

# Forum for Research into Ice Shelf Processes (FRISP)

15-18 September 2019, The Queen's College, Oxford, UK

Sunday 15 September

**17:30-19:00** Oxford walking tour

**19:30** Dinner

Monday 16 September

**7:45-8:45** Breakfast

**8:45-9:00** Introduction

**9:00-10:40** **Session 1: Circumpolar, Larsen, and Brunt**

**Chair: Tore Hattermann**

9:00-9:20 Michael Dinniman: "Direct and indirect contributions of ice shelves to micronutrient supply to the surface waters around Antarctica"

9:20-9:40 Eva Cougnon: "Realistic Ice-ocean State Estimates (RISE) international collaboration"

9:40-10:00 Lianne Harrison: "Oceanic melting and freezing beneath Larsen C Ice Shelf"

10:00-10:20 Alexander Robel: "A speed limit on ice shelf collapse through hydrofracture"

10:20-10:40 Jan De Rydt: "Calving cycle of the Brunt Ice Shelf, Antarctica, driven by changes in ice-shelf geometry"

**10:40-11:10** Morning tea

**11:10-12:30** **Session 2: Filchner-Ronne**

**Chair: Elin Darelus**

11:10-11:30 Lucie Vignes: "The impact of the seasonality of surface air-ice-sea fluxes on warm water pathway toward the Filchner Ronne Ice Shelf"

11:30-11:50 Stefanie Arndt: "Thickness of the Berkner Island fast-ice tongue: Implications for ISW"

11:50-12:10 Irena Vankova: "Tidal melt and vertical strain observations at the Filchner-Ronne Ice Shelf"

12:10-12:30 Timm Schultz: "Viscoelastic modelling of a subglacial melt channel beneath the Filchner Ronne Ice Shelf near Support Force Glacier, Antarctica"

**12:30-14:00** Lunch

**14:00-15:40** **Session 3: East Antarctica**

**Chair: Christopher Bull**

14:00-14:20 Jim Jordan: "Explaining the recent acceleration of Cook Glacier, East Antarctica"

14:20-14:40 Konstanze Haubner: "Totten glacier, EAIS, under a changing climate"

- 14:40-15:00 Sue Cook: "Basal melt variability on the Totten Ice Shelf"
- 15:00-15:20 Emilia Kyung Jin: "Impact of bed geometry on the future projections of ice sheet melting and sea level rise"
- 15:20-15:40 Shin Sugiyama: "Seasonal variations in temperature, salinity and current under the floating tongue of Langhovde Glacier in East Antarctica"
- 15:40-16:00 Afternoon tea**  
**Tour of Queens College Library (limited spaces)**
- 16:00-18:00 Posters**
- 19:30 Dinner**

## Tuesday 17 September

- 7:45-8:45 Breakfast**
- 9:00-10:40 Session 4: Processes and parameterisations**  
**Chair: Peter Davis**
- 9:00-9:20 Ben Yeager: "A 3D model of ocean circulation near an ice shelf grounding line"
- 9:20-9:40 Alena Malyarenko: "Ice shelf-ocean ablation: a wide range in observations, a wider range in modelling"
- 9:40-10:00 Maya Becker: "An overlooked ice-shelf calving process for accelerating Antarctic Ice Sheet loss"
- 10:00-10:20 Erin C. Pettit: "Melt Dynamics at Ice Cliffs"
- 10:20-10:40 Nicolas Jourdain: "Uncertainty on future ice-shelf basal melt rates in Antarctica"
- 10:40-11:10 Morning tea**
- 11:10-12:30 Session 5: Processes and parameterisations (cont'd)**  
**Chair: Catherine Vreugdenhil**
- 11:10-11:30 Ji Sung Na: "Large eddy simulation study of the flow within the mixed layer with water plume under ice shelf"
- 11:30-11:50 Carolyn Begeman: "Large-eddy simulations of the ice-ocean boundary layer"
- 11:50-12:10 Louis Couston: "Direct numerical simulation of ice melting in a turbulent ocean"
- 12:10-12:30 Leo Middleton: "Onset of Double Diffusive Convection in the Ice Shelf Ocean Boundary Layer"
- 12:30-14:00 Lunch**
- 14:00-15:40 Session 6: Ross and Greenland**  
**Chair: Natalie Robinson**
- 14:00-14:20 Indrani Das (remotely via Zoom): "Multi-decadal basal melt rates of Ross Ice Shelf, Antarctica from airborne ice penetrating radar"
- 14:20-14:40 Craig Stevens: "A year under ice: observations of thermohaline temporal

