

IUGG



**International Association
of Hydrological Sciences**

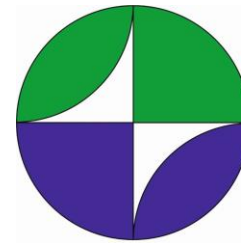


International Association of Hydrological Sciences
Association Internationale des Sciences Hydrologiques

**Celebrating 90 years of
international scientific cooperation
and activity**

Delft, October 2012

International Science Council



IUGG



International Association
of Hydrological Sciences

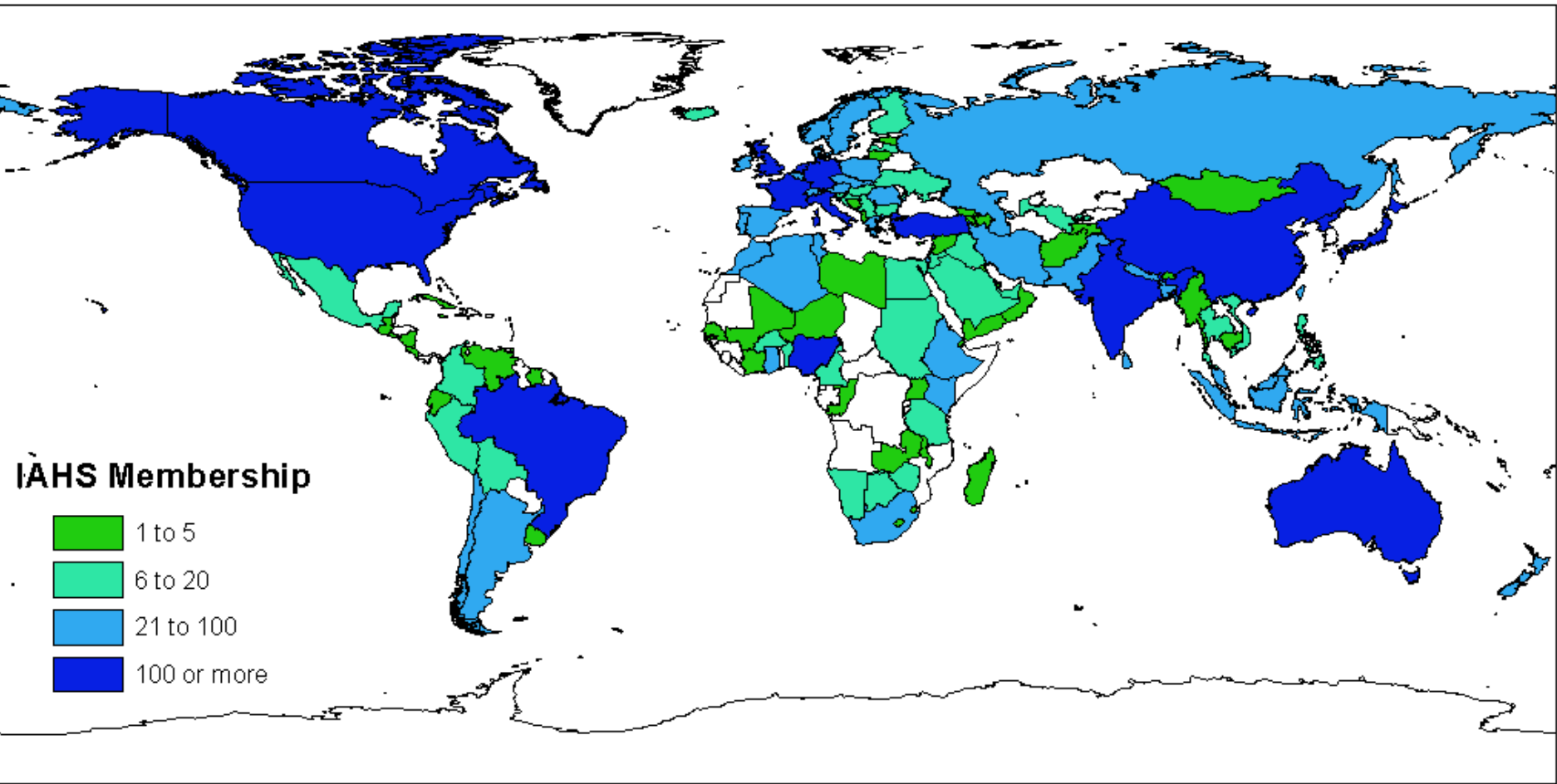
Hydrology as a geoscience

Supporting water
management

Worldwide cooperation

Bridging divides

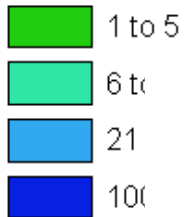
Capitalizing knowlegde



IAHS Membership

- 1 to 5
- 6 to 20
- 21 to 100
- 100 or more

IAHS Membership



Contact us



JOIN US



MEMBERS AREA



NEWS

Message from Hubert Savenije, IAHS President



EVENTS

Monday, 7th April 2014

Weather Radar and Hydrology International Symposium



INTERNATIONAL ASSOCIATION OF HYDROLOGICAL SCIENCES

IAHS – SUPPORTING HYDROLOGY AND RELATED SCIENCES WORLDWIDE

The IAHS community is more than 5500 strong with members in almost 200 countries contributing to the extensive programme of conferences and workshops, online discussions and IAHS publications

Members are kept informed of IAHS activities and benefit from discounts on publications – those in the poorest countries receive free online subscriptions to *Hydrological Sciences Journal* and other discounts.

