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 modelling 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

Topics subject to changes.

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

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MONDAY, SEPTEMBER 29TH, 2025

09.00 Opening speech

09.30 Lecture #1:
Ongoing changes in permafrost hydrology and their impacts on humans and the environment.
G. Grosse, Alfred Wegner Institute, Germany

10.30 Coffee Break

11.00 Session #1: Evidence and societal impact of permafrost thaw
J. Kunz (11.00), M. Soheb (11.30), S. Weber (12.00)

12.30 Lunch Break

14.00 Lecture #2:
Available techniques and data sources to produce good-quality input for hydrological models.
L. Menzel and L. Bussière, Heidelberg University, Germany

15.00 Coffee break

15.30 Session #2: Remote-sensing applied to cold-region hydrology
H. Bergstedt (15.30), B. Widhalm (16.00), J. Pan (16.30)

End at 17.00

TUESDAY, SEPTEMBER 30TH, 2025

9.30 Lecture #3:
The CryoGrid community model – Simulating the impacts of climate change on permafrost ecosystems and the hydrological cycle.
S. Westermann, University of Oslo, Norway

10.30 Coffee Break

11.00 Session #3: Hydrological modeling applied to cold-region hydrology
A.B. Alphonse (11.00), N. Handelmann (11.30), J. Shi (12.00)

12.30 Lunch Break

14.00 Lecture #4:
Best practices to capture uncertainties in hydrological modeling.
A. Puy, University of Birmingham, United Kingdom

15.00 Coffee Break

15.30 Session #4: Data analysis and model appraisal
M. Osuch (15.30), S. Schiling (16.00)

16.30 Blitz and poster session

End at 17.30

18.30 Conference dinner

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: Drivers and consequences of permafrost thaw on the ecosystem
E. Jafarov (11.00), Z. Gao (11.30), I. Baneschi (12.00)

12.30 Lunch Break

14.00 Lecture #6:
Modelling ice-rich permafrost landscape dynamics under past and future climates.
J. Nitzbon, Alfred Wegner Institute, Germany

15.00 Coffee break

15.30 Session #6: Drivers and consequences of permafrost thaw on hydrologic regimes
O. Kalashnikova (15.30), S. Ruiz Pereira (16.00), P. Wang (16.30)

End at 17.00