- variability in the central Ross Ice Shelf ocean cavity”
- 14:40-15:00 Britney Schmidt: “Grounded Ice-Ocean Interactions in McMurdo Sound”
- 15:00-15:20 Joe Todd: “Calving style and environmental sensitivity of a Greenland outlet glacier from discrete & finite element modelling”
- 15:20-15:40 Julia Christmann: “Tidally induced variation of horizontal displacements at the 79°N Glacier, Greenland”
- 15:40-16:00 Afternoon tea**  
**Tour of Queens College Library (limited spaces)**
- 16:00-18:00 Posters**
- 19:30 Conference dinner**

## Wednesday 18 September

- 7:45-8:45 Breakfast**
- 9:00-10:40 Session 7: Circumpolar and Amundsen**  
**Chair: Xylar Asay-Davis**
- 9:00-9:20 Chad A. Greene: “Satellite observations of Antarctic ice velocity variability”
- 9:20-9:40 Helen Amanda Fricker: “A new view of Antarctica's ice shelves from ICESat-2”
- 9:40-10:00 Susheel Adusumilli: “Partitioning meltwater fluxes from Antarctica's large ice shelves into the intermediate and upper ocean”
- 10:00-10:20 David Bett: “The effect of the Amundsen Sea freshwater balance on ocean melting of the West Antarctic Ice Sheet”
- 10:20-10:40 Paul Holland: “Climate Forcing of the West Antarctic Ice Sheet: Anthropogenic Trends and Internal Climate Variability”
- 10:40-11:10 Morning tea**
- 11:10-12:30 Session 8: Amundsen (cont'd)**  
**Chair: Kaitlin Naughten**
- 11:10-11:30 Pierre Dutrieux: “Seaglider and Float Observations Beneath Dotson Ice Shelf, West Antarctica”
- 11:30-11:50 Yixi Zheng: “Winter distribution of meltwater in front of Pine Island Bay revealed by seals”
- 11:50-12:10 Yoshihiro Nakayama: “Pathways of ocean heat towards Pine Island and Thwaites grounding lines”
- 12:10-12:30 J. Paul Winberry: “Precursory Seismicity and Glacial Earthquakes during Thwaites Glacier calving”
- 12:30 Lunch and close of conference**

## Posters

Sridhar Anandakrishnan	Bathymetry at the Thwaites Grounding Zone
Shigeru Aoki	Glacial meltwater fraction in the Antarctic shelf waters derived from stable oxygen isotope
Jan Erik Arndt	Past pinning points of Pine Island Glacier and the Brunt Ice Shelf mapped by swath bathymetry
Xylar Asay-Davis	Regional and global impacts of Antarctic ice-shelf melt fluxes in Energy Exascale Earth System Model (E3SM) preindustrial and historical simulations
Jowan Barnes	Assessment of plume routing methods for calculating basal melt in an ice flow model
Louise Biddle	The effect of glacial meltwater on the stability of the water column in the Amundsen Sea
Guilherme A. Bortolotto	How CTD-tagged seals are helping to monitor the Amundsen sea
Christopher Bull	Remote control of Ronne Filchner melt rates by the Antarctic Slope Current
Anna Crawford (presented by Doug Benn)	Towards a Physically Based Rate Law for Marine Ice-cliff Instability
Kjersti Daae	Seasonal variability over the southern Weddell Sea continental shelf and slope
Elin Darelius	APRES observation from the Fimbull ice shelf, East Antarctica
Peter Davis	Turbulence beneath the Larsen-C Ice Shelf, Antarctica
Jan De Rydt	Úa-MITgcm: a toolkit for coupled ice-ocean simulations
Roberto Grilli	Subsea Water Isotope Sensors: A novel tool for continuous and in-situ analysis
Damien Guihen	Trials of an Autonomous Underwater Vehicle at the Sørstøl Glacier, and the toolboxes in development to support future missions
Jingxue Guo	Physical characterization of Amery Ice Shelf and the subglacial environment using recently-acquired CHINARE airborne survey data
Tore Hattermann	Modelling the effects of small-scale topography on ocean/ice shelf interactions
Karen Heywood	Thwaites Glacier and the Amundsen Sea Embayment: The TARSAN Project
Emily Hill	Quantifying uncertainty in future projections of ice loss from the Filchner-Ronne Ice Shelf System
Coen Hofstede	Tracking an ice shelf channel of Support Force Glacier (West Antarctica) using reflection seismics: consequences for the ice dynamics and subglacial sedimentation.
Hannes Hollmann	High complexity in the structure of the firn; seismic observations from the Amery Ice Shelf, East Antarctica
Robert Larter	Influence of bathymetry on Thwaites Glacier ice shelf thinning,

