

Panta Rhei opinion paper series

Objective:

- Enrich and improve the Panta Rhei approach via diverse, critical and constructive opinions from different disciplines, “schools” and experiences.
- via invited opinion papers
- via a scientific discussion in response to the opinion papers

See the results of our discussion, i.e. ideas for further opinion papers on the last slide. If you have ideas for improvement/refinement of topic description, other/more ideas for opinion papers, please let me know!

I would also appreciate, if some of you would be interested and willing to write a comment on one of the opinion papers to foster our Panta Rhei discussion

**For more detail
see EDITORIAL**



Journal
Hydrological Sciences Journal >
Volume 62, 2017 - Issue 3

Enter keywords, authors, DOI etc.

This Journal



584

Views

0

CrossRef citations

5

Altmetric

Editorial

Scientific debate of Panta Rhei research – how to advance our knowledge of changes in hydrology and society?

Heidi Kreibich ✉, Tobias Krueger ✉, Anne Van Loon ✉, Alfonso Mejia ✉, Junguo Liu ✉, Hilary McMillan ✉ & Attilio Castellarin ✉

[...show less](#)

Pages 331-333 | Published online: 07 Dec 2016

Full access

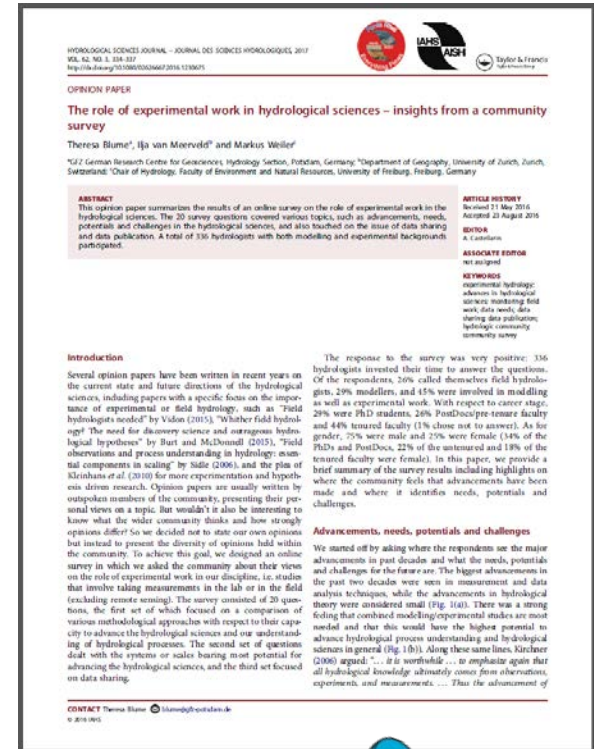
State	Opinion papers
Published in 2017 Volume 62 (3)	<p>The role of experimental work in hydrological sciences – insights from a community survey by Th. Blume, I. van Meerveld & M. Weiler</p> <p>Prediction in a socio-hydrological world by V. Srinivasan, M. Sanderson, M. Garcia, M. Konar, G. Blöschl & M. Sivapalan</p>
Under review – nearly accepted	<p>Challenges in operationalizing the water-energy-food nexus by J. Liu, H. Yang, C. Cudennec, A.K. Gain, H. Hoff, R. Lawford, J. Qi, L. de Strasser, P.T. Yillia, C. Zheng</p> <p>Perceptual models of uncertainty for socio-hydrological systems: a flood risk change example by I.K. Westerberg, G. Di Baldassarre, K.J. Beven, G. Coxon, T. Krueger</p>
Under preparation – to be submitted mid 2017	<p>Attribution of trends in impacts due to floods and droughts by H. Kreibich, A. Van Loon, L. Bouwer, J. Aerts, V. Blauhut, H. Van Lanen</p> <p>Mountain, rural and urban hydrology By M.J. Polo and co-authors</p>
To be planned	???


