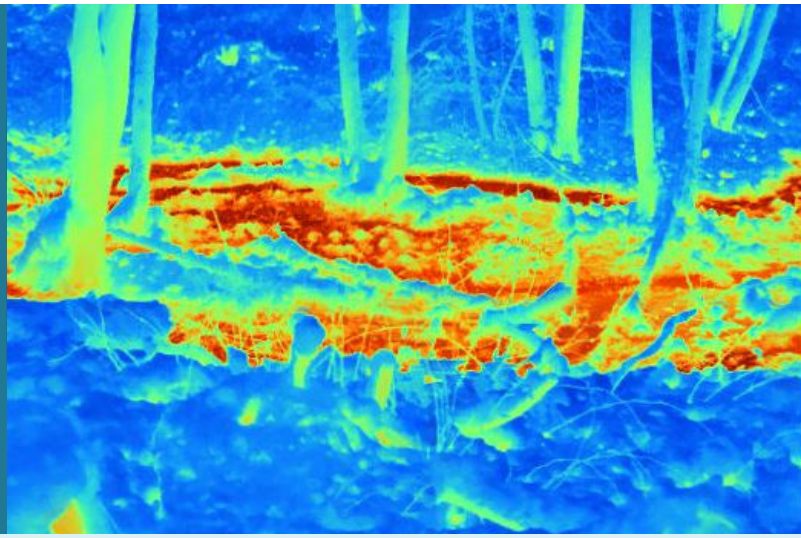
PROJECT FACTSHEET

www.list.lu/index.php?id=29&no_cache=1&L=2&tx_listprojects_listprojectdisplay%5BlistProjects%5D=165&cHash=1f78a476fa92d0ede8597f103fee7690

INTERFACES

Investigating the alteration of energy and water fluxes and interacting biogeochemical cycles at ecohydrological interfaces that connect ecosystems across environmental domains.



Inspiration

Ecohydrological interfaces are points in nature where different ecosystems meet and connect, such as aquatic-terrestrial, groundwater-surface water, and marine-sediment. They represent important new areas for cross-disciplinary research that would extend our knowledge horizons. Moreover, these environmental intersections offer extremely fertile training ground for researchers because the exploration of interface process dynamics requires novel linking of traditionally distinct disciplines, and the development of a supra-disciplinary research and training philosophy to foster the evolution of a new generation of scientists.

Innovation

INTERFACES is a supra-disciplinary training and research network that aims to develop conceptual process understanding of the role of ecohydrological interfaces for the transport and transformation of fluxes of heat, energy and water and interlinked biogeochemical cycles (C, N, O) at micro- to landscape-scale. In addition, it aims to help develop the next generation of supra-disciplinary scientists that will be able to work beyond traditional disciplinary boundaries, blending cutting edge field, laboratory and modelling technologies and understanding the practical relevance of their research. Part of the Marie Curie Initial Training Network (ITN) funded by the European Union under the FP7 programme, the project brings together 12 partners from seven countries across the EU, as well as ten associated partners. INTERFACES will provide groundbreaking supra-disciplinary training to 11 early stage researchers (ESR) and four experienced researchers.

With the main focus on terrestrial-aquatic interfaces, the contribution of the early stage researcher at the Luxembourg Institute of Science and Technology (LIST), Marta Antonelli, will consist in identifying how the spatial and temporal dynamics of hydrological connectivity at the hillslope-riparian-stream (HRS) continuum control the activation of interface connectivity between variable source areas. Conventional tracers (e.g. geochemicals, stable isotopes of O and H) will be used in combination with innovative approaches (e.g. biological tracers, thermal IR imagery) in order to contribute to overcoming the limitations of currently used tracer methods and bringing new momentum to our understanding of saturated area dynamics and connectivity.

Impact

The training and research offered within INTERFACES will span novel distributed sensing technologies, innovative tracer methods and integrated numerical models of heat fluxes, metabolism, biogeochemical turnover and ecological functioning to understand how, when and why ecohydrological interfaces act as critical hotspots for water-dependent environmental processes. The improved mechanistic process understanding developed by the project will not only provide industry, regulators and decision makers with the capacity to predict the complex, non-linear landscape-wide impacts of ecohydrological interfaces in a changing environment but also to understand how important ecosystem services provided by different ecohydrological interfaces can maintain or even enhance resilience to global environmental changes.

Partners

University of Birmingham (UK) , University of Vienna (AT) , Helmholtz Centre for Environmental Research – UFZ (DE) , National Center for Scientific Research - CNRS (FR) , BioSistemika (SL) , National Institute of Biology (SL) , University of Barcelona (ES) , Leibniz Institute of Freshwater Ecology and Inland Fisheries -IGB (DE) , Spanish National Research Council - CSIC (ES) , Silixa (UK) , Naturalea (ES)

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)

LUXEMBOURG INSTITUTE OF SCIENCE AND TECHNOLOGY | LIST