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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 IAHS series collects together, by theme, the scientific papers that provided the foundations for hydrology in the 20th century. Published across a wide spectrum of disciplines, these papers define the field and provide an overview of the development of ideas that led to our current concepts and understanding in hydrology.

FOREST HYDROLOGY

David R. DeWalle
BM7 2011 See p. 6 (surface water)

HYDRO-GEOMORPHOLOGY, EROSION AND SEDIMENTATION

Michael J. Kirkby
BM6 2011 See p. 2 (erosion & sediment)

RIPARIAN ZONE HYDROLOGY AND BIOGEOCHEMISTRY

T. P. Burt, G. Pinay & S. Sabater
BM5 2010 See p. 2 (ecohydrology/hydro-ecology)

RAINFALL–RUNOFF MODELLING

Keith Loague
BM4 2010 See p. 6 (surface water)

GROUNDWATER

Mary P. Anderson
BM3 2008 See p. 3 (groundwater)

EVAPORATION

John H. C. Gash & W. James Shuttleworth
BM2 2007 See p. 6 (surface water)

STREAMFLOW GENERATION PROCESSES

Keith J. Beven
BM1 2006 See p. 6 (surface water)

Forthcoming

PALAEOHYDROLOGY V. Baker

ISOTOPE HYDROLOGY P. Aggarwal & J. Gat

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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 2005, grouped by subject, on pages 1–9. Bibliographic details of books published since 2001 are listed on pages 8–9. Information about all books, including abstracts of papers, is available at the IAHS website – click on Publications. The older Red Books (Publs 1–250, i.e. 1922–1998) are free to view as Pdfs at the IAHS website. Print copies of some older volumes are still available.

IAHS Membership is free of charge
All IAHS members ordering personally from IAHS Press are eligible for 25% discount on book prices. Members in poor countries are eligible for 80% discount, subject to the £15 minimum price restriction, and to free online access to *Hydrological Sciences Journal*.

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 1.418, and the Five-Year Impact Factor is 1.914

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

Taylor & Francis
Taylor & Francis Group

Special journal subscription rates are available to IAHS Members: £27.00 for a personal online subscription, and £48.00 for a personal online + print subscription (£32.40 and £53.40, respectively for EU members, inclusive of VAT). IAHS Members should order from IAHS Press.

Access to the back archive is free – explore 53 volumes of cutting-edge research and discovery

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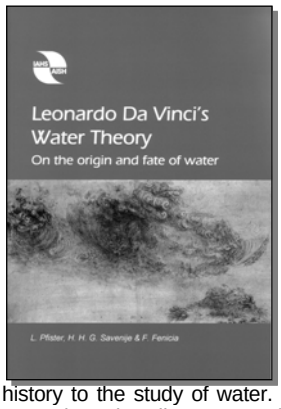
(June 2011)

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. Two hundred years before Newton, Perrault and Halley, Leonardo Da Vinci was doing hypothesis-driven science and describing and classifying hydrological processes. For example, he came close to the modern definition of the hydrological cycle, recognising that water passes through the major river systems countless times, summing up to volumes much greater than those contained in the world's oceans. Pfister, Savenije and Fenicia carefully report Da Vinci's seminal work and provide a modern hydrological context.

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

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

A collection of papers by Vít Klemeš (1932–2010) that provide an insight to the science and practice of hydrology.

Reading Klemeš's work continues to be a refreshing, enlightening and inspiring experience. The 21 papers, first published across the scientific literature, include:

- Dilettantism in hydrology: transition or destiny
- Of carts and horses in hydrologic modelling
- Statistics and probability: wrong remedies for a confused hydrologic modeller
- Probability of extreme hydrometeorological events—a different approach
- Risk analysis: the unbearable cleverness of bluffing
- Water storage: source of inspiration and desperation
- Geophysical time series and climatic change
- Design implications of climatic change

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

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

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

The Court of Miracles of Hydrology

Guest Editors Charles Perrin & Vazken Andréassian

HSJ 55(6) (*2010*) 236 + iv pp. (available from Taylor & Francis)

