



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

Title of the Research Theme

Prediction under Change (PUC)

Abstract of the research theme

Hydrology is made of non-deterministic processes changing with space in time. Within the hydrological cycle are precipitation, evaporation, transpiration, infiltration, percolation, surface water flow, subsurface flow, groundwater flow, etc. All these components make the hydrological cycle complete. According to recent studies, each component of hydrological cycle change. This indicates the hydrological cycle itself changes.

From engineering point of view, hydrological behavior must be foreseen appropriately in order to design a hydraulic structure. The design must be economical, neither over- nor under-design of hydraulic structures is desired. This is made by prediction / estimation / forecasting models in hydrology. Better known the behavior of the past, more accurate predictions will be obtained.

The theme aims to respond following questions:

- What is the role of data in prediction under change?
- How can models help us in providing better prediction under change?
- What are the gaps and shortcomings in existing hydrological models designed for prediction?
- How can we incorporate the change into hydrological models used for prediction?
- How fast / slow will the change happen?
- How will the society be affected by the change in the hydrological regime?
- How will the society react against the change?
- How can we best combine in-situ and remote sensing information for improving prediction under change?
- What are the key sources of uncertainty in the prediction under change?
- How can we improve our prediction under uncertainty?

- How will the change in hydrological regimes influence the impacts of water-related disasters?

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

This research theme aims to make input for Target 2 – Estimation and Prediction of Panta Rhei. At the same time, this research theme is expected to help in Understanding the change (Target 1) and Practicing the Science (Target 3).

Societal impact of the Research Theme

Changes in hydrology have direct impacts on society. The link between the society and the change in hydrology is very important. Substantial social arrangements might be needed due to the change in the hydrological cycle as it has significant impacts on the society. In brief, either change (fast / slow, temporary / permanent, gradual / sudden, natural / man-made, etc.) has its own particular impact on individuals in the society and on the society as a whole.

Working Group(s) may be formed to address the various research sub-themes and science questions. These can be formed after acceptance of the Prediction under Change (PUC) Research Theme.