*Ideas?
Interesting topics?*

The role of experimental work in hydrological sciences – insights from a community survey by Th. Blume, I. van Meerveld & M. Weiler

Conclusions:

- Field work is imperative
- More monitoring is necessary to advance hydrological sciences, to understand hydrological processes and to understand and project the consequences of global change
- Maintaining monitoring networks is a great challenge
- Better integration of field efforts and modelling is vital
- But, experimental efforts are not valued sufficiently and carry an inherent risk of fewer publications.
- To overcome this discrepancy, the community should make a conscious effort to point out the necessity and value of field efforts The DOI (digital object identifier)
- The production and publication of sound datasets should have a similar (or even higher) merit as that of scientific publications



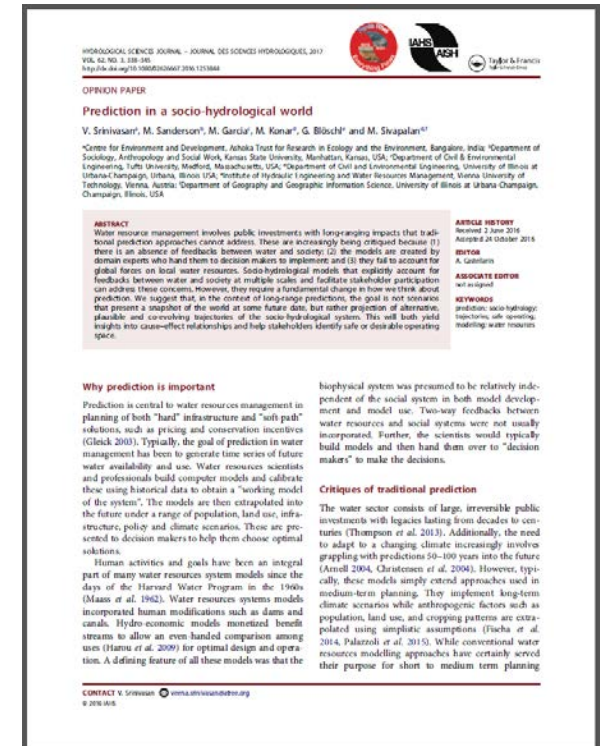
the issue of data sharing and data publication may be controversial – worth to be discussed

Prediction in a socio-hydrological world

by V. Srinivasan, M. Sanderson, M. Garcia, M. Konar, G. Blöschl & M. Sivapalan

Changes needed to improve hydrological predictions:

- First, in the context of very long-range predictions, the goal is not to generate scenarios that present a snapshot of the world at some future date, but rather alternative, plausible and co-evolving trajectories through the use of socio-hydrological models.
- Second, these models must try to simulate outcomes society actually cares about, so they can facilitate stakeholder participation and steer societies onto better trajectories.
- Third, in an increasingly globalized world, models must account for broader economic, social and cultural influences on the system of interest.



the usefulness of socio-hydrological models for long-range predictions may be controversial – worth to be discussed

Challenges in operationalizing the water-energy-food nexus

by J. Liu, H. Yang, C. Cudennec, A.K. Gain, H. Hoff, R. Lawford, J. Qi, L. de Strasser, P.T. Yillia, C. Zheng

Main Points:

- There remain many challenges in scientific research on the water-energy-food (WEF) nexus, while implementation as a management tool is just beginning;
- The scientific challenges are primarily related to data, information and knowledge gaps in our understanding of the WEF interlinkages.
- Our ability to untangle the WEF nexus is also limited by the lack of systematic tools that could address all the trade-offs involved in the nexus.
- Future research needs to strengthen the pool of information. It is also important to develop integrated software platforms and tools for systematic analysis of the WEF nexus.
- The experience made in integrated water resources management in the hydrological community, especially in the frame of Panta Rhei, is particularly well suited to take a lead in these advances.



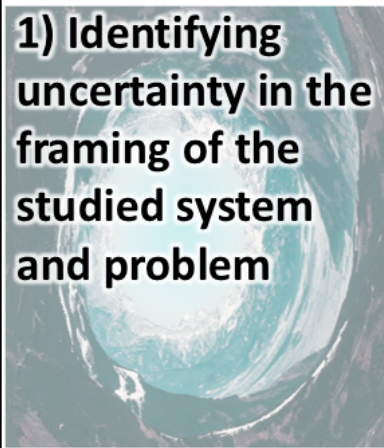
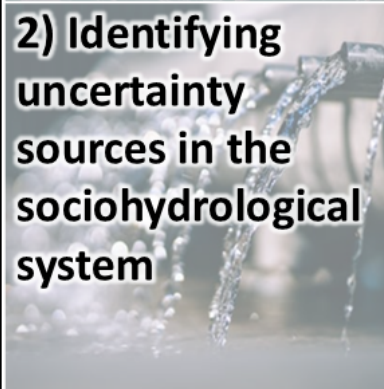
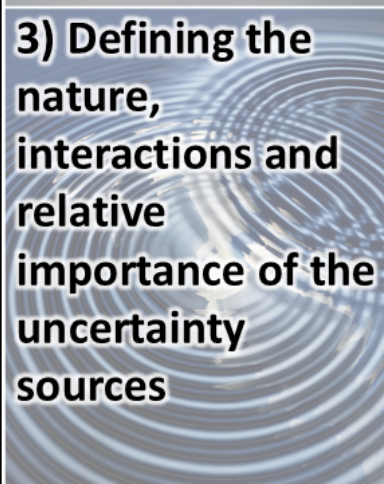
*Tools for the implementation
of the water-energy-food
nexus may be controversial
– worth to be discussed*