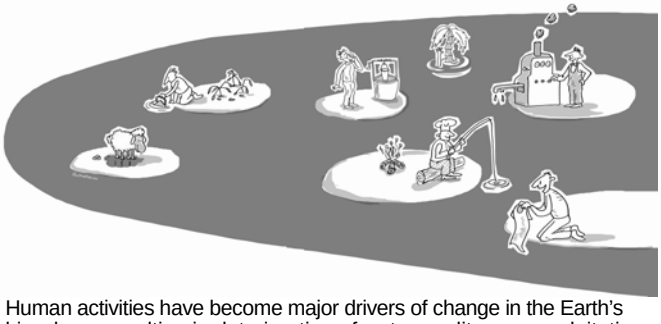
Water Crisis: From Conflict to Cooperation

Guest Editor Bellie Sivakumar

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

Hydrocomplexity: New Tools for Solving Wicked Water Problems

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

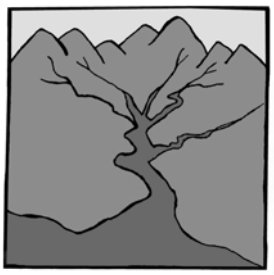


Human activities have become major drivers of change in the Earth's biosphere, resulting in deterioration of water quality, overexploitation of freshwater resources, hydrological hazards and landscape degradation, and affecting the functioning of ecosystems and their ability to provide the goods and 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

Water in Celtic Countries: Quantity, Quality and Climate Variability

Editors J. P. Lobo Ferreira & José M. P. Viera

Provides a focus on hydrology in the Celtic countries: Portugal, Galicia (Spain), Brittany (France), west/southwest England, Ireland, Wales and Scotland, where commodities include mild climate, dense, fast flowing river networks, scarce groundwater, rising pollution, and demands on water services due to seasonal tourism, and on the themes:

- Climate Variability
- Water Quality
- Groundwater
- Hydrology
- Modelling
- Management and Environmental Impact Assessment

Sponsored by Laboratório Nacional de Engenharia Civil, Universidade de Minho, Associação Portuguesa dos Recursos Hídricos, Institut National des Sciences Appliquées and University of Wales.

Publ. 310 2007 978-1-901502-88-6 358 + viii pp. £66.00

ecohydrology/hydro-ecology

RIPARIAN ZONE HYDROLOGY AND BIOGEOCHEMISTRY

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

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

Editors Corinna Abesser et al. See page 3 (groundwater)

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

Sediment Dynamics and the Hydromorphology of Fluvial Systems

Editors John S. Rowan et al. See page 2 (erosion & sediment)

Publ. 306 2006 978-1-901502-68-8 630 + viii pp. £96.00

Special Issues of Hydrological Sciences Journal (HSJ)

Advances in Ecohydrological Modelling with SWAT

Guest Editors Valentina Krysanova & Jeffrey G. Arnold

HSJ 53(8) (October 2008)

Ecosystem Services of Wetlands

Guest Editor Michael Acreman

HSJ 56(8) (December 2011) (forthcoming)

erosion and sediment

HYDRO-GEOMORPHOLOGY, EROSION AND SEDIMENTATION

Michael J. Kirkby

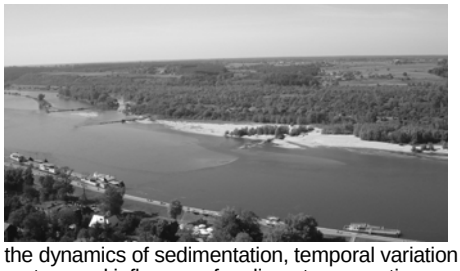
In this Benchmark Series volume, Kirkby presents a systematic analysis of the relationships between hydrology and geomorphology with commentaries on the papers that have been most influential in the development of research at the hydrology/geomorphology interface. Thirty-seven papers are reprinted in 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

Sediment Dynamics and the Hydromorphology of Fluvial Systems

Editors John S. Rowan, Robert W. Duck & Alan Werritty

Links sediment dynamics to hydromorphology and, by extension, to the biogeochemical functioning and ecohydrology of fluvial systems. Fluvial sediment dynamics are explored over a range of spatial and temporal scales, from global and continental-scale fluxes to detailed process studies on small instrumented catchments, and particularly the role of extreme events. Process links between hydromorphology and ecology are examined and management-related studies are detailed.

