

FRISP 2023 Program

19-22 June 2023, Stalheim, Norway

Monday 19 June

16:00 Buses leave Bergen airport and city centre

19:30 Dinner

Tuesday 20 June

06:30-08:30 Breakfast

08:30 Welcome

08:45 Processes, Part 1 (Convener: Kjersti Daae)

- 08:45 **Nina Caldarella** (Otago University, Aotearoa / New Zealand): *How frazil ice concentration, size, and velocities can be quantified using retrievals from an acoustic profiler, a camera and plume models*
- 09:00 **Madelaine Rosevear** (Melbourne University, Australia): *Basal melting of Antarctic ice shelves by tidal currents*
- 09:15 **Erwin Lambert** (KNMI, Netherlands): *Introducing the 2D basal melt model LADDIE*
- 09:30 **Niall Coffey** (Princeton, USA): *The Transition from Basal Crevasses to Rifts*

09:45 Coffee & Tea

10:30 Antarctic ice sheet and ice shelves in general, Part 1 (Convener: Ann Kristin Klose)

- 10:30 **Benjamin Davison** (Leeds University, UK): *Annual mass budget of Antarctic ice shelves from 1997-2021*
- 10:45 **Inga Smith** (Otago University, Aotearoa / New Zealand): *From observations to climate modelling: what is the influence of ice shelves on sea ice and climate?*
- 11:00 **Bertie Miles** (Edinburgh University, UK): *Unanchoring of Antarctic ice shelves over the past five decades*
- 11:15 **Ching-Yao Lai** (Stanford University, USA): *Deep Learning Antarctic Ice-Shelf Rheology*
- 11:30 **David Chandler** (NORCE, Norway): *Antarctic Ice Sheet tipping points in the last 800,000 years*

11:45 Lunch; walk & talk

15:00 Lightning presentations of upcoming field plans (5 mins per person, Convener: Keith Nicholls & timer)

- **Craig Stevens**
- **Inga Smith**

- **Tore Hatterman**
- **Markus Janout**
- **Adrian Jenkins**
- **Laura Herraiz Borreguero**
- **Coen Hofstede**

15:30 Coffee & Tea

15:45 – 18:00 Poster session 1

19:00 Dinner

Wednesday 21 June

06:30-08:30 Breakfast

08:30 East Antarctica/Ross (Convener: Laura Herraiz Borreguero)

- **08:30 Yoshihiro Nakayama** (Lowtem, Hokkaido University, Japan): *Helicopter-based ocean observations capture broad ocean heat intrusions towards the Totten Ice Shelf*
- **08:45 Pierre Dutrieux** (BAS, UK): *On the complex geometry connecting ocean and ice, an observational perspective from a cold setting, the Nansen Ice Shelf*
- **09:00 Craig Stevens** (NIWA, Aotearoa / New Zealand): *Subglacial discharge at the Kamb Ice Stream, Ross Ice Shelf, Antarctica*
- **09:15 Felipe Gomez-Valdivia** (BAS, UK): *Projected West Antarctic ocean warming caused by the Ross Gyre expansion*
- **09:30 Alethea Mountford** (Northumbria University, UK) - *Exploring drivers of change in the Ross Sea with a regional ocean model*

09:45 Coffee & Tea

10:30 Processes, Part 2 (Convener: Xylar Davis)

- **10:30 Adrian Jenkins** (Northumbria University, UK): *The floatation condition and the barotropic circulation beneath ice shelves*
- **10:45 Yixi Zheng** (East Anglia University, UK): *Temporal variability of meltwater in front of Dotson Ice Shelf*
- **11:00 Catherine Walker** (WHOI, USA): *Observations of Ice Shelf Rift Topography using ICESat-2 laser altimetry and high-resolution imagery*
- **11:15 Maren Richter** (Otago University, Aotearoa / New Zealand): *An investigation of drivers of interannual fast-ice variability in McMurdo Sound on multiple scales*
- **11:30 Franka Jesse** (Utrecht University, Netherlands): *The effect of 2D basal melt patterns on ice sheet stability*

11:45 Lunch; short walk & talk

14:00 Weddell Sea (Convener: Julius Lauber)

