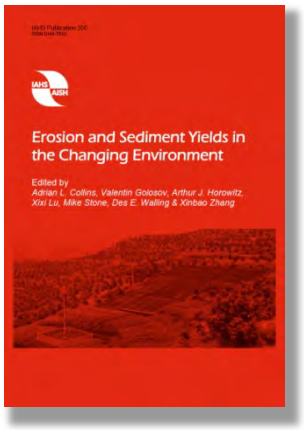
HSJ 56(8) *(2011)* (available from Taylor & Francis)

# erosion & sediment

## Erosion and Sediment Yields in the Changing Environment

**NEW**

*Editors* Adrian L. Collins, Valentin Golosov, Arthur J. Horowitz, Xixi Lu, Mike Stone, Des E. Walling & Xinbao Zhang



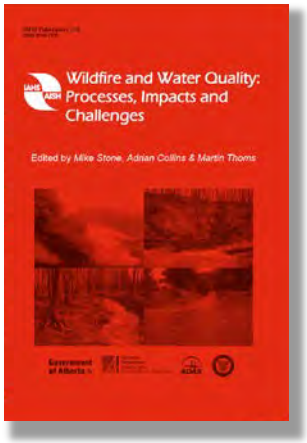

ICCE-2012, held in Chengdu, China, continues the successful, series of ICCE symposia and publications, and focused on understanding processes of erosion and sediment production in a world that is increasingly affected by anthropogenic activities. In this book, the four keynote papers precede 50 contributions grouped by theme: Dynamic processes of erosion and sediment transport in fluvial systems; Impacts of climate change and human activities on erosion and sediment yield ; Modelling erosion and sediment yields ; Mountain hazards and debris flows; Monitoring and tracing methodology

**Publ. 356 2012 978-1-907161-33-9 452 + x pp. £90.00**

## Wildfire and Water Quality: Processes, Impacts and Challenges

**NEW**

*Editors* Mike Stone, Adrian Collins & Martin Thoms




There is increasing global concern over the impacts of landscape disturbance by wildfire on a range of aquatic ecosystem services and drinking water supply. Profound and often irreversible changes in river ecosystem function, geomorphology, water quality and water supply can occur. Such impacts have important management implications for source water supply and protection at the catchment scale.

Themes addressed in this volume include: (1) impacts of wildfire on hillslope hydrology, (2) effects of wildfire on the physical, chemical and biological composition of soils, (3) changes in sediment transport dynamics and yields resulting from wildfires, (4) methodologies used to evaluate the provenance and fate of wildfire impacted sediments and associated contaminants, (5) prediction of hydrological and sediment transport recovery trajectories at the local and catchment scale, (6) impacts of wildfire on aquatic ecology, (7) post-fire sedimentation and water quality impacts in reservoirs, and (8) management actions to reduce the impact of wildfires or river ecosystems.

**Publ. 354 2012 978-1-901502-32-2 124 + viii pp. £40.00**

## Sediment Problems and Sediment Management in Asian River Basins

*Editor* Des E. Walling

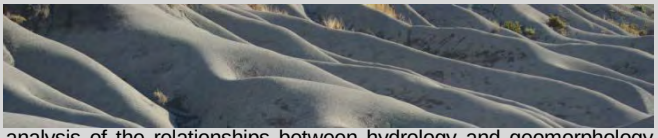
Sediment problems are assuming increasing importance in many Asian river basins Problems include accelerated soil erosion, reservoir sedimentation, the impact of sediment on aquatic ecology, river morphology and water resources. They are complicated by climate change and other components of global change in causing both increases and decreases in sediment loads. This volume, arises from a workshop organised by the International Commission on Continental Erosion (ICCE) of IAHS, the UNESCO International Sediment Initiative (ISI) and the World Association for Sedimentation and Erosion Research (WASER).

**Publ. 349 2011 978-1-907161-24-7 224 + viii pp. £52.00**

## HYDRO-GEOMORPHOLOGY, EROSION AND SEDIMENTATION

Michael J. Kirkby

In this Benchmark Series volume, Kirkby presents a systematic



analysis of the relationships between hydrology and geomorphology with commentaries on the papers that have been most influential in the development of research at the hydrology/geomorphology interface. Thirty-seven papers are reprinted in full or in part, the majority published pre-1970, including early contributions by Fisher (1866), Davison (1889) and Gilbert (1909), and seminal papers by Hack, Strahler, Wolman & Miller, and Melton, among others.