	calving and grounding line retreat from new high-resolution data
Justin Lawrence	Ice-ocean interactions influence microbial diversity under ice
Seung Hyun Lee	Effect of localized high basal melting on transient subglacial water flow evolution beneath Campbell Glacier, Antarctica
Shelley MacDonell	The impact of liquid water on ice shelf dynamics
Stefanie Mack	Coupled ice sheet-ocean modeling: shareable and reproducible with containerization software
Oliver Marsh	Observations of Fracture on the Brunt Ice Shelf
Andrew Mullen	Development Of A Submersible Water Sampling & Microbial Imaging System For The Icefin ROV
Kaitlin Naughten	Coupled ice sheet-ocean modelling of the Filchner-Ronne Ice Shelf cavity
Kaitlin Naughten	Gender equality at FRISP: How are we doing?
Svein Østerhus	Weddell Watch
Petra Langebroek	Tipping Points in Antarctic Climate Components (TiPACCs)
Ryan Patmore	Modelling the ice shelf-ocean boundary layer in a general circulation model framework
Charles Pelletier	Investigating the ice shelf melt impact on the upper Southern Ocean heat content and sea ice extent using coupled Antarctic-wide numerical models
Ronja Reese	Antarctic Ice Sheet model simulations with PISM+PICO
Natalie Robinson	Dynamic processes in a supercooled ISW plume: tales from the Victoria Land Coast Current
Sebastian Rosier	Exploring mechanisms responsible for tidal modulation in flow of the Filchner-Ronne Ice Shelf
Alessandro Silvano	Changes in Antarctic Bottom Water
Nadine Steiger	Oceanic processes at an ice shelf front
David Sutherland (presented by Mike Dinniman)	Grounding zone depth modulates oceanic control on glacier terminus retreat along the west Antarctic Peninsula
Xueyuan Tang	Airborne geophysical survey in Princess Elizabeth's Land, East Antarctica
Ralph Timmermann	Coupled ocean-ice simulation of the Weddell Sea Basin
Guillian Van Achter	A high resolution NEMO-LIM local configuration over Totten area for assessing decadal variability and predictability.
Catherine Vreugdenhil	The effect of tides on the basal-melting of an ice shelf: large-eddy simulations with a near-wall model
Peter Washam	Observations of Subglacial Runoff-Enhanced Basal Melt beneath Petermann Gletscher Ice Shelf, Greenland
Andrew Wells	Ice-shelf rippling and internal layer dynamics from temporally varying melt and ice discharge
C. Rosie Williams	Century-long probabilistic forecasts of sea-level contribution from the Amundsen Sea Sector of West Antarctica, constrained by mass balance data.
Ole Zeising	Difficulties of estimating large basal melt rates by pRES