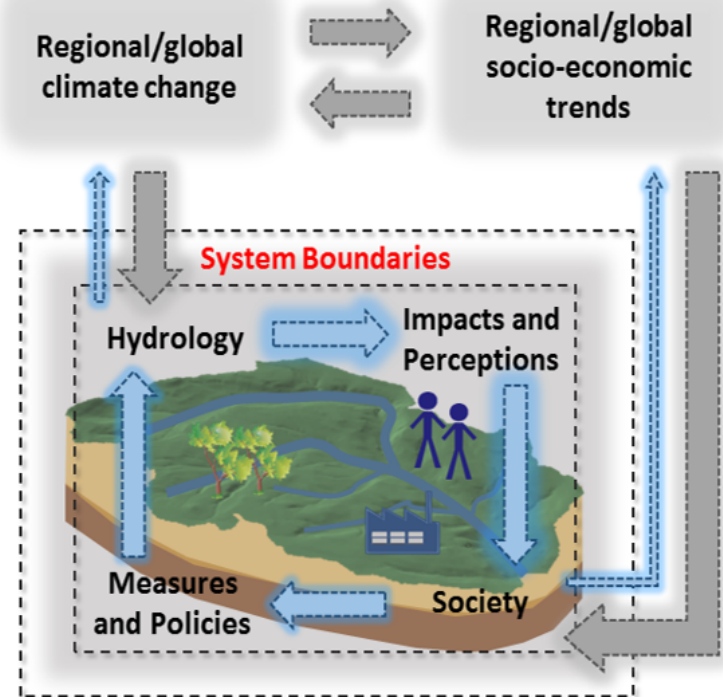
Perceptual models of uncertainty for socio-hydrological systems - a flood risk change example



Aim of building a perceptual uncertainty model:

- To make uncertainty sources and different perceptions of uncertainty explicit in a structured way
- To help structure dialogue, communication, and understanding about uncertainty – in particular for interdisciplinary work

Step in building the perceptual model	Example questions to guide the model building
1) Identifying uncertainty in the framing of the studied system and problem 	What uncertainties are related to identifying the boundaries of each coupled system?
	What potentially important coupled systems have been left out of the analysis?
	Is the framing of the research problem different between different researchers and stakeholders?
2) Identifying uncertainty sources in the sociohydrological system 	What uncertainties are there in process representations and data?
	What uncertainties are related to drivers and feedbacks within the system?
	What uncertainties are there related to future boundary conditions?
3) Defining the nature, interactions and relative importance of the uncertainty sources 	What is the nature of the uncertainty; is it 1) Bounded, 2) Unbounded, or 3) Indeterminable?
	Which uncertainty sources interact with each other?
	What is the relative importance of the different uncertainty sources from the perspective of different scientists and stakeholders?



- Should be tested in a real case study
- Personal/subjective nature of uncertainty may be controversial

Results of our discussion: Ideas for further opinion papers

- How can we measure the impact of Panta Rhei? (How) did the Panta Rhei approach lead to an improved integrated water resources management / to an improved water security / improved management of hydrological hazards?
- How can Panta Rhei support the Sustainable development goals? What are the links between the sustainable development goals / the Sendai Framework for Disaster Risk Reduction and Panta Rhei?
- Ask a social scientist to judge social-hydrology work done under the framework of Panta Rhei.
- What should be the role of scientists / hydrologists in society? What to do when scientific results are ignored by decision makers?
- How to find a societal consensus about how much investment is appropriate in flood risk management.
- What data is necessary for Panta Rhei studies / socio-hydrological investigations? How to collect these kind of data, e.g. impact data etc. How to develop joint datasets for Panta Rhei? Is an analogue approach to the international Model Parameter Estimation Experiment (MOPEX) project possible?
- Can lab experiments investigating human behaviour help to understand better the socio-hydrological system?