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Forschungszentrum Jülich

**Scaling-up computational hydrodynamics with HPC and SERGHEI**

September 13<sup>th</sup>, 2024, 11:30 -13:00

KIT, Bldg.10.81, Room 305

or online:

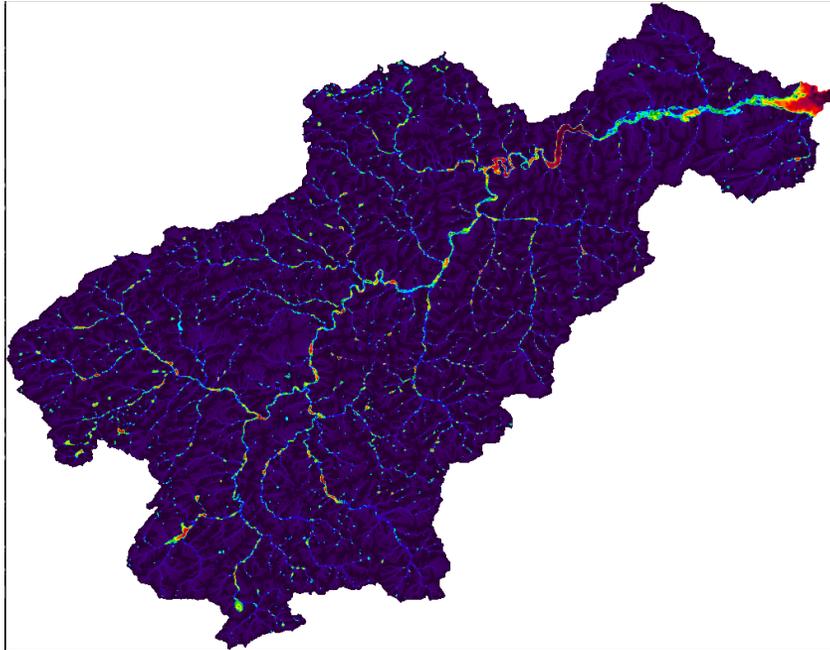
<https://kit-lecture.zoom-x.de/j/63212012516>

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# Scaling-up computational hydrodynamics with HPC and SERGHEI



## Abstract

Physically-based hydrological models can be understood as an upscaling exercise of hydrodynamic numerical models. The latter have experienced great development in the past two decades, which together with the accelerated growth of computational power, now enable to tackle catchment and even regional scale hydrological modelling based on such tools.

This talk summarizes the ongoing efforts to deploy an open-source, scalable physically-based hydrodynamic solver for catchment scale hydrology and water-mediated transport called SERGHEI, demonstrating some key applications concentrated on very highly resolved surface flow hydrodynamics and transport, and highlighting new opportunities and open challenges.

## Biography

Daniel Caviedes-Voullieme is the team leader of the Simulation and Data Laboratory for Terrestrial Systems of the Jülich Supercomputing Centre (Forschungszentrum Jülich). He obtained a Civil Engineering degree from the University of Costa Rica, an Msc in Applied Mechanics and a PhD degree from the University of Zaragoza. He has previously held research and teaching positions at the University of Zaragoza (ES), University of Sheffield (UK) and BTU Cottbus-Senftenberg (DE). His research is centered around high-performing and scalable numerical solvers for hydrodynamics, and their application for hydraulics and hydrology across scales.

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