measurements at 79°N Glacier, Greenland
---

## List of participants

<b>Name</b>	<b>Institution</b>	<b>Email</b>
Susheel Adusumilli	Scripps Institution of Oceanography	suadusum@ucsd.edu
Sridhar Anandakrishnan	Pennsylvania State University	sak@essc.psu.edu
Shigeru Aoki	Hokkaido University	shigeru@lowtem.hokudai.ac.jp
Jan Erik Arndt	Alfred Wegener Institute	Jan.Erik.Arndt@awi.de
Stefanie Arndt	Alfred Wegener Institute (AWI)	stefanie.arndt@awi.de
Xylar Asay-Davis	Los Alamos National Laboratory	xylarstorm@gmail.com
Jowan Barnes	Northumbria University	jowan.barnes@northumbria.ac.uk
Aurora Basinski-Ferris	New York University	abf376@nyu.edu
Maya Becker	Scripps Institution of Oceanography, University of California, San Diego	m3becker@ucsd.edu
Carolyn Begeman	Los Alamos National Laboratory	cbegeman@lanl.gov
Doug Benn	University of St Andrews	dib2@st-andrews.ac.uk
David Bett	British Antarctic Survey	davbet33@bas.ac.uk
Louise Biddle	University of Gothenburg	louise.biddle@marine.gu.se
Guilherme Bortolotto	University of St Andrews, SMRU	gabdo@st-andrews.ac.uk
Christopher Bull	British Antarctic Survey	chbull@bas.ac.uk
Elizabeth Case	Columbia University/Lamont-Doherty Earth Observatory	ehc2150@columbia.edu
Knut Christianson	University of Washington	knut@uw.edu
Julia Christmann	Alfred-Wegener-Institut, Helmholtz-Zentrum für Polar- und Meeresforschung	julia.christmann@awi.de
Sue Cook	University of Tasmania	sue.cook@utas.edu.au
Eva Cougnon	Antarctic Gateway Partnership (AGP-UTAS)	eva.cougnon@utas.edu.au
Louis Couston	British Antarctic Survey	loton@bas.ac.uk
Riley Culberg	Stanford University	culberg@stanford.edu
Kjersti Daae	University of Bergen	kjersti.daae@uib.no

Elin Darelius	Bjerknes Centre for Climate Research	elin@gfi.uib.no
Indrani Das	Lamont Doherty Earth Observatory, Columbia University	indrani@ldeo.columbia.edu
Peter Davis	British Antarctic Survey	petvis@bas.ac.uk
Jan De Rydt	Northumbria University	jan.rydt@northumbria.ac.uk
Michael Dinniman	Old Dominion University	mdinniman@gmail.com
Vår Dundas	Geophysical Institute, University of Bergen, Norway	irendundas@gmail.com
Pierre Dutrieux	Lamont-Doherty Earth Observatory of Columbia University	pierred@ldeo.columbia.edu
Helen Amanda Fricker	Scripps Institution of Oceanography	hafricker@ucsd.edu
Chad Greene	NASA: Jet Propulsion Laboratory	chad@chadagreene.com
Roberto GRILLI	Institut des Géosciences de l'Environnement	roberto.grilli@univ-grenoble-alpes.fr
Hilmar Gudmundsson	Northumbria University	hilmar.gudmundsson@northumbria.ac.uk
Damien Guihen	University of Tasmania	damien.guihen@utas.edu.au
Jingxue Guo	Polar Research Institute of China	guojingxue@pric.org.cn
Rob Hall	University of East Anglia	robert.hall@uea.ac.uk
Lianne Harrison	British Antarctic Survey	liahar11@bas.ac.uk
Tore Hattermann	Norwegian Polar Institute	tore.hattermann@npolar.no
Konstanze Haubner	ULB (Université libre de Bruxelles)	khaubner@ulb.ac.be
Hartmut Hellmer	Alfred Wegener Institute	Hartmut.Hellmer@awi.de
Karen Heywood	University of East Anglia	k.heywood@uea.ac.uk
Emily Hill	University of Exeter	e.hill@exeter.ac.uk
Andrew Hoffman	University of Washington, Seattle	hoffmaao@uw.edu
Coen Hofstede	AWI	coen.hofstede@awi.de
David Holland	New York University Abu Dhabi	dmh4@nyu.edu
Paul Holland	British Antarctic Survey	p.holland@bas.ac.uk
Hannes Hollmann	Institute for Marine and Antarctic Studies	hannes.hollmann@utas.edu.au
Adrian Jenkins	British Antarctic Survey	ajen@bas.ac.uk

