

Hydro-CSI

Contributing to the exploration of new and interdisciplinary research avenues to overcome limitations in our current understanding of catchment functioning.



Inspiration

In the light of increasing evidence of lasting impacts of global change on our water resources, there is a pressing need for a better understanding of the complex rainfall-runoff transformation processes and feedback mechanisms within hydrological systems. In this context, the assumption of stationarity of environmental systems is a limitation to the development of new knowledge, forecasting and prediction tools. Catchments are non-stationary systems and as such processes dominating the rainfall-runoff transformation are time-variant.

LIST is highly involved in an ongoing international effort and participates in the PRIDE programme of the National Research Fund (FNR) providing a unique opportunity for galvanizing research efforts in water resources research. In this context, LIST created its doctoral training unit (DTU) and is launching the research project Hydro-CSI together with four academic partners.

Innovation

The Hydro-CSI project will contribute to tackling some of the most pressing challenges related to water resources research and management. Researchers will work on the understanding of the fundamental hydrological functions of catchments. They will design, craft, test and bring to the market innovative technological solutions in order to develop models delivering more reliable forecasts and predictions under global change. Within the framework of the Hydro-CSI project a new generation of highly skilled experts will be trained with a view to reach excellent doctoral education in water resources research.

Impact

Hydro-CSI's strategy relies on three fundamental pillars: interdisciplinary research in a common test bed (i.e. the Sûre River basin, a joint framework for interdisciplinary research); innovative approaches, methodologies and technologies which means progressing in hydrological process monitoring through innovation; filling knowledge gaps and propose new solutions for hydrological forecasting and prediction under change.

Striving for a sustainable economic impact, the project team will involve multiple companies covering various product portfolios in environmental monitoring and management. End-users of the project's results and products have been identified as national and international companies, institutions and/or administrations involved in the management of hydrology-related natural disasters such as floods and droughts, in the implementation of the EU Water Framework Directive, or in the design and implementation of local water quality/river structure management plans, and soil management.

Partners

Research Unit in Engineering Sciences, University of Luxembourg (LU) , Vienna Doctoral Programme on Water Resources Systems, Vienna University of Technology (AT) , Hydrology and Quantitative Water Management Group, Wageningen UR (NL) , Institute of Water and River Basin Management, Karlsruhe Institute of Technology (DE)

Financial Support

Fonds National de la Recherche

Contact

5, avenue des Hauts-Fourneaux
L-4362 Esch-sur-Alzette
phone: +352 275 888 - 1 | LIST.lu

Dr habil. Laurent PFISTER (laurent.pfister@list.lu)
© Copyright July 2020 LIST

LUXEMBOURG
INSTITUTE OF SCIENCE
AND TECHNOLOGY