FEATURES

DOOGE NASH INTERNATIONAL SYMPOSIUM 2014 Dublin, Ireland, 24-25 April

Background and Objectives

The Symposium will bring together experts to discuss

Enter search phrase..





Working Groups

Panta Rhei:

MOXXI:
Modelling and observations

CANDHY:
Citizen AND Hydrology:

Education

Instruments

Meetings

Publications

Awards

Unsolved problems in Hydrology
Why, what, how?

Continental Erosion

Surface Water

Coupled Land-Atmosphere Systems

Water Quality

Tracers

Remote Sensing

Groundwater

Snow and Ice Hydrology

Statistical Hydrology

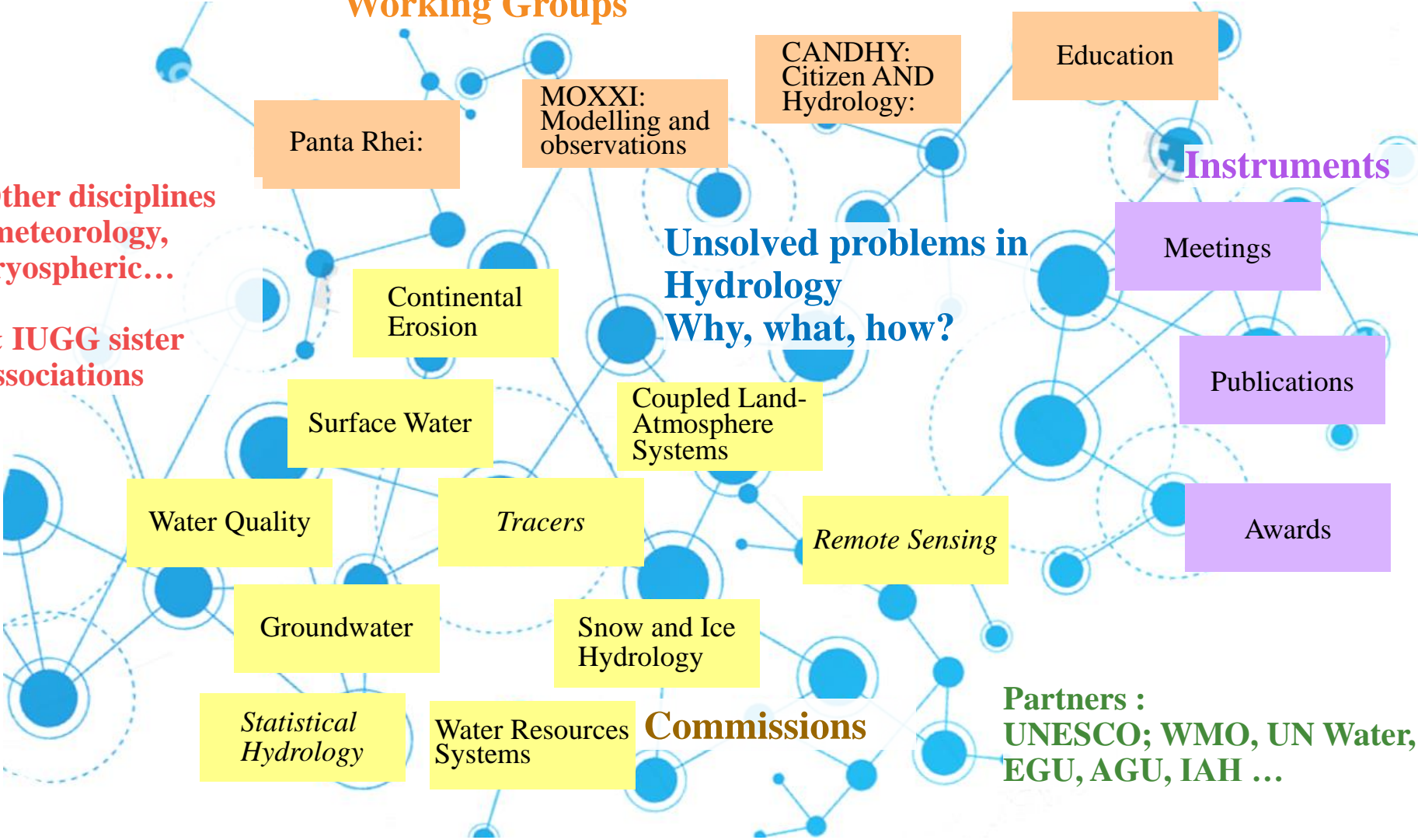
Water Resources Systems

Commissions

Partners :
UNESCO; WMO, UN Water,
EGU, AGU, IAH ...

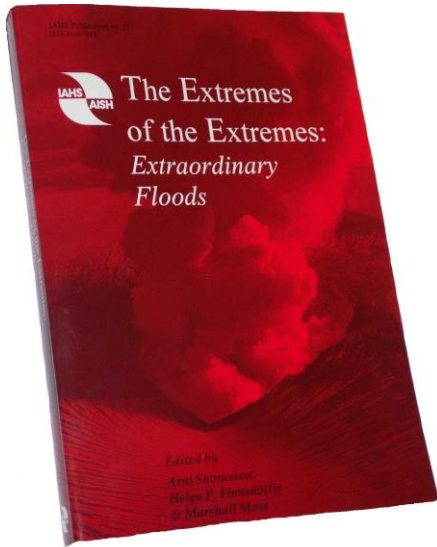
Other disciplines
:meteorology,
cryospheric...

