JUNGE AKADEMIE | HADW

WIN KONFERENZ

This conference proposes to explore permafrost hydrology from an interdisciplinary perspective to tackle three kinds of uncertainties: (1) those concerning the environmental risks caused by permafrost hydrological disturbances in response to climate warming; (2) those linked to the use of numerical modeling when investigating hydrological processes; and (3) those regarding future projections of permafrost hydrology in a warming climate.

Indeed, global warming is threatening the stability of the perennially frozen ground, called permafrost. Across the northern latitudes, the thawing of ice-rich permafrost is already reshaping the topography of the landscapes, modifying surface water distribution, and thereby triggering a broad ecological shift. The associated changes in nutrients fluxes, heat regulation, and greenhouse gas emission (following the release of large carbon pools previously trapped in frozen ground) is expected to have global consequences. As a vector of heat and nutrients, water plays a crucial role in these processes: it contributes to the thermal state of the permafrost and supports the trophic chain. Therefore, understanding cold-region hydrology is essential to anticipate the local and global consequences of permafrost thaw on biodiversity, human health, and further climate change.

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Overcoming uncertainties in cold-region hydrology

Convenor:
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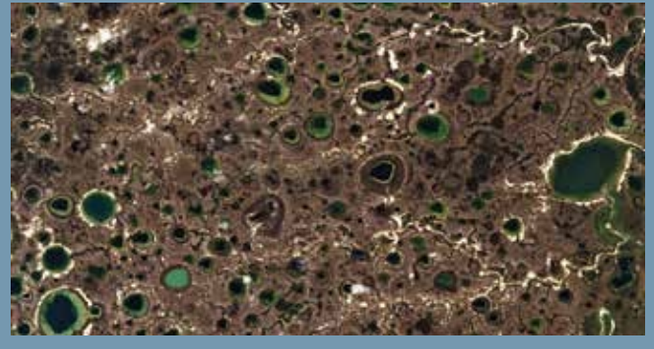
www.hadw-bw.de/win-konferenzen

September 29th – October 1st, 2025

Heidelberger Akademie der Wissenschaften
Venue: Karlstraße 4, 69117 Heidelberg



Picture:
contains modified Copernicus data (2018), processed by ESA

Preliminary programme last updated on February, 12th.
Topics and speakers subject to changes.

HEIDELBERGER AKADEMIE DER WISSENSCHAFTEN
Akademie der Wissenschaften des Landes Baden-Württemberg

Overcoming uncertainties in cold-region hydrology

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MONDAY, SEPTEMBER 29TH, 2025

09.00 **Opening speech**

09.30 **Lecture #1:**
Ongoing changes in permafrost hydrology and expected (or documented) impacts on humans and the environment.
G. Grosse, Alfred Wegner Institute, Germany

10.30 **Coffee break**

11.00 **Session #1:**
Result-focused presentations on the current magnitude, speed, or distribution of hydrological disturbances in cold-regions.

12.30 **Lunch Break**

14.00 **Lecture #2:**
Available techniques and data sources to produce good-quality input for hydrological models.
[To be confirmed]

15.00 **Coffee break**

15.30 **Session #2:**
Method-focused presentations on research conducted in data-scarce environments.

End at 17.00

TUESDAY, SEPTEMBER 30TH, 2025

9.30 **Lecture #3:**
Modeling methods: introduction to the challenges in modeling permafrost hydrology, and to the current offers in hydrological models suitable for permafrost study.
S. Westermann, University of Oslo, Norway

10.30 **Coffee Break**

11.00 **Session #3:**
Result-focused presentations on hydrological modeling applied to permafrost area.

12.30 **Lunch Break**

14.00 **Lecture #4:**
Best practices to capture uncertainties in hydrological modeling.
A. Saltelli, University Pompeu Fabra Barcelona School of Management, Spain

15.00 **Coffee break**

15.30 **Session #4:**
Presentations on the quantification of uncertainty in model results, on uncertainty propagation, or on inter-model comparison.

16.30 **Blitz and poster session**

End at 17.30

WEDNESDAY, OCTOBER 1ST, 2025

9.30 **Lecture #5:**
Available techniques and models to include climatic projections in hydrological modeling.
D. Jacob, Climate Service Center Germany, Germany

10.30 **Coffee Break**

11.00 **Session #5:**
Result-focused presentations on projections of the impact of permafrost thaw on humans and environment.

12.30 **Lunch Break**

14.00 **Lecture #6:**
Permafrost hydrology and climate projections.
J.Nitzbon, Alfred Wegner Institute, Germany

15.00 **Coffee break**

15.30 **Session #6:**
Method-focused presentations on uncertainties in hydrological and climatic projections.

End at 17.00