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Monitoring rivers from the top

September 11, 2026, 11:30 -13:00

KIT, Bldg.10.83, Room 305

or online:

<https://kit-lecture.zoom-x.de/j/67938800050>

Meeting-ID: 679 3880 0050

Kenncode: T5j&VrPY



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Abstract

Rivers are key connectors between inland processes and coastal systems, transporting water, sediments, nutrients and pollutants from source to sea. This seminar will focus on how satellite observations can be used to monitor the spatiotemporal dynamics of river systems, with particular attention to planform morphology and suspended sediment transport. Using the Loire River in France as a representative case, I will illustrate how remote sensing enables tracking of channel evolution, sediment pathways, and variability across scales, as well as to depict potential drivers. Recent methodological advances are highlighted alongside current limitations, including resolution constraints and data integration challenges. These insights point to future research directions and emphasize the value of combining satellite data with in situ measurements and numerical modelling to better understand river hydro-morpho-biodynamics.



Biography

Michael Nones is an Associate Professor at the Hydrology and Hydrodynamics Department at the Institute of Geophysics, Polish Academy of Sciences in Warsaw, Poland. He currently works and leads projects on fluvial morphodynamics and geomorphology, combining numerical modelling with remote sensing, to understand how climate and human-driven changes influence river systems' dynamics and water quality, specifically sediment transport. He published more than 50 peer-reviewed articles on the topic, and is currently the Editor in Chief of the International Journal of River Basin Management.

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