& IUGG sister
associations

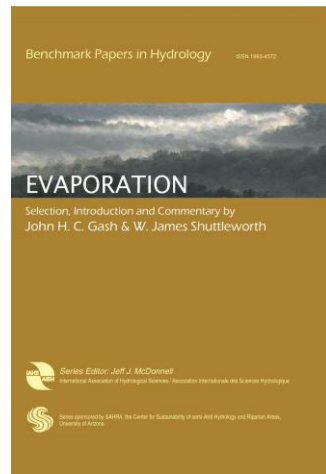




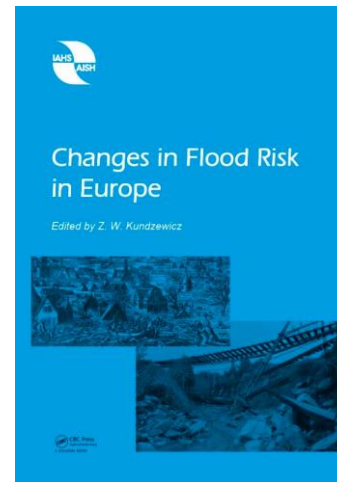
More than 100,000 pages digitized on line



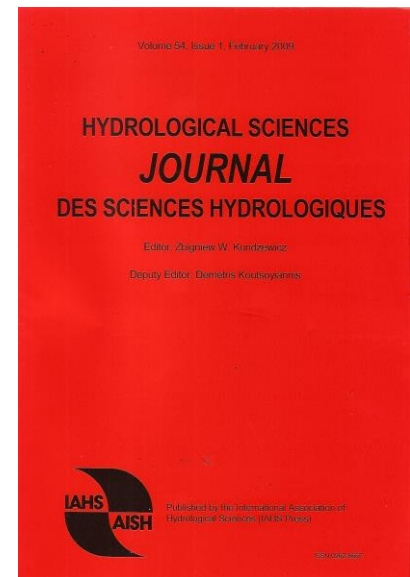
374 Red Books published since 1924



Benchmark Papers
9 volumes



Blue Books
10 volumes



Since 1956



Proceedings of the International Association of Hydrological Sciences

An open-access publication for refereed proceedings in hydrology



| IAHS |

| Contact |

- About
- Articles
- RSS feeds
- Peer review
- For authors
- For reviewers

User ID

Password

[New user?](#) | [Lost login?](#)

Journal metrics

Scopus SNIP 0.058

SJR 0.135

CWTS IPP 0.096

[Definitions](#)

- Abstracted/indexed**
- Conference Proceedings Citation Index
 - Scopus
 - ADS

Most downloaded

Volumes

▶ **Volume 374, 2016**
Water Resources Assessment and Seasonal Prediction
 International Conference Water Resources Assessment and Seasonal Prediction, Koblenz, Germany, 13–16 October 2015
 W. Grabs and S. Demuth

▶ **Volume 373, 2016**
The spatial dimensions of water management – Redistribution of benefits and risks
 7th International Water Resources Management Conference of ICWRS, Bochum, Germany, 18–20 May 2016
 A. H. Schumann, G. Blöschl, A. Castellarin, J. Dietrich, S. Grimaldi, U. Haberlandt, A. Montanari, D. Rosbjerg, A. Viglione, and S. Vorogushyn

▶ **Volume 372, 2015**
Prevention and mitigation of natural and anthropogenic hazards due to land subsidence
 Ninth International Symposium on Land Subsidence (NISOLS), Nagoya, Japan, 15–19 November 2015
 K. Daito and D. Galloway

▶ **Volume 371, 2015**
Hydrologic Non-Stationarity and Extrapolating Models to Predict the Future
 IAHS Symposium HS02, 26th General Assembly of the International Union of Geodesy and Geophysics, Prague, Czech Republic, 22 June–2 July 2015
 J. Vaze, F. Chiew, D. Hughes, and V. Andreassian

▶ **Volume 370, 2015**
Changes in Flood Risk and Perception in Catchments and Cities
 IAHS Symposium HS01, 26th General Assembly of the International Union of Geodesy and Geophysics, Prague, Czech Republic, 22 June–2 July 2015
 M. Rogger, H. Aksoy, M. Kooy, A. Schumann, E. Toth, Y. Chen, V. Borrell Estupina, and G. Blöschl

▶ **Volume 369, 2015**
Extreme Hydrological Events
 IAHS-IACS-IAG Joint Symposium JH1, 26th General Assembly of the International Union of Geodesy and Geophysics, Prague, Czech Republic, 22 June–2 July 2015
 C. Cudennec, A. Eicker, P. Pilon, M. Stoffel, A. Viglione, and Z. Xu

▶ **Volume 368, 2015**
Remote Sensing and GIS for Hydrology and Water Resources
 2nd Remote Sensing and Hydrology Symposium (RSUS14) and the 2nd International Conference of GIS/RS in Hydrology and Water Resources