Publ. 306 2006 978-1-901502-68-8 630 + viii pp. £96.00

SEE ALSO

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

Editors Bruce W. Webb & Dirk De Boer. See page 7 (water quality)

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

FORTHCOMING

Sediment Problems and Management in Asian River Basins (2011)

Contribution to the UNESCO IHP International Sediment Initiative

Editor D. E. Walling

GROUNDWATER

Mary P. Anderson

Mary Anderson's selection for this Benchmark Series volume, and the commentaries that she has prepared to accompany the 35 reprinted papers, detail the development of groundwater hydrology during the 20th century. 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 and heterogeneity 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 actively investigated many aspects of groundwater–surface water interactions, and has succeeded in identifying and understanding many underlying processes and factors, such as the dynamics of flow, sediment transport, contaminant transport and chemical reactions in river beds and flood plains and how processes at different spatial scales interact. Advances have been made through field, laboratory, and modelling investigations. 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 understanding 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

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. The contributions, from EISOLS2010, reflect the international state of the art.

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

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-based livelihoods
- Impact of climate variability and change on groundwater and groundwater-fed ecosystems
- Monitoring and modelling groundwater use and replenishment
- Estimation of groundwater resources and demand under a changing climate
- 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

Calibration and Reliability in Groundwater Modelling: Credibility of Modelling

Editors J. C. Refsgaard, K. Kovar, E. Haarder & E. Nygaard

An outcome of ModelCARE2007, the sixth in the Calibration and Reliability in Groundwater Modelling international conference series. The papers are organised in the following themes:

- Development in modelling and uncertainty assessment
- Credibility in modelling for practical approaches
- New data types and monitoring systems
- Integrated hydrological modelling
- Reactive and density affected transport
- Parameter estimation and model calibration
- Geological models and conceptual model uncertainty

Publ. 320 2008 978-1-901502-49-7 358 + x pp. £67.00

Groundwater and Climate in Africa

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

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

A New Focus on Groundwater–Seawater Interactions

Editors W. Sanford, C. Langevin, M. Polemio & P. Povinec

Oceanographers, marine scientists, and those studying and managing saltwater intrusion in coastal aquifers, share a common goal of quantification and understanding of groundwater and seawater interactions. This volume presents research approached from the marine and terrestrial sides of the issues, covering a variety of investigative approaches applied at locations worldwide.

Publ. 312 2007 978-1-901502-04-6 344 + x pp. £64.00

SEE ALSO

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

Editors Günter Blöschl et al. See page 7 (water resources)

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

hydroclimatology

Hydro-climatology: Variability and Change

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

The hydro-climatological approach of this volume 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 interdisciplinary 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

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 and ice)

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 3 (groundwater)

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

Climate and the Hydrological Cycle

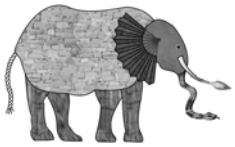
Editors Marc Bierkens, Han Dolman & Peter Troch

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

predictions in ungauged basins (PUB)



Ungauged basins (by far the majority) present major difficulties for hydrological prediction, hence the IAHS Predictions in Ungauged Basins (PUB) initiative, 2003–2012.

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. The China Prediction in Ungauged Basins (PUB) group focuses on the new methodology of hydrological simulation and prediction under natural and human-induced global changes.

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

Climate in China varies from arid/semi-arid to semi-humid/humid, inducing a variety of hydrological phenomena. Under the pressure of the increasing population, in northern China the scarcity of water resources is a constraint for social and economic development, and has led to the widespread degradation of natural ecosystems and the general environment, while in southern China flooding is a great threat and the potential risks are increasing steadily. Accurate predictions of droughts and floods are extremely important to these regions. China is changing from traditional water resources usage to water resources management for sustainable development, and needs advanced hydrology for this. Provides a cross-section of the innovative research in China.