**BM6 2011 978-1-907161-14-8 Hardback, 640 + x pp. £70.00**

## Sediment Dynamics for a Changing Future

*Editors* K. Banasik, A. J. Horowitz, P. N. Owens, M. Stone & D. E. Walling

Progresses understanding of erosion and sedimentation in relation to sediment dynamics and river water quality. *Human Impact on Sediment Budgets* concerns the influence of land-use change on sediment yields and/or fluxes. *Structure, Functioning and Management of Fluvial Sediment Systems* addresses the dynamics of sedimentation, temporal variation of sediment parameters and influence of sediment on aquatic ecosystems. *Experiment-based and Modelling Approaches to Sediment Research* highlights the role of monitoring and modelling studies in advancing understanding.

**Publ. 337 2010 978-1-901502-10-0 376 + viii pp. £74.00**

## Sediment Dynamics in Changing Environments

*Editors* Jochen Schmidt, Tom Cochrane, Chris Phillips, Sandy Elliott, Tim Davies & Les Basher

Schmidt *et al.* have compiled contributions that advance knowledge of how sedimentary systems react to change. Four themes are addressed:

- Scaling issues in sedimentary environments – from points to continents
- Dating and source tracing technologies
- Global change and erosion
- Linking erosion with environmental and societal impacts

**Publ. 325 2008 978-1-901502-84-8 626 + xiv pp. £105.00**

# groundwater

## GROUNDWATER

Mary P. Anderson

This Benchmark Series volume details the development of groundwater hydrology. The fundamentals are covered with a translation of Darcy's experimental results that led to Darcy's law, as well as classic papers by Meinzer, Theis and Hubbert, among others. The development of pumping test theory and practice, approaches to estimating aquifer parameters in the field, and flow system analysis are dealt with. Papers reflecting early concerns regarding quantification of uncertainty, how recognition of groundwater interaction with surface water grew, and research on contaminant occurrence and transport, are included. Slichter's (1905) seminal contribution that identified dispersion in the field, and Skibitzke & Robinson's (1963) laboratory findings, are linked with more recent attempts to represent dispersion with models.

**BM3 2008 978-901502-74-9 Hardback, 626 pp. £55.00**

## Conceptual and Modelling Studies of Integrated Groundwater, Surface Water, and Ecological Systems

*Editors* Corinna Abesser, Gunnar Nützmann, Mary C. Hill, Günter Blöschl & Elango Lakshmanan


Interactions between groundwater and surface water are critical to ecological communities and to resource management. Recent research has succeeded in identifying and understanding many underlying processes and factors, such as the dynamics of flow, sediment contaminant transport and chemical reactions in river beds and how processes at different spatial scales interact. The themes addressed are:

- Improved process understanding at different scales and in different regions
- Advanced modelling methods and applications
- Sensitivity analysis and uncertainty evaluation
- Ecohydrological studies: from process to management
- Case studies and large-scale applications

**Publ. 345 2011 978-1-907161-20-9 274 + xii pp. £62**

## GQ10: Groundwater Management in a Rapidly Changing World

*Editors* Mario Schirmer, Eduard Hoehn & Tobias Vogt


Groundwater is a vital resource and a conveyor belt for dissolved and particulate matter. It is a crucial component of local, regional and global water cycles, and the quality of groundwater is inextricably linked with global environmental and social viability. The GQ10 conference focused on the need to manage, sustain, repair and protect groundwater quality under rapidly changing climatic and global conditions. The aim was to build a bridge between contaminant hydro(geo)logy and other scientific disciplines and to society. The 115 contributions in this volume address the issues.