Search articles

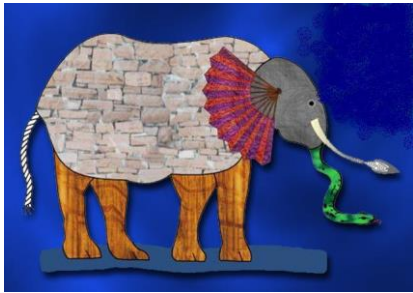
Search

Author

Search web pages

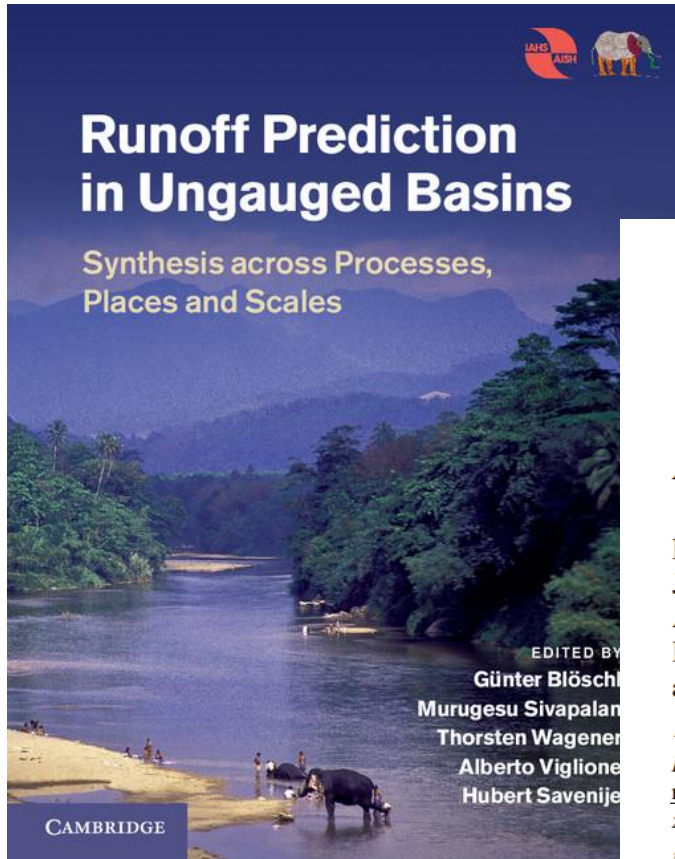
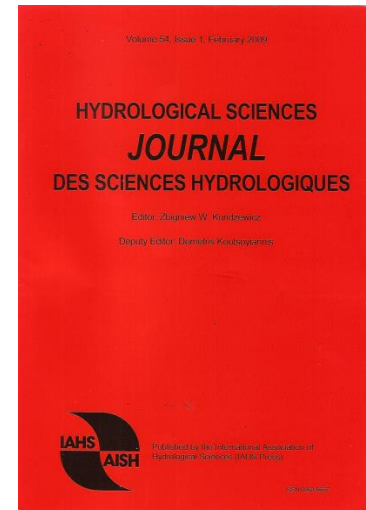
Search





PUB

2003-2012



Hydrological Sciences Journal – Journal des Sciences Hydrologiques, 2013
<http://dx.doi.org/10.1080/02626667.2013.803183>

1

A decade of Predictions in Ungauged Basins (PUB)—a review

M. Hrachowitz¹, H. H. G. Savenije^{1,2†}, G. Blösch^{3†}, J. J. McDonnell^{4,5†}, M. Sivapalan^{6†}, J. W. Pomeroy^{7†}, B. Arheimer⁸, T. Blume⁹, M. P. Clark¹⁰, U. Ehret¹¹, F. Fenicia^{1,12}, J. E. Freer¹³, A. Gelfan¹⁴, H. V. Gupta¹⁵, D. A. Hughes¹⁶, R. W. Hut¹, A. Montanari¹⁷, S. Pande¹, D. Tetzlaff⁵, P. A. Troch¹⁵, S. Uhlenbrook^{1,2}, T. Wagener¹⁸, H. C. Winsemius¹⁹, R. A. Woods¹⁸, E. Zehe¹¹ and C. Cudennec^{20‡}

¹Water Resources Section, Faculty of Civil Engineering and Applied Geosciences, Delft University of Technology, Stevinweg 1, 2600 GA Delft, The Netherlands
m.hrachowitz@tudelft.nl

²UNESCO-IHE Institute for Water Education, Westvest 7, 2601 DA Delft, The Netherlands

³Institute of Hydraulic Engineering and Water Resources Management, Vienna University of Technology, Vienna, Austria

Before

Lack of concurrent data at multiple time/space scales

Insufficient understanding of landscapes and emerging patterns

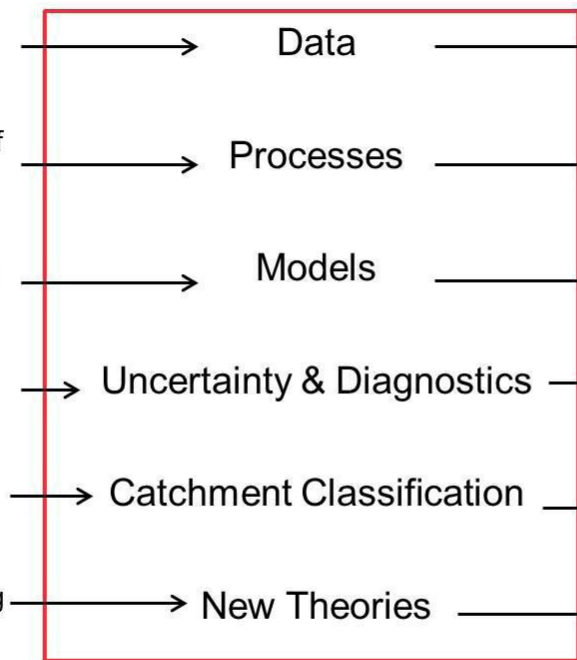
Empirical/calibration-based OR physically based

Low awareness

Fragmented case-studies

Isolated discipline, Lack of understanding of organizing principles at various scales