- **14:00 Oliver Marsh** (BAS, UK): *Predicting conditions for calving from the Brunt Ice Shelf in January 2023*

- 14:15 **Nadine Steiger** (L'Ocean, France): *Pathways, variability and drivers of the inflow of Warm Deep Water into the Filchner Trough on the southern Weddell Sea continental shelf*
- 14:30 **Markus Janout** (AWI, Germany): *Water mass production and export from Filchner-Ronne Ice Shelf*
- 14:45 **Vår Dundas** (GFI, Norway): *Idealized storm-forced heat transport in the Filchner Trough throughout the seasons*
- 15:00 **Jelte von Oostveen** (NORCE, NO): *Quantifying Short- and Long-Term Variability in the Fimbul Ice Shelf Grounding Zone*

15:30 Coffee & Tea

15:45 – 18:00 Poster Session 2

19:00 Dinner

Thursday 22 June

06:30-08:30 Breakfast & check out!

08:30 Antarctica and beyond (Convener: Lena Nicola)

- 08:30 **Claudia Wekerle** (AWI, Germany): *Atmosphere or ocean - What drives basal melt at Greenland's largest floating ice tongue, the 79°North Glacier?*
- 08:45 **Tore Hattermann** (Norwegian Polar Institute, Norway): *Temperature-driven basal channel growth under Fimbulisen*
- 09:00 **Ruth Moorman** (Caltech, USA): *Coastal polynyas enable transitions between high and low West Antarctic ice shelf melt rates*
- 09:15 **Trystan Surawy-Stepney** (Leeds University, UK): *Investigating the role of ice shelf fracture in Antarctic Ice Sheet dynamics*

09:30 Coffee & Tea, Check out!

10:00 Ice shelf melting in West-Antarctica (Convener: Fabio Boeira Dias)

- 10:00 **Justine Caillet** (Grenoble University, France): *Impact of natural variability of oceanic forcing on the ice-shelf melting in the Amundsen Sea*
- 10:15 **Paul Holland** (BAS, UK): *Strong ocean melting feedback during the recent retreat of Thwaites Glacier*
- 10:30 **Peter Davis** (BAS, UK): *Suppressed basal melting in the eastern Thwaites Glacier grounding zone*

11:45 Pick up your packed lunch

12:00 Bus to Bergen city centre and airport

POSTERS

Session 1:

Leo Middleton (WHOI, US) - Double Diffusion as a Driver of Turbulence in the Stratified Boundary Layer Beneath George VI Ice Shelf

Michael Haigh (BAS, UK) - The influence of bathymetry over heat transport onto the Amundsen Sea continental shelf

Kaitlin Naughten (BAS, UK) - Unavoidable future increase in West Antarctic ice-shelf melting over the 21st century

Lars Smedsrud (UiB, Norway) - Super Cooled Water and flow intensity at the McMurdo Ice Shelf Front

Andreas Klocker (NORCE, Norway) - Basal meltwater from Antarctic ice shelves crucial to explain observed sea ice trends

Nathan Teder (Adelaide University, Australia) - How swell instigated the Wilkins and Voyeykov calvings in 2007—2008

Irena Vaňková (BAS, UK) - Melt rates, bathymetry, and melt rate variability near the Totten Glacier grounding zone

Josephine Anselin (BAS, UK) - How ice base slope controls turbulent mixing through the ice shelf – ocean boundary current: insights from large-eddy simulations

Violaine Coulon (ULB, Belgium) - Disentangling the drivers of future Antarctic ice loss with a historically-calibrated ice-sheet model

Ann-Sofie Zinck (TU Delft, Netherlands) - High-resolution basal melt rates of ice shelves in the Amundsen Sea Sector

Dorothee Vallot (SMHI, Sweden) - Spatially variable drag in the shear-controlled melt parameterisation below ice shelves in NEMO

Greg Leonard (Otago University, Aotearoa / New Zealand) - Assessing the vulnerability of fast ice in McMurdo Sound, Antarctica to winter storms