**Publ. 342 2011 978-1-901502-16-2 512 + xvi pp. £97.00**

## Calibration and Reliability in Groundwater Modelling: Managing Groundwater and the Environment

*Editors* Yanxin Wang, Shemin Ge, Mary C. Hill & Chunmiao Zheng

A collection of papers selected from the seventh conference in the ModelCARE series on Calibration and Reliability in Groundwater Modelling. These important contributions deal with:

- New advances and innovations in model calibration, model prediction, sensitivity analysis, and uncertainty assessment
- Parameterizing groundwater models
- Construction, calibration, reliability and use of models designed to address resources and environmental concerns
- Modelling of $CO_2$ sequestration and other groundwater model applications

**Publ. 341 2011 978-1-901502-15-5 274 + x pp. £60.00**

Special Issue of
*Hydrological Sciences Journal* (*HSJ*)

### Groundwater and Climate in Africa

*Guest Editors* Richard G. Taylor, Antonis D. Koussis & Callist Tindimugaya

*HSJ* 54(4) (*2009*) Available from Taylor & Francis

## Groundwater and Climate in Africa

*Editors* Richard Taylor, Callist Tindimugaya, Michael Owor & Mohammad Shamsudduha

Current assessments of the impacts of climate variability and change on water resources commonly exclude groundwater, an omission of concern in Africa where current water usage and future adaptations in response to climate variability and change, together with population growth, place considerable reliance upon groundwater to meet domestic, agricultural and industrial water needs. This collection of papers includes the Kampala Statement, and addresses: Impact of climate variability and change on groundwater and groundwater-fed ecosystems; Monitoring and modelling groundwater use and replenishment; Estimation of resources and demand under a changing climate, and Groundwater management in Africa

**Publ. 334 2009 978-1-901502-05-6 276 + xii pp. £65.00**

## Trends and Sustainability of Groundwater in Highly Stressed Aquifers

*Editors* Makoto Taniguchi, Alyssa Dausman, Ken Howard, Maurizio Polemio & Elango Lakshmanan

Population growth, urbanization and global climate change have increased urban and agricultural water demands, stressing aquifer systems where groundwater is a source of water supply. The availability and utility of groundwater may be further threatened by factors stressing the quality of groundwater, such as industrial and domestic wastes and agricultural intensification. This proceedings volume details problematic aquifer conditions, and solutions to them, around the world.

**Publ. 329 2009 978-1-907161-00-1 318 + x pp. £62.50**

## Groundwater Quality: Securing Groundwater Quality in Urban and Industrial Environments

*Editor* Michael G. Trefry

Compiles selected papers from GQ2007, the sixth of the Groundwater Quality conference series. The themes are: Policy and controls on groundwater quality

- Innovative remediation and clean-up technologies
- Emerging chemicals of concern; and Groundwater ecosystems.

**Publ. 324 2008 978-1-901502-79-4 566 + x pp. £90.00**

### Groundwater–Surface water Interactions: Process Understanding, Conceptualization and Modelling

*Editors* Corinna Abesser, Thorsten Wagener & Gunnar Nüetzmann

A collection of physical, chemical, biological and ecological contributions focusing on groundwater–surface water interactions and using innovative field, conceptual and simulation techniques.

**Publ. 321 2008 978-1-901502-59-6 214 + x pp. £48.00**

*Forthcoming*

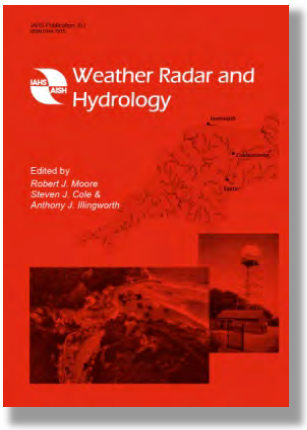
### Calibration and Reliability in Groundwater Modelling: Models – Repositories of Knowledge

**Publ. 355 2012 978-1-901502-34-6**

## remote sensing

### Weather Radar and Hydrology NEW

*Editors* Robert J. Moore, Steven J. Cole & Anthony J. Illingworth




Weather Radar and Hydrology concerns the monitoring and forecasting of rainfall over space and time, and how the pattern of rainfall is transformed by a varied landscape into surface water runoff and river flow across a city, region or country. It has significant practical application across water resource functions, including flood forecasting and warning, flood design, urban drainage management, water supply and environmental services.