PUB



After

New observation techniques, Multiple open datasets, Assimilation methods

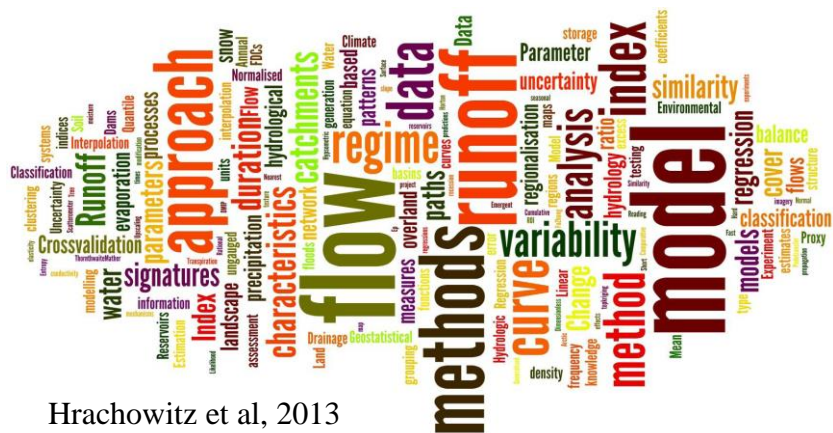
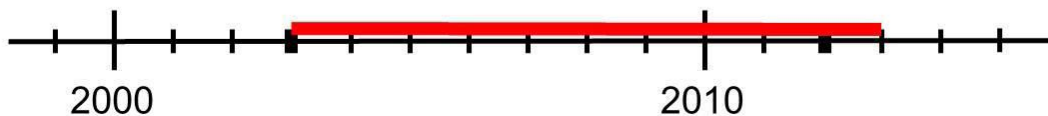
Better understanding of multi-scale spatio-temporal heterogeneity

Merged flexible concepts, Process-based, Systems understanding

Better understanding of uncertainty, Catchment signatures, Multi-model approaches

Comparative studies, Regionalization techniques, Similarity frameworks

Interdisciplinarity, Co-evolution, Systems approach



Hrachowitz et al, 2013

Fragmentation of knowledge building



Accumulation of knowledge



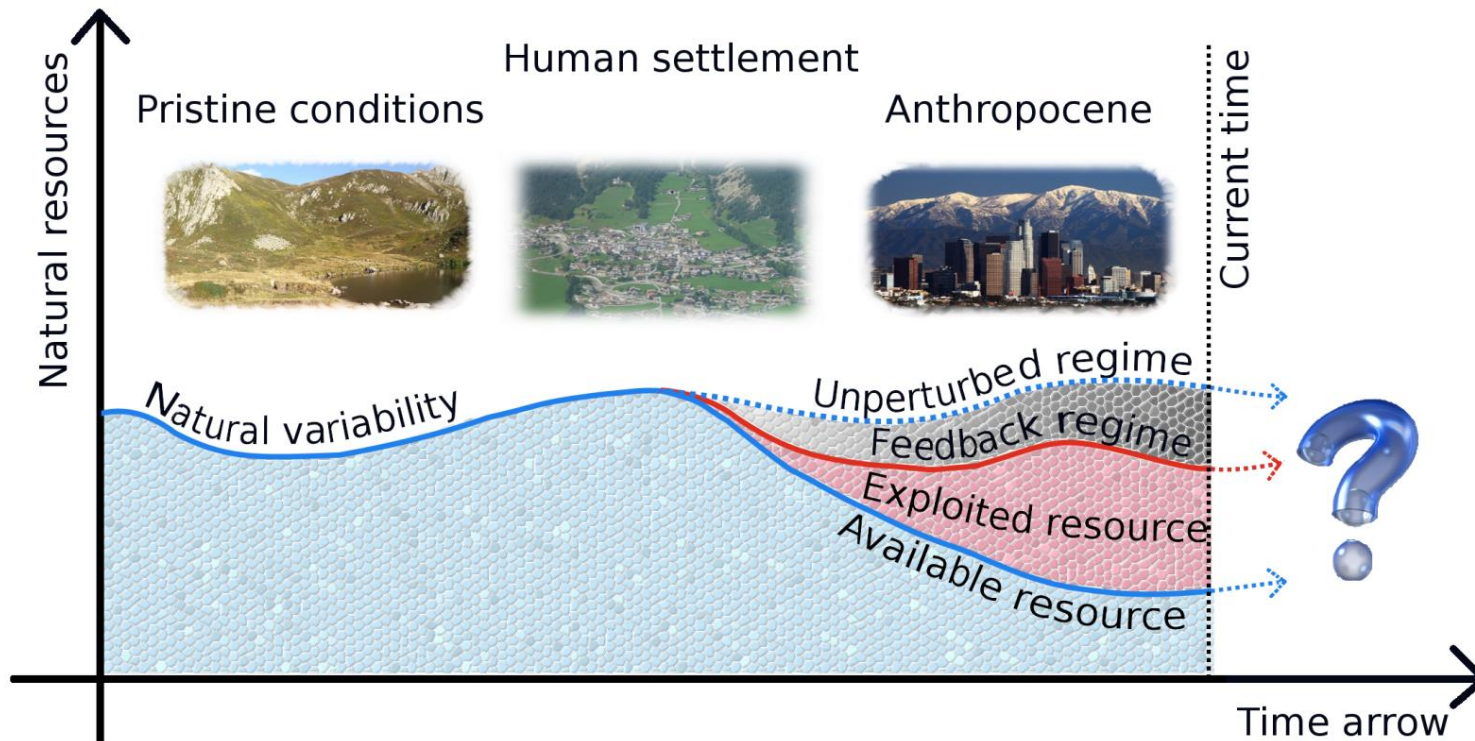
Gupta et al, 2013



Panta Rhei

Everything Flows

2013-2022



Superimposition of natural variability and human influence

Hydrological Sciences Journal – Journal des Sciences Hydrologiques, 2013
<http://dx.doi.org/10.1080/02626667.2013.809088>

