Verification and Validation of Cryospheric Models

4 - 9 August 2024, Northumbria University, Newcastle, UK

Registration, the Icebreaker and the scientific program take place in the **Business and Law Building at Northumbria University** (12 Falconar St, Newcastle NE2 1XA): https://www.google.com/maps/@54.9753771,-1.6044481,18.75z?entry=ttu.

Further information can be found here:
IGS website: https://www.igsoc.org/event/northumbria_2024
Local organiser: https://www.northumbria.ac.uk/about-us/news-events/events/2024/08/igs-symposium-aug-2024/

SUNDAY 4 August 2024

17:00 - 20:00	Registration
18:00 - 20:00	Icebreaker

MONDAY 5 August 2024

8:00 - 9:00	Registration	
09:00	**Opening address**	
	Cryosphere observations I	
09:20	Kenichi Matsuoka	Scientific rationale for the RINGS efforts facilitating airborne geophysical surveys and relevant resarch of the Antarctic Ice Sheet margin
09:40	Bernd Kulessa	Transient electromagnetic imaging of basal marine ice in Larsen C Ice Shelf, Antarctic Peninsula
10:00	Siobhan Killingbeck	Magnetotelluric imaging of deep subglacial conditions beneath Thwaites Glacier and WAIS Divide
10:20	Benjamin J. Wallis	Ice shelf and glacier grounding line delineation with synthetic aperture radar in low coherence regions using tidal motion correlation – a new grounding line dataset for the Antarctic Peninsula
10:20 - 11:10	Break	
	Cryosphere observations II	
11:10	Hui Gao	Greenland Mass Balance from Laser Altimetry between 1995 and 2020
11:30	Xianwei Wang	Collision with Seamount Triggers Breakup of Antarctic Iceberg
11:50	Audrey Margirier	Tracking glacial sediment transport using a Lagrangian approach with luminescence rock surface burial dating of englacial clasts
12:10	Andreas Wernecke	New observational uncertainties for sea-ice model evaluation
12:30 - 13:30	Lunch break	
	Hydrology I	
13:30	Owen King	Deplete and Retreat in the Andean Water Towers: data-model comparisons for improving understanding of glacio-hydrological processes
13:50	Hongyi Li	Monitoring and modeling glacier and snowmelt water resources in complex high-mountain terrain
14:10	Natasha Lee	An Investigation into Observed Summer Colour Changes of Icelandic Proglacial Lakes
14:30	Tim van den Akker	Observations and modelling the long-term development of a perennial firn aquifer on the Lomonosovfonna ice cap, Svalbard
14:50 - 15:20	Break	
	Hydrology II	
15:20	Sammie Buzzard	MONARCHS: a 3-D model of ice shelf surface hydrology

15:40	Joel Harper	Quantifying meltwater infiltration mechanisms in firn on the Greenland Ice Sheet with observational time series and numerical simulations
16:00	Jeremie Schmiedel	Validation of effective subglacial hydrology models
16:20	Tim Hill	Gaussian Process emulation of a subglacial drainage model

17:00 - 18:00 **SCAR RINGS workshop (Harvard Lecture Theatre 403)**
contact Felicity McCormack <felicity.mccormack@monash.edu>

18:00 - ... **ECR drinks** (venue TBC)

TUESDAY 6 August 2024

Cryosphere-atmosphere interactions I		
09:00	Ruth Mottram	Evaluating a regional climate model ensemble of surface mass budget to understand diverging future projections
09:20	Sebastian B. Simonsen	Data-driven modelling of satellite radar altimetry for Greenland ice sheet mass balance
09:40	Charlotte Lang	Sensitivity of coupled climate and ice sheet simulations of modern Greenland to atmospheric, snow and ice sheet parameters
10:00	Mikkel Lauritzen	Reconstructing the Holocene thinning of the Greenland Ice Sheet

10:20 Break

Cryosphere-atmosphere interactions II		
10:50	Nicole-Jeanne Schlegel	Ice sheets and surface energy balance: observational opportunities and key model uncertainties
11:10	Georgina Woolley	Multi-physics ensemble modelling of Arctic tundra and taiga snowpack properties
11:30	Libo Wang	Impact of topography and meteorological forcing on snow simulation in the Canadian Land Surface Scheme Including Biogeochemical Cycles (CLASSIC)
11:50	Harley R. McCourt	The State and Fate of Global Permafrost: A time series of modelled permafrost extent (1960-2020).