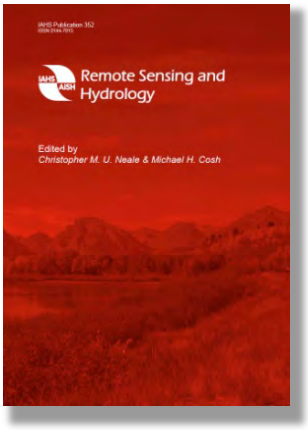
Over 100 peer-reviewed papers from the International Symposium on "Weather Radar and Hydrology" (WRaH 2011, Exeter, UK), a valuable record of current activity, address:

- Weather radar theory, technology and systems
- Rainfall estimation and quality control
- Rainfall forecasting (nowcasting and numerical weather prediction)
- Uncertainty estimation
- Hydrological impact and design studies
- Hydrological modelling and flood forecasting
- Urban hydrology and water management applications

**Publ. 351 2012 978-1-907161-26-1 672 + xvi pp. £125.00**

### Remote Sensing and Hydrology NEW

*Editors* Christopher M. U. Neale & Michael H. Cosh



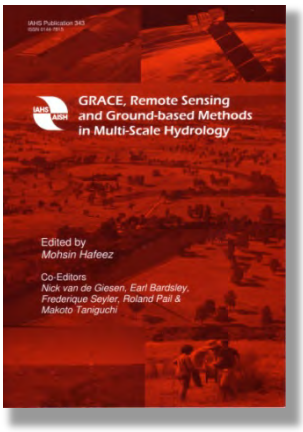

Remote sensing continues to expand the ability of scientists to study hydrological processes.

With each new technological development, more of the hydrological cycle is revealed. This impacts both the scientific understanding of hydrological processes and the models used for forecasting, and so the ability to improve decision-making processes and other applications is increasing. This compendium of more than 100 papers, an outcome of the latest ICRS International Symposium on Remote Sensing and Hydrology (Jackson Hole, Wyoming, USA, Sept 2010), reviews the status of technologies and highlights new directions and opportunities for hydrological remote sensing.

**Publ. 352 2012 978-1-907161-27-8 482+ xvi pp. £97.00**

### GRACE, Remote Sensing and Ground-based Methods in Multi-Scale Hydrology

*Editor* Mohsin Hafeez
*Co-Editors* Nick van de Giesen, Earl Bardsley, Frederique Seyler, Roland Pail & Makoto Taniguchi




Recent advances in measuring hydrological variability by means of the Gravity Recovery and Climate Experiment (GRACE) mission, and other remote sensing platforms (TRMM, Landsat and MODIS) offer great potential for estimating spatio-temporal surface water balances, spatially-averaged water budgets, hydrodynamics, hydrological processes, and characterization of groundwater systems in gauged and ungauged basins, at regional and global scales. In parallel, advances in ground-based measurement techniques, such as distributed temperature sensing and geological-weighing lysimeters, are being incorporated into research and practice for determining hydrological parameters. Collectively, the 30 peer-reviewed papers provide an overview of these techniques and their use with hydrological models for understanding multi-scale hydrological processes.

**Publ. 343 2011 978-1-901502-18-6 196 + x pp. £55.00**

### Hydroinformatics in Hydrology, Hydrogeology and Water Resources

*Editors* Ian D. Cluckie, Yangbo Chen, Vladan Babovic, Lenny Konikow, Arthur Mynett, Siegfried Demuth & Dragan A. Savic

Hydroinformatics is a reflection of the intense development that has occurred in the application of information technology in the areas of Hydrology, Hydraulics and Water Resources. The 60 contributions focus on topics ranging from Whole System Modelling and Uncertainty, to Hydrological Applications of Hydroinformatics, to Hydrogeological Applications and to Modelling of Large Systems.

**Publ. 331 2009 978-1-907161-02-5 528 + viii pp. £92.00**

### Remote Sensing for Environmental Monitoring and Change Detection

*Editors* Manfred Owe & Christopher Neale

**Publ. 316 2007 978-1-907161-24-4 288 + viii pp. £55.00**

## snow, ice, mountain hydrology

### Cold Regions Hydrology in a Changing Climate

*Editors* Daqing Yang, Philip Marsh & Alexander Gelfan

In cold regions, changes in hydrology related to changing climate, such as in frozen soils, snowfall/rainfall ratio, snow cover, river and lake ice, glacier cover and vegetation, are not well understood. The contributions here report new research results based on field observations, modelling and remote sensing in geographical regions ranging from Chile to the Arctic. Collectively, they highlight recent progress in cold regions hydrology research and its linkage with climate change at various space and time scales, but also identify gaps and needs for future research. They cover a broad domain, including snow cover, glaciers, permafrost, streamflow, temperature, precipitation, groundwater and ecosystems.