“Panta Rhei—Everything Flows”: Change in hydrology and society—The IAHS Scientific Decade 2013–2022

A. Montanari¹, G. Young², H. H. G. Savenije³, D. Hughes⁴, T. Wagener⁵, L. L. Ren⁶,
D. Koutsoyiannis⁷, C. Cudennec⁸, E. Toth¹, S. Grimaldi⁹, G. Blöschl¹⁰, M. Sivapalan¹¹, K. Beven¹²,
H. Gupta¹³, M. Hipsey¹⁴, B. Schaefli¹⁵, B. Arheimer¹⁶, E. Boegh¹⁷, S. J. Schymanski¹⁸,
G. Di Baldassarre¹⁹, B. Yu²⁰, P. Hubert²¹, Y. Huang²², A. Schumann²³, D. A. Post²⁴, V. Srinivasan²⁵,
C. Harman²⁶, S. Thompson²⁷, M. Rogger¹⁰, A. Viglione¹⁰, H. McMillan²⁸, G. Characklis²⁹, Z. Pang³⁰
and V. Belyaev³¹



Socio-Hydrology

HYDROLOGICAL PROCESSES

Hydrol. Process. **26**, 1270–1276 (2012)

Published online 24 January 2012 in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/hyp.8426

INVITED COMMENTARY



Socio-hydrology: A new science of people and water

Murugesu Sivapalan,^{1,2*}
Hubert H. G. Savenije³ and
Günter Blöschl⁴

¹ *Department of Civil and
Environmental Engineering,
Department of Geography, University
of Illinois at Urbana-Champaign,
Urbana, IL 61801, USA*

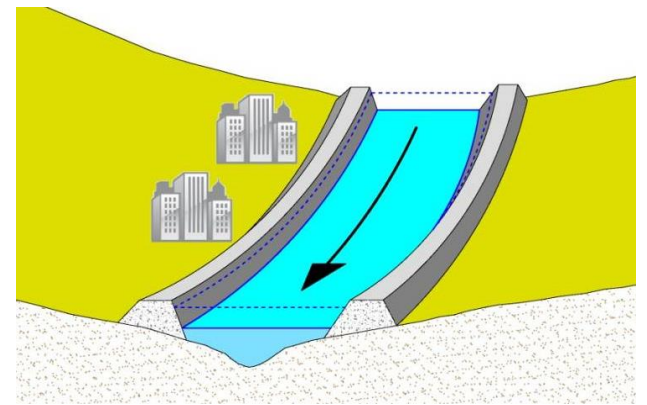
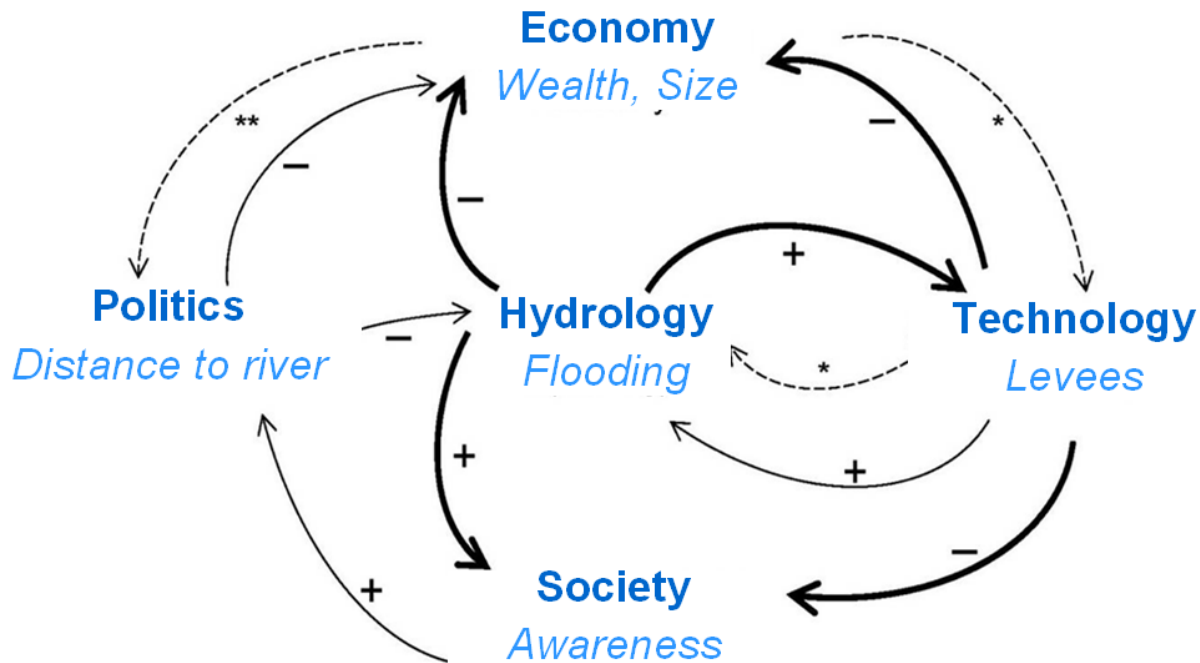
² *Department of Civil and*

Humans have changed the way the world works. Now they have to change the way they think about it, too. *The Economist*, May 26, 2011

THE COUPLED HUMAN-WATER SYSTEM

Dateline November 2010, Murrumbidgee River Basin, Australia: Irrigators are up in arms over proposed government plans to cut their water allocations and return flows back to the basin's rivers to support the environment and restore lost biodiversity. *The Australian* of November 04,