12:30-13:30 Lunch break

13:30-15:00 **Poster session 1 (see schedule below)**

15:00-15:30 Break

15:30-17:00 **Poster session 2 (see schedule below)**

ISMIP7 workshop
(Harvard Lecture Theatre 403)
contact Sophie Nowicki
<ismip6@gmail.com>

17:00 - 18:00 **ECR workshop (room TBC)**
contact Harley McCourt <harley.mccourt@northumbria.ac.uk> and Qing Qin <q.qin@northumbria.ac.uk>

WEDNESDAY 7 August 2024

Ice-sheet dynamics I		
09:00	Brent Minchew	Scaling rheological insights from laboratories to ice sheets using remote sensing and ice-flow models
09:20	Ching-Yao Lai	How can physics-informed deep learning help reveal the flow law of ice?
09:40	Daniel Martin	What's in a number? (implications of n=4)
10:00	Felicity McCormack	What can we learn about ice sheet dynamics by investigating geothermal heat flow in East Antarctica?

10:20 Break

Ice-sheet dynamics II		
10:50	Christine S. Hvidberg	How stable are the ice divides in the northern Greenland ice sheet?

11:10	Hilmar Gudmundsson	Drivers on ongoing changes Thwaites and Pine Island Glaciers, West Antarctica.
11:30	Lielle Stern	Stability of radially spreading extensional flows and Ice shelves
11:50	Ann Kristin Klose	Long-lasting and irreversible Antarctic ice loss caused by warming overshoots
12:30	Lunch break	
13:30 - 19:00	**Mid-week excursions**	

THURSDAY 8 August 2024

Initialization and calibration I		
09:00	Alex Bradley	Using the ensemble Kalman inversion to calibrate ice sheet models
09:20	Jessica Badgeley	Improving modeled ice dynamics in Northwest Greenland with transient calibration: From multi-decadal trends to seasonal cycles
09:40	Beata Csatho	Novel framework for reconstructing the evolution of Earth's land ice cover with examples from Greenland
10:00	Dominik Fahrner	Impact of geothermal heat flow choice on Greenland ice sheet spin up
10:20	Break	

Initialization and calibration II		
10:50	Tom Mitcham	On the use of dh/dt observations in ice sheet model initialisation
11:10	Trystan Surawy-Stepney	Using observations of surface fracture to address ill-posed ice softness estimation over Pine Island Glacier
11:30	Antoine Hermant	Towards isochronal calibration of continental scale ice sheet models
11:50	Therese Rieckh	Design and performance of ELSA v2: an isochronal model for ice-sheet layer tracing
12:30-13:30	Lunch break	
13:30-15:00	**Poster session 3 (see schedule below)**	
15:00-15:30	Break	
15:30-17:00	**Poster session 4 (see schedule below)**	
18:30	**Symposium Banquet** at The Biscuit Factory (16 Stoddart St, Newcastle NE2 1AN, www.thebiscuitfactory.com)	

FRIDAY 9 August 2024

Cryosphere-ocean interactions		
09:00	Adrian Jenkins	Physical controls on the ocean circulation beneath ice shelves revealed by a simple diagnostic model
09:20	Ronja Reese	Do ice-ocean feedbacks influence a regime shift of the Filchner-Ronne ice shelf cavity?
09:40	Steve George	Implementing a Greenland marine terminating glacier melt parameterisation within an Earth Sytem Model framework
10:00	Uta Krebs-Kanzow	The AWI Earth System Model with interactive ice sheets for simulations on millennial timescales
10:20	Break	

Ice fracture and calving		
10:50	Juan Michael Sargado	Simulation of crevasse field evolution using a phase-field approach
11:10	Iain Wheel	Self organisation in tidewater glaciers and ice shelves: implications for calving laws

11:30	Sainan Sun	Revisiting the implications of cliff-height dependent calving law on West Antarctic glaciers
11:50	Oliver J, Marsh	Rift growth and calving triggered by ocean tides and resulting in rapid acceleration of the Brunt Ice Shelf

12:30 Lunch break

Future perspectives		
13:30	Tamsin Edwards	Improving, evaluating and sharing projections of global mean sea level change to 2300
13:50	Sophie Nowicki	How much does model weighting alter projections of ice sheet evolution?
14:10	Michele Petrini	Topographically constrained tipping point for complete Greenland Ice Sheet melt
14:30	Regine Hock	How much global glacier mass loss is committed under policy-relevant global warming scenarios?

