



Panta Rhei – Everything Flows
Change in Hydrology and Society
IAHS Scientific Decade 2013-2022
www.iahs.info/pantarhei

Details of the Proposal

Title of the Working Group

Hydro-meteorological extremes: Decision making in an uncertain environment

Abstract of the proposed research activity

Around the globe, meteorological events continue to result in disasters in many locations. Despite their predictability, those who will be most affected often do not receive warnings when hazardous events are likely to happen. At least in part, this failure of communication is a result of many government agencies and aid organizations still being insufficiently connected to the hydrological sciences. Hydro-meteorological hazards can have cascading effects and far-reaching implications on water security, with political, social, economic and environmental consequences. These events observed in developed and developing nations alike, highlight the necessity to generate a better understanding on what causes them and how we can better manage and reduce the risk. In the near future, the acknowledgment of uncertainty in projections will be at least as important as the projection itself for decision-makers. Without uncertainty estimates, graphs or maps of model results are nearly useless.

In view of the magnitude and ubiquity of the hydro-climatic change, population growth and urbanization now under way, new approaches in water-resource risk assessment and planning are needed.

Panta Rhei Research Themes, Targets and Science Questions addressed by the Working Group

Target #3: Science in Practice

4. How can we use improved knowledge of coupled hydrological-social systems to improve model predictions, including estimation of predictive uncertainty and assessment of predictability?
5. How can we advance our monitoring and data analysis capabilities to predict and manage hydrologic change?
6. How can we support societies to adapt to changing conditions by considering the uncertainties and feedbacks between natural and human-induced hydrologic changes?

Societal impact of the Working Group activity

The effective integration of science into policy development and practical problem-solving will entail sustainable development; transferring research and scientific findings into applied adaptive strategies will be possible by the promotion of scientific policy advice through straightforward honesty about risk and uncertainty. The assessment of uncertainty will enable successful mitigation and resilience through adaptive risk strategies.

To date hardly any scientific studies can be directly translated into action on the ground. Therefore, the work proposed within this working group will explore the usability of scientific information by non-academic stakeholders. This will be done in order to help to turn knowledge into better decisions.

To reap the full societal benefit of hydrological research, more avenues for an open dialogue between scientists, decision-makers and the public are needed. It is not enough to invest in research; we must also work towards making hydrological research more usable, both in the questions raised and in how the answers are communicated.

List of Participants

Please include at least 6 members from 3 different countries. Make an effort to ensure interdisciplinarity. Add rows at the Table if necessary.

Name of Participant	Affiliation (full address and email)	Role in Working Group (Chair or Member)	Main expertise
1 Adrián Pedrozo-Acuña	National Autonomous University of Mexico, Institute of Engineering AV. Universidad, 04510, Mexico DF apedrozoa@ii.unam.mx		Flood risk management and hydrodynamics.
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3 Miguel Rico-Ramírez	University of Bristol, Queen's Building, University Walk, Clifton BS8 1TR United Kingdom m.a.rico-ramirez@bristol.ac.uk		Radar Hydrology
4 Thorsten Wagener	University of Bristol, Queen's Building, University Walk, Clifton BS8 1TR United Kingdom thorsten.wagener@		Analysis of Hydrologic Systems

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5 Gerald A. Corzo	UNESCO-IHE Westvest 7 2611 AX Delft The Netherlands g.corzo@unesco-ihe.org		Hydroinformatics, Water resources modelling
6 J. Agustín Breña-Naranjo	National Autonomous University of Mexico, Institute of Engineering AV. Universidad, 04510, Mexico DF jbrenan@ii.unam.mx		Remote-sensed hydrology and ecohydrology
7 Dawei Han	University of Bristol, Queen's Building, University Walk, Clifton BS8 1TR United Kingdom d.han@bristol.ac.uk		Water and Environmental engineering