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

SEE ALSO

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

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

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

Quantification and Reduction of Predictive Uncertainty for Sustainable Water Resources Management

Editors Eva Boegh, Harald Kunstmann, Thorsten Wagener, Alan Hall, Luis Bastidas, Stewart Franks, Hoshin Gupta, Dan Rosbjerg & John Schaake

This book considers the uncertainties in the end-to-end prediction of hydrological variables, from the atmospheric driving, to the hydrological calculations for scientifically-sound decisions in sustainable water management. It is organized in two main parts; the first addresses the Q*uantification and reduction of predictive uncertainty in hydrometeorological forcing*, and the second includes studies aiming at *Minimizing risks in water management decisions by improving the understanding and spatial representation of the coupled land–atmosphere system.*

Publ. 313 2007 978-1-901502-09-1 508 + iv pp. £87.00

PUB Kick-Off

Editors D. Schertzer, P. Hubert, S. Koide & K. Takeuchi

Publ. 309 2007 Papers open access only at www.iahs.info

remote sensing

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

FORTHCOMING

Remote Sensing and Hydrology (2011)

Editors C. Neal *et al.*

Weather Radar and Hydrology (2011/2012)

Editors R. J. Moore *et al.*

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

Remote sensing technology has evolved into an integral research tool for the natural sciences. Hydrology has developed a strong remote sensing analysis component that has facilitated research over a broad range of spatial and temporal scales, and especially in water resources management, environmental monitoring and prediction, and the detection of environmental change. Approaches using the thermal infrared, microwave and radar; studies monitoring vegetation, snow and ice, and evapotranspiration; and the combination of remote sensing techniques and GIS for hydrological applications, are compiled in this volume.

Publ. 316 2007 978-1-901502-24-4 288 + viii pp. £55.00

snow and ice

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

SEE ALSO

Hydrology in Mountain Regions: Observations, Processes and Dynamics

Editors D. Marks *et al.* See page 6 (surface water)

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

Mountain snow cover and glaciers contribute considerably to streamflow in many parts of the world, and modify runoff in terms of quantity, timing and variability. Their role is emphasized in the light of globally increasing freshwater demand and the potential impacts of future climate change. The effect of snow and ice on runoff varies between different climatic regions. While in mid- and high-latitude areas seasonal snow cover exerts a strong control on runoff variations, in low latitudes glaciers provide the most dominant source of water during the dry season. Papers are grouped under Hydrology, Mass balance and Meteorology.

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

FORTHCOMING

High Mountain Snow and Ice Hydrology

Editors John Pomeroy *et al.*

Publ. 332 2009 Papers will be open access at www.iahs.info

surface water (see also PUB)

FOREST HYDROLOGY

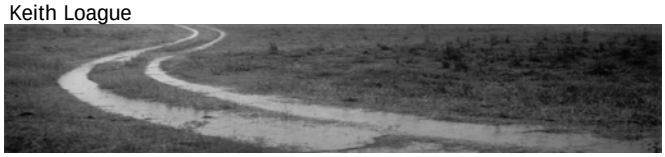
David R. DeWalle

This volume of the Benchmark Series includes the early review by Zon (1927) and the Wagon Wheel Gap paired watershed study (Bates & Henry, 1928). Forest Practices and Water Yields and Timing looks at the impacts of management on flows, with contributions by Hoover (1944) and Hewlett & Helvey (1970). Understanding and quantifying forest snow cover processes is represented by three papers in Forest Practices and Snow, including the early study by Wilm & Dunford (1948), while Forest Evapotranspiration considers the seminal developments in the direct measurement and estimation of losses from trees. Kittredge's (1948) review is included in Hydrological Processes and Forests, which covers interception losses, soil moisture, hydraulic lift and precipitation from fog. The shift in focus from water quantity to quality is reflected in Forests and Water Quality. The final section considers Forest Practices and Erosion.

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

RAINFALL–RUNOFF MODELLING

Keith Loague



Loague notes that hundreds, if not thousands, of hydrologic-response models have been developed, but that not all were created equal. 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 Gash & 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.