Socio-Hydrology



23 Unsolved Problems in Hydrology ‘UPHs’

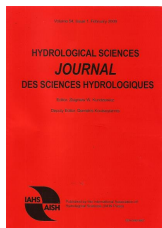
The image shows a screenshot of a LinkedIn feed. The top post is by Giuliano Di Baldassarre, Professor of Hydrology at CNRS, with the text: "Panta Rhei Question #1: Do flood rich-poor periods exist? If so why?". Below the text is a graph with 'time' on the vertical axis and 'space' on the horizontal axis. The graph shows a series of blue dots representing data points. Three regions are circled in red and labeled 'flood rich', and one region is circled in green and labeled 'flood poor'. The second post is by Mohammad Abbasi, Ph.D. in Watershed Management, with the text: "It is time to change our mind to augmenting groundwater recharge by focus on water-bearing formation in uplands watershed not just in flood plains or alluvial fans!". Below the text is a cross-sectional diagram of a watershed showing various hydrological features: 'Influent stream', 'Recharge zone', 'Local (perched) water table', 'Spring', 'Effluent stream', 'Recharge mound', 'Unconfined aquifer (sandstone)', 'Confined aquifer (sandstone)', and 'Impervious rock'.



Article soon in HSJ – 23 UPHs / themes:

Time Variability and change
Space variability and scaling
Variability of extremes

Interfaces in hydrology
Measurements and data
Modelling methods
Interfaces with society



Global Environmental Change xxx (2015) xxx-xxx

Contents lists available at ScienceDirect

Global Environmental Change

journal homepage: www.elsevier.com/locate/gloenvcha

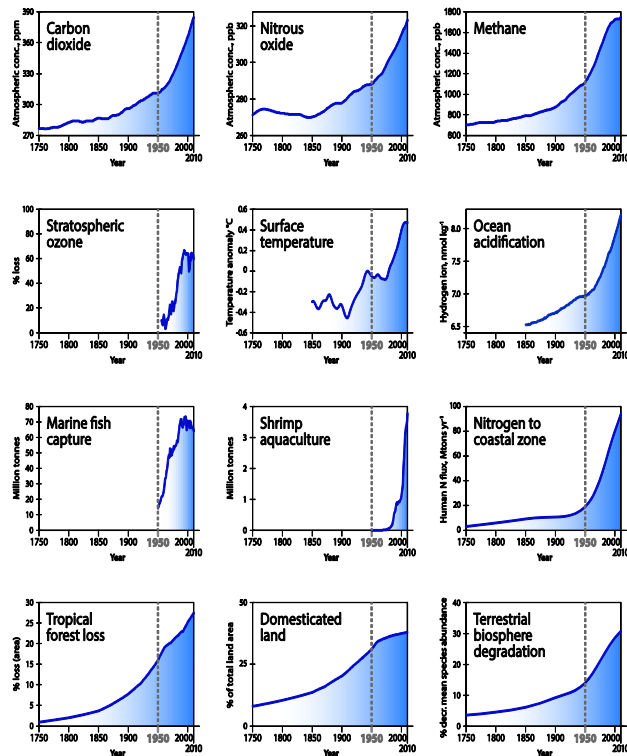


Re-conceptualizing the Anthropocene: A new call for collaboration

Eduardo S. Brondizio¹, Karen O'Brien², Frans Berkhout³, Xuemei Bai⁴, Maria Carmen Lemos⁵,
Christophe Cudenneq⁶, Frank Biermann⁷, Jose Palma-Oliveira⁸, Will Steffen⁹, Alexander
Wolfe¹⁰, Chen-Tung Arthur Chen¹¹