**Publ. 346 2011 978-1-901502-21-6 208 + x pp. £52.00**

## Hydrology in Mountain Regions: Observations, Processes and Dynamics

*Editors* Danny Marks, Regine Hock, Michael Lehning, Masaki Hayashi & Robert Gurney

Around the globe, mountainous regions, ranging from arctic to tropical, provide a source of water from orographic-induced rain and snow that can sustain ecosystems, agriculture and populations in areas that might otherwise be quite arid. Climate warming will alter patterns of mountain precipitation, changing seasonal snow cover and hydrology. It is critical that we understand how climate interacts with snow and mountain hydrology, how streamflow and ecosystems will be affected, and how these changes will translate into impacts on water supply downstream.

**Publ. 326 2009 978-1-901502-89-3 184 + viii pp. £45.00**

## Glacier Mass Balance Changes and Meltwater Discharge

*Editors* Patrick Ginot & Jean-Emmanuel Sicart

**Publ. 318 2007 978-1-901502-39-8 216 + viii pp. £46.00**

# surface water/predictions in ungauged basins (PUB)

## Revisiting Experimental Catchment Studies in Forest Hydrology

**NEW**

*Editors* A. A. Webb, M. Bonell, L. Bren, P. N. J. Lane, D. McGuire, D. G. Neary, J. Nettles, D. F. Scott, J. D. Stednick & Y. Wang

Most of what we know about the hydrological role of forests is based on paired catchment experiments whereby two neighbouring forested catchments are jointly monitored during a calibration period of several years, after which one catchment is kept untouched as a reference (control), while the second is submitted to a forest treatment (impact). This volume, generated from a workshop that gathered forest hydrologists from around the world, is divided into four sections.

1 Addressing new questions using historical data sets
2 Impacts of fires
3 Water quality and sediment loads
4 Ecosystem services

**Publ. 353 2012 978-1-901502-31-5 240 + viii pp. £56.00**

## Status and Perspectives of Hydrology in Small Basins

*Editors* A. Herrmann & S. Schumann; *Co-editors:* L. Holko, I. Littlewood, L. Pfister, P. Warmerdam & U. Schröder

Only in well-defined small basins with high-quality measurements can the complexities of combined physical, chemical and biological processes be adequately investigated. This volume, an outcome of the Workshop held at Goslar-Hahnenklee, Germany, focuses on:

- Operational small research basins
- Fundamental hydrological research results from small basins
- Hydrological processes
- Importance of small basin data and results for modelling

and includes the Braunschweig Declaration on: The need for a global network of long-term small hydrological research basins.

**Publ. 336 2010 978-1-901502-08-7 316 + xii pp. £65.00**

## Hydrological Modelling and Integrated Water Resources Management in Ungauged Mountainous Watersheds

*Editors* Wei-Lin Xu, Tian-Qi Ao & Xin-Hua Zhang

Some 40 contributions address:

- Modelling and predictive uncertainty
- New observation techniques and hydrological processes
- Integrated water resources management
- Eco-environmental protection

These were selected for publication after the Second IAHS-PUB International Symposium in China.

**Publ. 335 2009 978-1-907161-07-0 310 + x pp. £65.00**

## New Approaches to Hydrological Prediction in Data-sparse Regions

*Editors* K. K. Yilmaz, I. Yucel, H. V. Gupta, T. Wagener, D. Yang, H. Savenije, .C. Neale, H. Kunstmann & J. Pomeroy

When data are scarce, hydrological predictions become unreliable, mainly due to the inability to specify model components and parameter values that consistently represent the dominant hydrological processes in a particular basin, and also due to the lack of high quality model forcing. This is a problem in developed and developing countries, and the focus of much research worldwide. These papers reflect differing aspects of, and approaches to, the problem and are grouped accordingly:

- Hydrological modelling in poorly gauged and ungauged basins
- Hydrometeorology and climate change assessment
- Remote sensing applications in hydrology
- Characterizing rainfall variability and its impacts on hydrological modelling

**Publ. 333 2009 978-1-907161-04-9 344 + x pp. £66.00**

## Hydrological Research in China

*Editors* Dawen Yang, Fuqiang Tian & Lihua Tang

**Publ. 322 2008 978-1-901502-64-0 262 + x pp. £55.00**

### FOREST HYDROLOGY

David R. DeWalle

Forest Hydrology emphasizes the influence of forests and their management on the regime, quantity and quality of water. The volume provides an overview of the development of the discipline, with the early review by Zon (1927), and seminal contributions such as the Wagon Wheel Gap paired catchment study (Bates & Henry, 1928), and Kiltredge (1948) on interception and stem flow, among the 29 Benchmark papers.

**BM7 2011 978-1-907161-17-9 Hardback, 474 + x pp. £65.00**

### RAINFALL–RUNOFF MODELLING

Keith Loague

This volume reprints 30 papers that exemplify the best in rainfall–runoff modelling. It charts developments from Mulvany's (1851) rational method for estimating peak flow, probably the first rainfall–runoff model, up to 1989. Benchmark papers on other empirical approaches, such as Sherman (1932) and Mockus (1949), are reprinted, as are Richards (1931) and Smith & Parlange (1978), the innovative contributions of Alan Freeze, and later Keith Beven, and the seminal papers of Moore & Clarke (1981) and Abbott *et al.* (1986).

**BM4 2010 978-1-907161-06-3 Hardback, 506 + vi pp. £65.00**

### EVAPORATION

John H. C. Gash & W. James Shuttleworth

The development of evaporation measurement techniques are documented first, commencing with the Wagon Wheel Gap catchment water balance (1921), through mass budget to water transfer methods, and use of scintillometry. Dalton's seminal essay *On Evaporation* (1802) starts the selection of papers on evaporation estimation, which then covers atmospheric controls on the evaporation process (the original Penman and Thornthwaite papers are reprinted), vegetation controls via transpiration and interception, and finally evaporation as a component of the global climate system. The Commentaries explain the context and significance of each paper.

**BM2 2007 978-901502-98-5 Softback, 526 pp. £40.00**

### STREAMFLOW GENERATION PROCESSES

Keith J. Beven

Keith Beven's selection of 31 papers to reprint on the theme of Streamflow Generation Processes, spans the period from 1933 to 1984, commencing with Horton's early papers on infiltration and on maximum groundwater levels. With the aid of the Introduction and Commentaries, they provide a stimulating insight to how this part of the field of hydrology developed.

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**Publ. 357 2012 978-1-901502-35-3**

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*Editors* R. J. Moore. See page 5 (remote sensing)

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*Editors* Corinna Abesser *et al.* See page 4 (groundwater)

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*Editors* Mohsin Hafeez *et al.* See page 5 (remote sensing)

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### Changes in Flood Risk in Europe

Zbigniew W. Kundzewicz See page 4 (groundwater)

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## water quality

### Water Quality: Current Trends and Expected Climate Change Impacts

*Editors* Norman E. Peters, Valentina Krysanova, Ahti Lepistö, Rajendra Prasad, Martin Thoms, & Sarantuyaa Zandaryaa

The contributions provide an overview of the broad spectrum of water quality issues and deal with:

- Seasonality and extreme event effects on water quality
- Effects on groundwater quality
- Climate change and water quality assessment
- Climate change and water temperature, and
- Climate change and water quality modelling.

This volume is a contribution to the International Hydrological Programme (IHP) of UNESCO.

**Publ. 348 2011 978-1-901502-23-0 186 + xipp. £50.00**

### Water Quality and Sediment Behaviour of the Future: Predictions for the 21st Century

*Editors* Bruce W. Webb & Dirk De Boer

**Publ. 314 2007 978-1-901502-14-5 322 + xi pp. £62.00**

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*Editors* Mike Stone, Adrian Collins & Martin Thoms . See page 3 (erosion and sediment)

**Publ. 354 2012 978-1-901502-32-2 124 + viii pp. £40.00**

## water resources & management

### Risk in Water Resources Management

*Editors* Günter Blöschl, Kuni Takeuchi, Sharad Jain, Andreas Farnleitner & Andreas Schumann

Water resources management has to deal with incomplete knowledge of the current dynamics and the future evolution of water resource systems. Risk is a concept that helps in making management decisions under incomplete and/or incorrect knowledge by relating water-related hazards and their consequences. Risks related to floods and droughts, to the environment and to health, as well as economic and financial risk are encompassed by water resources management. It is not possible to completely eliminate uncertainty, but better understanding of the sources and magnitude of the uncertainties involved in a particular project will clearly lead to improved decisions: this volume aims towards that end.