BM1 2006 978-901502-53-4 Softback, 432 pp. £40.00

FORTHCOMING

Changes in Flood Risk in Europe (2011/2012)

Editor Z. Kundzewicz (EU WATCH project) (Special Publication)

Experimental Forest Hydrology (2011/2012)

Editors Ashley Webb *et al.*

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

Hydrology in Mountain Regions: Observations, Processes and Dynamics

Editor 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

Methodology in Hydrology

Editors Liliang Ren, Qiongfang Li, Danrong Zhang & Jun Xia

A unique overview, in English, of current hydrological science in China. The ~100 contributions, primarily from China, were selected from a major conference held in Nanjing, and are grouped as:

- Hydrological modelling and flood forecasting
- Stochastic hydrology
- Water quality modelling and analysis
- Water resources management and water economy
- Interdisciplinary hydrology

Details of the hydrology of the Yangtze and Yellow rivers and other drainage basins in China, and about engineering projects, including the South-to-North Water Transfer, are included.

Publ. 311 2007 978-1-901502-93-0 654 + xii pp. £110.00

Large Sample Basin Experiments for Hydrological Model Parameterization: Results of the Model Parameter Experiment – MOPEX

Editors Vazken Andréassian, Alan Hall, Nanée Chahinian & John Schaake

Demonstrates just how valuable it is to work on large data sets in hydrological modelling, with examples. It details the goals of the MOPEX project, and presents the databases that were used; much of the data are published on the accompanying DVD.

- Four papers, solicited especially for this volume, provide alternative views on the use of large sample basin experiments in hydrology.
- Model parameterization experiments based on the MOPEX databases and other regionalization and parameterization studies are presented.
- The most recent results of MOPEX are compiled and perspectives discussed.

Publ. 307 2006 978-1-901502-73-2 348 + iv pp. £70.00

SEE ALSO

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

Editors Corinna Abesser *et al.* See page 3 (groundwater)

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

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

Editors Corinna Abesser *et al.* See page 3 (groundwater)

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

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

Examines, for both surface water and groundwater systems, not only the nature and controls of future changes in water quality and sediment behaviour, but also what the implications of these will be for human use of water and for freshwater ecosystems, and how well our science is equipped to predict the future. Thirty-six papers are grouped in three sections:

- Sediment and Nutrient Behaviour in Surface Waters
- Metals and Other Water Quality Problems
- Management Issues.

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

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.

Publ. 347 2011 978-1-901502-22-3 276 + x pp. £62.00

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.

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

SEE ALSO

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

Editors D. Carreón-Freyre *et al.* See page 3 (groundwater)

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

Hydrological Modelling and Integrated Water Resources Management in Ungauged Mountainous Watersheds

Editors Wei-Lin Xu *et al.* See page 4 (predictions in ungauged basins)

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

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 and
- Hydrology for the Protection of Ecosystems

Publ. 327 2009 978-1-901502-94-7 332 + xii pp. £67.00

Hydrological Sciences for Managing Water Resources in the Asian Developing World

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

Reducing the Vulnerability of Societies to Water Related Risks at the Basin Scale

Editors Andreas Schumann & Markus Pahlow

The need for integrated approaches to deal with complex water resources management issues in both the developed and developing world is well recognised, yet, in many places, IWRM is still only a concept and not an established practice. This collection of papers considers the heterogeneity of world water problems by addressing the following important questions: What has to be integrated? How can it be accomplished? What are the options to balance the different views? How to cope with water-related vulnerability of societies forms the overarching theme. An excellent overview of current Integrated Water Resource Management (IWRM) research worldwide.

Publ. 317 2007 978-1-901502-29-9 450 + xiv pp. £78.00

Changes in Water Resources Systems: Methodologies to Maintain Water Security and Ensure Integrated Management

Editors Nick van de Giesen, Xia Jun, Dan Rosbjerg & Yoshihiro Fukushima

The continuously changing pressures on our water resources are diverse: the pressure to produce food and provide household water is of extreme importance in Africa; in Asia, the rapidly emerging economies of China and India show that the need for water of sufficient quality is becoming a development constraint; and in Europe, North America, Australia and Japan, water resources have long been recognized as essential for social well-being, as now expressed in institutional changes, such as the European Water Framework. This diverse set of challenges is met with an equally diverse set of solutions and approaches, as illustrated in this book.

Publ. 315 2007 978-1-901502-19-0 330 + viii pp. £62.00

FORTHCOMING

Water Resources Sustainability in a Changing Environment (2011)

Editors Liliang Ren *et al.*

Publications in the Proceedings and Reports Series (ISSN 0144-7815)

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