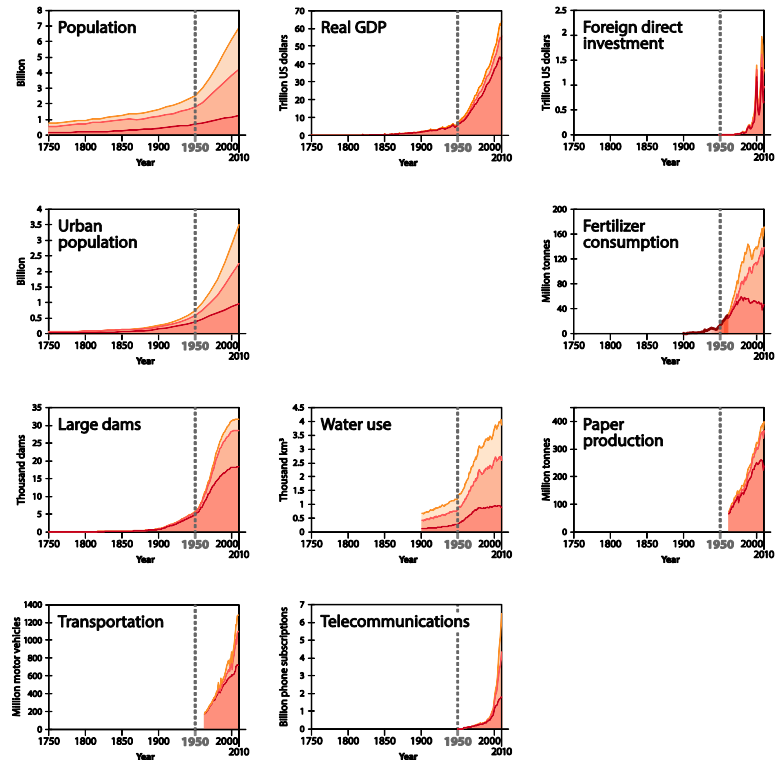
Earth system trends

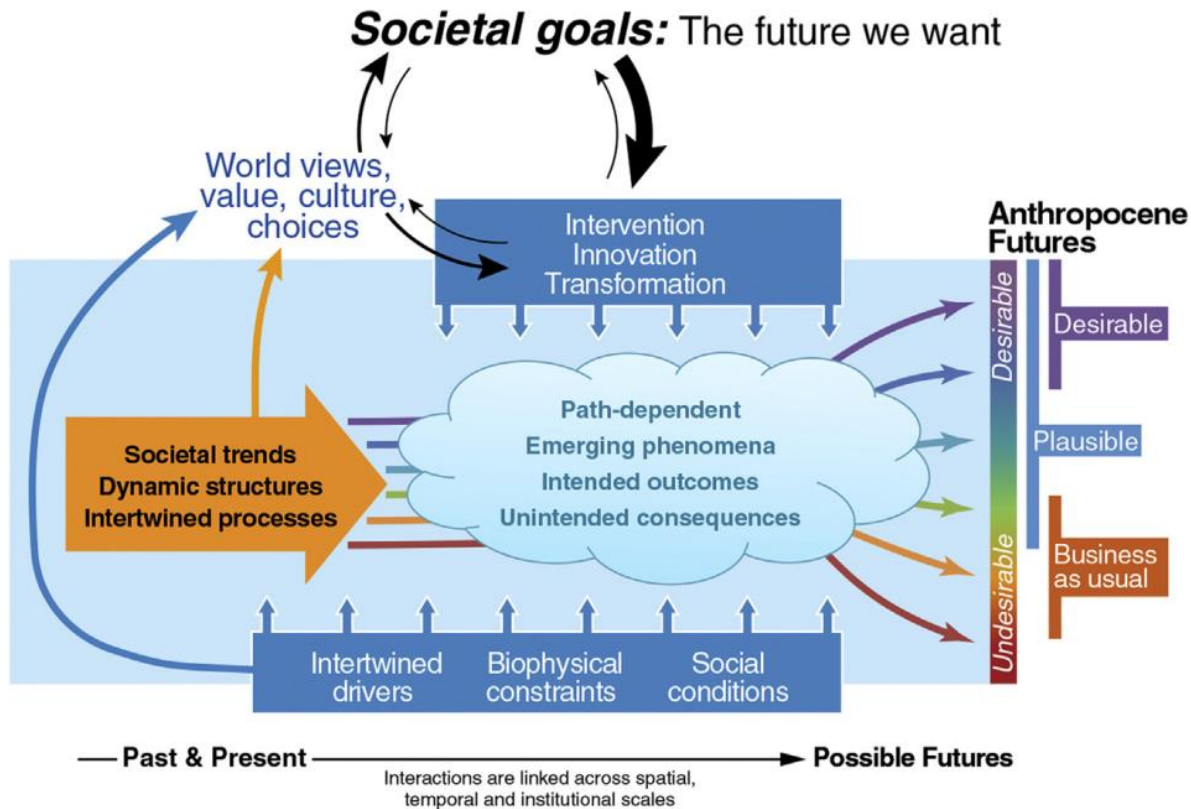
ioim, Sweden



Socio-economic trends

OECD BRICS Others





Global Environmental Change xxx (2015) xxx–xxx



Contents lists available at ScienceDirect

Global Environmental Change

journal homepage: www.elsevier.com/locate/gloenvcha



Global Environmental Change xxx (2015) xxx–xxx



Contents lists available at ScienceDirect

Global Environmental Change

journal homepage: www.elsevier.com/locate/gloenvcha



Methods and approaches to modelling the Anthropocene

Peter H. Verburg^{a,*}, John A. Dearing^b, James G. Dyke^b, Sander van der Leeuw^{c,h}, Sybil Seitzinger^d, Will Steffen^{e,f}, James Syvitski^g

^a Department of Earth Sciences, Faculty of Earth and Life Sciences, VU University Amsterdam, de Boelelaan 1087, 1081 HV Amsterdam, The Netherlands

^b School of Geography and Environment, University of Southampton, Southampton SO17 1BJ, UK

^c School of Sustainability, Arizona State University, 900 S. Cady Mall, Tempe, AZ, USA

^d International Geosphere-Biosphere Programme, Royal Swedish Academy of Sciences, Lilla Frescativägen 4A, 11418 Stockholm, Sweden

^e Fenner School of Environment and Society, The Australian National University, Canberra ACT 2601, Australia

^f Stockholm Resilience Centre, Stockholm University, SE-10691 Stockholm, Sweden

^g CSDMS/INSTAAR, U Colorado–Boulder, Boulder, CO 80309, USA

^h Beijing Normal University, Beijing, China

Plausible and desirable futures in the Anthropocene: A new research agenda

Xuemei Bai^{a,*}, Sander van der Leeuw^b, Karen O'Brien^c, Frans Berkhout^d, Frank Biermann^e, Eduardo S. Brondizio^{f,g}, Christophe Cudenneq^h, John Dearingⁱ, Anantha Duraipah^j, Marion Glaser^k, Andrew Revkin^l, Will Steffen^{m,n}, James Syvitski^{o,p}

^a Fenner School of Environment and Society, Australian National University, Australia

^b ASU-SFI Center for Biosocial Complex Systems, Arizona State University, USA

^c Department of Sociology & Human Geography, University of Oslo, Norway

^d Department of Earth and Environmental Science, University of Groningen, The Netherlands