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### Global Change: Facing Risks and Threats to Water Resources

*Editors* E. Servat, S. Demuth, A. Dezetter & T. Daniell;
*Co-editors* E. Ferrari, M. Ijjaali, R. Jabrane, H. Van Lanen & Y. Huang

Contributions from the 6th World FRIEND Conference address: Hydro-hazards, Adaptation Strategies, Human Pressure on Limited Resources, Environmental Information and Monitoring Systems, and Large Scale Hydroclimatic Variability and Impact. FRIEND (Flow Regimes from International Experimental and Network Data) aims to improve understanding of hydrological variability and similarity across time and space through mutual exchange of data, knowledge and techniques.

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### Hydrological Modelling and Integrated Water Resources Management in Ungauged Mountainous Watersheds

*Editors* Wei-Lin Xu *et al.* See page 4

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### Improving Integrated Surface and Groundwater Resources Management in a Vulnerable and Changing World

*Editors* Günter Blöschl, Nick Van De Giesen, D. Muralidharan, Liliang Ren, Frédérique Seyler, Uttam Sharma & Jaroslav Vrba

With the increasing difficulties of meeting human demands on water resource quantity and quality, new concepts in water management need to be explored, with a move away from centralised command and control approaches to more participatory multi-stakeholder approaches that have the potential to be flexible and responsive. This volume tackles:

- Water resources availability
- Water for food
- Water quality
- Floods and droughts
- Change assessment and management
- Monitoring and optimisation
- Integrating water resources management

**Publ. 330 2009 978-1-907161-01-8 382 + x pp. £71.50**

### The Role of Hydrology in Water Resources Management

*Editors* Hans-Jürgen Liebscher, Robin Clarke, John Rodda, Gert Schultz, Andreas Schumann, Lucio Ubertini & Gordon Young

How can hydrologists contribute most effectively to the planning and management of freshwater projects, including the efficient operation of

existing systems faced with new socio-political situations? And how can water resource managers capitalise on the hydrological expertise available to them? The contributions discuss these topics and consider the need to include more environmental, social and economic aspects in the planning and management of projects, while keeping in mind the sustainability of water resource systems:

- Integrated water resources management
- Hydrology and dams
- Hydrology for flood protection
- Hydrology and water supply systems
- Hydrology for groundwater management
- Hydrology for the protection of ecosystems

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*Editors* Xiaohong Chen, Yongqin David Chen, Jun Xia & Hailun Zhang

Many regions in Asia are experiencing unprecedented rapid development resulting in great pressures on environmental quality and sustainable management of natural resources. China has traditionally emphasised water shortages in the Yellow River basin and flooding by the Yangtze River, but water problems in South China, and especially the Pearl River (Zhujiang) basin are now attracting attention. Provides an insight to the on-going innovative work.

**Publ. 319 2008 978-1-901502-44-2 422 + x pp. £72.00**

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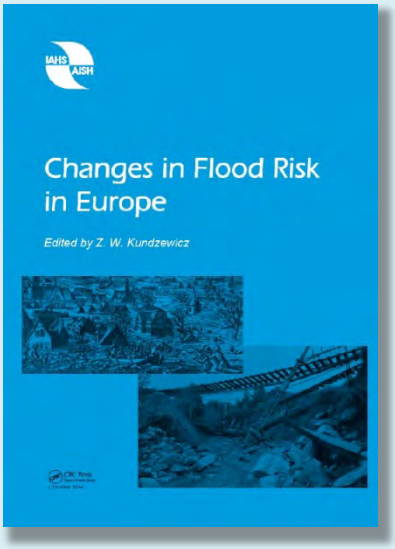


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