



INTERNATIONAL GLACIOLOGICAL SOCIETY

International Symposium on
**Verification and
Validation of Cryospheric Models**
– Bringing Data and Models Together –



Newcastle, UK
4–9 August 2024

FIRST CIRCULAR
October 2023
https://www.igsoc.org/event/northumbria_2024

The International Glaciological Society (IGS) will hold an International Symposium on Verification and Validation of Cryospheric Models in Newcastle, UK, from 4–9 August 2024. Registration will begin in late April 2024.

THEME

Cryospheric models that simulate land and sea ice dynamics, snow physics and permafrost processes have become mainstream tools to assess the past, present and future state of the Earth's frozen landscapes. In combination with observational data, they provide a powerful, physics-constrained method to address some of Earth Science's most pressing questions. They form the backbone of sea-level rise projections, they underpin freshwater budget estimates of the world's glaciated mountain regions and oceans, and they are dynamically integrated with other components of the global climate system. The continued development, calibration and validation of cryospheric models should therefore remain at the forefront of ongoing research. This symposium will invite contributions by the international research community on a wide range of topics in the field of cryospheric model verification and validation, covering a range of different length and timescales. We invite contributions relating to numerical model developments, process-based studies, and/or novel observational products. The focus of the symposium will be on improving numerical models and their interactions with the climate system, although cross-cutting interdisciplinary contributions are invited from a range of topics, as detailed below.

TOPICS

We seek papers and presentations on any timely topic related to the verification and validation of numerical models that simulate the cryosphere. All contributions may include and/or combine observational, numerical, theoretical, laboratory or conceptual approaches. Key focus areas include (but are not limited to):

- 1. Ice sheets and ice shelves:** observations and modelling of ice dynamics, basal and surface mass balance, with reference to past, present-day and/or future change
- 2. Mountain glaciers and ice caps:** advances in numerical simulations of glacier mass balance at local to global scales, new datasets for validation and calibration, and numerical assessments of cryospheric hazards
- 3. Snow and firn processes:** advances in numerical simulations and integration with novel observational datasets of firn processes, snow cover, snowpack properties and interactions with the climate system
- 4. Permafrost:** initialization and validation of thermal models, advances in the coupling to land surface schemes and GCMs
- 5. Sea ice:** advances in sea-ice physics and models, novel datasets and integration with coupled Earth-System models
- 6. Cryosphere–climate interactions:** feedbacks, attribution, tipping points

7. **Advances in data-driven model initialization and calibration:** machine learning, emulators, uncertainty quantification
8. **Model verification and model intercomparisons:** benchmark datasets, including lab measurements, and analytical approaches
9. **Future perspectives:** the impact of model initialization, data gaps, data errors, under-constrained or missing physics

In the preparation of the conference we will invite more specific proposals for sessions related to one or several of the topics above.

PROGRAMME

The symposium will include oral and poster sessions and will be a friendly and intellectually stimulating environment to facilitate face-to-face interactions and networking. Additional activities will include an opening Icebreaker reception, a banquet dinner, a mid-symposium afternoon excursion and pre/post symposium excursions.

ABSTRACT AND PAPER PUBLICATION

Participants who wish to present a paper (oral or poster) at the Symposium will be required to submit an abstract. Accepted abstracts will be posted on the Symposium's website. The Council of the IGS has decided to publish a thematic issue of the *Annals of Glaciology* on topics consistent with the Symposium themes. Participants and non-participants alike are encouraged to submit manuscripts for this *Annals* volume. A call for abstracts will be issued in the Second Circular.

SIDE MEETINGS

There will be an opportunity for breakout meetings relating to the broad symposium theme. Email jan.rydt@northumbria.ac.uk to discuss.

VENUE

The symposium will take place on the campus of Northumbria University, located in the city centre of Newcastle, UK.





SYMPOSIUM ORGANIZATION

Magnús Már Magnússon (International Glaciological Society)

LOCAL ORGANIZING COMMITTEE

Jan De Rydt, Lindsay Connolly

SCIENCE STEERING COMMITTEE*

Hilmar Gudmundsson (U. Northumbria, chair), Guðfinna Aðalgeirsdóttir (U. Iceland), Rachel Carr (Newcastle U.), Christine Hvidberg (U. Copenhagen), Adrian Jenkins (U. Northumbria), Ching-Yao Lai (Stanford U.), Brent Minchew (MIT), Ruth Mottram (Danish Met. Inst.), Frank Pattyn (Free U. Brussels), Andy Shepherd (U. Northumbria), Ted Scambos (U. Colorado), Jürg Schweizer (SLF Davos), John Woodward (U. Northumbria)

EDITORIAL COMMITTEE*

Hester Jiskoot, Chief Editor; Rachel Carr, Associate Chief Editor; Scientific Editors TBC

FURTHER INFORMATION

If you wish to receive future communications from IGS and the local organizing committee about the Symposium, please **register your interest online** at <https://community.igsoc.org/events/651af4328556cb0008d21b64/description>

The Second Circular will give further information about accommodation, the scientific programme, additional activities, preparation of abstracts and final papers. Members of the International Glaciological Society, as well as all those who have expressed an interest, will automatically receive notification of the Second Circular.

Information will also be updated on the IGS conference website, https://www.igsoc.org/event/northumbria_2024 and the local website, <https://www.northumbria.ac.uk/about-us/news-events/events/2024/08/igs-symposium-aug-2024/>, as it becomes available.

*Additional members of the Science Steering committee and members of the Editorial committee will be added after publication of the first circular