



Panta Rhei – Everything Flows Change in Hydrology and Society IAHS Scientific Decade 2013- 2022

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Details of the Proposal

Title of the Research Theme

Water Scarcity Assessment

Abstract of the research theme

Population growth, economic development and dietary shift (towards more animal products) result in increasing pressures on water resources. Many parts of the world face water scarcity. According to the *Global Risks 2014 report of the World Economic Forum*, water supply crisis was identified as the top 1 high-impact risk for our current times. The water scarcity situation is likely to become even worse in the near future. The Water Scarcity Assessment research theme embraces the investigation of the linkages between socioeconomic development, consumption patterns, water pollution, climate change, and water scarcity and water resources management.

The research tasks include: 1) developing methods to quantify and map water scarcity, 2) assessing water scarcity by considering both water quantity and quality, 3) examining links of water scarcity to growing pollution with changing dietary patterns and socioeconomic development, 4) analyzing uncertainties brought about by climate changes, 5) exploring human and institutional capacities to govern and manage water resources, and 6) identifying adaptation solutions. The main outcome of the research will be improved water scarcity methods that explicitly take into account water quality as well as environmental flow requirements, water scarcity scenarios under changing consumer preferences, and societal adaptation solutions that support water governance and stewardship.

Panta Rhei research Targets and Science Questions addressed by the Research Theme

This research theme caters to science questions 2, 3 and 6 and research targets of 'understanding', 'estimation' and 'science in practice'.

Societal impact of the Research Theme

Water scarcity is among the main problems to be faced by many societies and the world in the 21st century. According to previous assessment, around 1.2 billion people, or almost one-fifth of the world's population, have already faced physical water scarcity, while another 1.6

billion people, or almost one quarter of the world's population, face economic water scarcity. UN-Water has identified coping with water scarcity as part of the strategic issues and priorities requiring joint action. The improved methodology will deepen our understanding of the interactions between water scarcity and water resources, socioeconomic change, consumption patterns, environmental flow requirement, and growing pollution. Water scarcity assessment will help decision makers identify water problems in a spatiotemporal explicit way, link water scarcity to socioeconomic development, and recognize the relation between water scarcity and consumption patterns and growing pollution. Society at large, especially in water scarce areas, will be aware of unsustainable water use practices, and importance to build institutional and adaptive capacity to alleviate water scarcity. Stakeholders in research include UN bodies (e.g. UN-Water, FAO, UNEP, UNDP), international organizations and NOGs (e.g. IUCN, WWF, Ramsar Convention), governmental bodies (e.g. River Basin Committees, National Environmental Agencies), and may also include companies that have many production activities in water scarce areas.

Panta Rhei Working Groups referring to the Research Theme

We are proposing at least one working group catering to one or more of its research questions.