14:50 - 15:00 Closing remarks

SATURDAY 10 August 2024

9:00 - 21:00 **Post-symposium excursion** to Hadrian's Wall

Poster session 1 (Tuesday 6 August 2024, 13:30 - 15:00)

Holly	Bartlett	Quantifying suspended sediment export from the Kangerlussuaq region of West Greenland (2017 – 2023)
Allison	Chartrand	Greenland-scape: Assessing analytic and numerical models for improving representation of subglacial topography in slow-flowing regions
Xiangbin	Cui	Available and possible datasets based on seven season's airborne ice-penetrating radar survey in East Antarctica through the Chinese "Snow Eagle 601"
Lenneke	Jong	Model Development and Integration in the Integrated Digital East Antarctica Program
Rebecca	McCerery	Chemical Weathering Products in Seasonally Diverse Proglacial Waters as Tracers for Glacial Hydrologic and Geochemical Modelling
Carolyn	Michael	The EOLIS dataset: Monitoring Land Ice from CryoSat-2 Swath processing
Ipseeta	Nayak	Evaluating the consistency of subglacial overdeepenings derived from different Digital Elevation Models and Ice thickness Models.

Poster session 2 (Tuesday 6 August 2024, 15:30 - 17:00)

Ritu	Anilkumar	Assessing the role of machine learning in glacier mass balance modelling: A case study over large Himalayan glaciers
Ritu	Anilkumar	Explainable AI aids the development of a dynamically enhanced temperature index glacier mass balance model that outperforms traditional empirical models
Jon	Arrizabalaga-Iria	Firn densification in two dimensions: modelling the collapse of snow caves and enhanced densification in ice-stream shear margins
Basile	de Fleurian	Development of a new snow model in the framework of the ERC IVORI ERC project
Wayne	de Jager	Increased rotational Coupling between Antarctic Sea Ice and the Atmosphere Over the Last 30 Years
Pascal	Hagenmuller	Seasonal observations of the microstructure of snow in an Arctic environment
Andreas	Henz	Transient reconstruction of Younger Dryas to present-day glacier evolution in the Alps constrained by the geological record
Owen	King	Glacier area and mass change along the South American Andes over the last five decades.
Jonas	Liebsch	A spatio-temporal ice loading model for Mýrdalsjökull Icecap(Iceland)
Anna	Puggaard	Greenland surface mass balance using physical-informed deep learning
Johnny	Rutherford	Representation of snow thermal conductivity controls future simulated winter carbon emissions in shrub-tundra
Max	Brils	Climatic drivers of ice slabs and firn aquifers in Greenland

Poster session 3 (Thursday 8 August 2024, 13:30 - 15:00)

Violaine	Coulon	Historically-constrained projections of freshwater fluxes from Antarctica
Jan	De Rydt	The simulated response of Antarctic ice flow to observed perturbations in ice-sheet geometry.
Benjamin	Getraer	Impact of assumptions for Glen's flow law exponent: 30% greater Amundsen Sea Embayment ice loss by 2100 if n = 4
Emily	Hill	Modelling the recently observed evolution of Helheim Glacier
Eliot	Jager	The future of Upernavik Isstrøm : sensitivity analysis and bayesian calibration
Ana Carolina	Moraes Luzardi	Impact of model initialization on future projections of the Greenland ice sheet evolution
Olivia	Raspoet	New estimates of englacial and basal thermal conditions of the Antarctic ice sheet
Camilla	Schelpe	On the theoretical limitations of joint inversion for basal slipperiness and ice viscosity
Matt	Trevers	Sensitivity of the Amundsen Sea ice streams to model initialisation and melt parameterisations
Tim	van den Akker	Modelled ice sheet sensitivity to basal friction parameterizations is determined by the amount of buttressing and the flow factor inversion.

Poster session 4 (Thursday 8 August 2024, 15:30 - 17:00)

Aminat	Ambelorun	Modeling the Impact of Stochastic Iceberg Calving on Ice Sheet Dynamics
Jowan	Barnes	Towards predictive modelling of Antarctica using the Úa-FESOM coupled ice-ocean framework
Emma	Carr	Spatiotemporal evolution of subaerial ice cliff heights at marine-terminating outlet glaciers in Northwestern Greenland
Cristina	Gerli	Weak relationship between remotely detected crevasses and inferred ice rheological parameters on Antarctic ice shelves
Rebecca	Goodison	The relationship between cliff-height and calving rates for Hektoria Glacier in the Larsen B Ice Shelf
Jim	Jordan	Calving MIP - Idealised experiments into calving algorithms and laws
Yiliang	Ma	Evaluation of coupled Earth System Model - icesheet simulations of Greenland against observational products
Richard	Parsons	Glacier Calving - Observations and Modelling
Brad	Reed	Validation of a new coupled ice-ocean model of the Amundsen Sea sector
Sam	Sutcliffe	Modelling Ice Cliff Collapse with the Material Point Method
Jo	Zanker	Ice-ocean coupled modelling for Nioghalvfjerdsbræ (79NG), Greenland