Ashley Morris (UW, USA) - Building an Antarctic Rift Catalog using ICESat-2: Detection and Measurement Algorithm Design, and Recent Variability in the Opening Rate of the Halloween Crack, Brunt Ice Shelf

Nicolas Jourdain (Grenoble University, France) - Mixed resolved and parameterised melting beneath Antarctic ice shelves

Lena Nicola (PIK, Germany) - Oceanic gateways to Antarctic grounding lines - Impact of critical access depths on sub-shelf melt

Katherine Turner (BAS, UK) - Untangling the effects of climate change on the Amundsen Sea, Antarctica

Christoph Kittel (Grenoble University, France) - Influence of the future surface meltwater from the Antarctic ice sheet on the Southern Ocean properties and ice-shelf basal melt

Fabio Boeira Dias (UNSW, Australia) - Sensitivity of simulated water mass transformation on the Antarctic shelf to tides, topography and model resolution

Elin Darelus (GFI, Norway) - Observational evidence for on-shelf heat transport driven by dense water export in the Weddell Sea (and a sudden warming in the same region)

Ruth Moorman (Caltech, USA) - Coastal polynyas enable transitions between high and low West Antarctic ice shelf melt rates

Clara Burgard (Grenoble, FR) - Parameterising melt at the base of Antarctic ice shelves with deep learning: exploring a simple approach and thoughts for the future

Joshua Rines (Princeton, USA) - Automatic detection of ice fracture density using a convolutional neural network

Session 2:

David Bett (BAS, UK) - Coupled ice/ocean interaction during the future retreat of West Antarctic ice streams

Chen Zhao (UTAS, Tasmania) – Accelerated forcing to handle asynchronicity in coupled ice sheet-ocean modelling

Katie Lowery (BAS, UK) - Channels through time: A Case Study over Pine Island Glacier

Ole Richter (AWI, Germany) - The power of unstructured grids: Coupled Antarctic ice sheet-ocean modelling using Úa-Fesom v1.0

Xylar Asay-Davis (LANL, USA) - Ice sheet-ocean coupling in an Earth System Model

Tore Hattermann (NPOLAR, Norway) - The Troll Observing Network marine observatories

Lars Zipf (ULB, Belgium) - The details of how to implement and apply sub-shelf melt parametrizations in standalone ice sheet models - Does it matter for Antarctic sea level projections?

Vanessa Teske (AWI, Germany) - Warming of the Filchner Trough during the 21st century

Verena Haid (AWI, Germany) - Antarctica under present-day and 'warm continental shelf' conditions

Julius Lauber (NPOLAR, Norway) - Insights into the cavity circulation below Fimbulisen from 12 years of sub-ice-shelf mooring observations

Emily Hill (Northumbria University, UK) - Exploring the potential for regime shifts in ocean conditions to cause widespread retreat of Antarctic grounding lines

Johanne Jahnsen Hus (UiT, Norway) - Effects of subglacial melt water runoff on the ocean circulation beneath the Filchner Ice Shelf

Ann Kristin Klose (PIK, Germany) - (Ir)reversibility of future Antarctic mass loss on multi-millennial timescales

Julius Garbe (PIK, Germany) - The evolution of future Antarctic surface melt using PISM-dEBM-simple

Moritz Kreuzer (PIK, Germany) - Oceanic gateways to Antarctic grounding lines - Impact of relative sea level change on sub-shelf melt

Simon Schöll (PIK, Germany) - Response of the Antarctic Ice Sheet to present-day and warm ocean conditions – first results from coupled FESOM-PISM modelling

Shenjie Zhou (BAS, UK) - The decadal warming in Weddell sea Warm Deep Water

Britney Schmidt (Cornell University, USA) - Ice-Ocean Interactions Compared across Grounding Zone Regimes

Christopher Bull (Northumbria University, UK) - Topographic and fresh water controls of shelf temperatures around Antarctica

Coen Hofstede (AWI, DE) - The bed of Thwaites Glacier: presenting a 208km seismic reflection profile of the center flow line

Laura Herraiz Borreguero (CSIRO, AU) - The vulnerability of the East Antarctic Ice Sheet

Johan Nilsson (MISU, SE) - Hydraulic suppression of basal glacier melt in sill fjords