Emilia Jin	KOPRI	jin@kopri.re.kr
James Rowan Jordan	Northumbria University	jim.jordan@northumbria.ac.uk
Nicolas Jourdain	CNRS (IGE)	nicolas.jourdain@univ-grenoble-alpes.fr
Galen Kaip	University of Texas at El Paso	gkaip@utep.edu
Marianne Karplus	University of Texas at El Paso	mkarplus@utep.edu
Satoshi Kimura	Japan Agency for Marine-Earth Science and Technology	skimura@jamstec.go.jp
Petra Langebroek	NORCE and Bjerknes Centre	pela@norceresearch.no
Robert Larter	British Antarctic Survey	rdla@bas.ac.uk
Justin Lawrence	Georgia Institute of Technology	jlawrence@gatech.edu
Anne Le Brocq	University of Exeter	a.lebrocq@exeter.ac.uk
Seung Hyun Lee	KOPRI	lsh@kopri.re.kr
Won Sang Lee	KOPRI	wonsang@kopri.re.kr
Adrian Luckman	Swansea University	A.Luckman@Swansea.ac.uk
Shelley MacDonell	CEAZA	shelley.macdonell@ceaza.cl
Stefanie Mack	Applied Physics Laboratory, University of Washington	mnemoniko@gmail.com
Keith Makinson	British Antarctic Survey	kmak@bas.ac.uk
Alena malyarenko	University of Otago	alena.malyarenko@niwa.co.nz
Oliver Marsh	British Antarctic Survey	olrs@bas.ac.uk
Leo Middleton	British Antarctic Survey	leomid98@bas.ac.uk
Andrew Mullen	Georgia Tech	andrewdavidmullen@gmail.com
Jisung Na	KOPRI	jsna@kopri.re.kr
Yoshihiro Nakayama	Hokkaido University	Yoshihiro.Nakayama@lowtem.hokudai.ac.jp
Kaitlin Naughten	British Antarctic Survey	kaight@bas.ac.uk
Keith Nicholls	British Antarctic Survey	kwni@bas.ac.uk
Svein Østerhus	NORCE	svein.osterhus@uni.no
Ryan Patmore	BAS	ryapat30@bas.ac.uk
Charles Pelletier	UCLouvain	charles.pelletier@uclouvain.be
Erin Pettit	Oregon State University	pettiter@oregonstate.edu
Ronja Reese	Potsdam Institute for Climate Impact Research	ronja.reese@pik-potsdam.de



Alexander Robel	Georgia Institute of Technology	alexander.robel@eas.gatech.edu
Natalie Robinson	NIWA	natalie.robinson@niwa.co.nz
Sebastian Rosier	Northumbria University	sebastian.rosier@northumbria.ac.uk
Ted Scambos	University of Colorado	tascambos@colorado.edu
Britney Schmidt	Georgia Tech	britneys@eas.gatech.edu
Timm Schultz	Technische Universität Kaiserslautern	tschultz@rhrk.uni-kl.de
Alessandro Silvano	UTAS, CSIRO	a.silvano.email@gmail.com
Adam Stanway	University of Oxford	adam.stanway@physics.ox.ac.uk
Nadine Steiger	GFI/ UIB	nadine.steiger@uib.no
Craig Stevens	NIWA/U.Auckland	craig.stevens@niwa.co.nz
Shin Sugiyama	Hokkaido University	sugishin@lowtem.hokudai.ac.jp
Xueyuan Tang	Polar Research Institute of China	tangxueyuan@pric.org.cn
Ralph Timmermann	Alfred-Wegener-Institut für Polar- und Meeresforschung	Ralph.Timmermann@awi.de
Joe Todd	University of St Andrews	jat39@st-andrews.ac.uk
Srikanth Toppaladoddi	University of Oxford	srikanth.toppaladoddi@all-souls.ox.ac.uk
Martin Truffer	University of Alaska Fairbanks	mtruffer2@alaska.edu
Guillian Van Achter	UCLouvain University	guillian.vanachter@uclouvain.be
Irena Vankova	British Antarctic Survey	irkova@bas.ac.uk
David Vaughan	British Antarctic Survey	dgv@bas.ac.uk
Lucie Vignes	LOCEAN	lucie.vignes@locean-ipsl.upmc.fr
Catherine Vreugdenhil	University of Cambridge	cv329@cam.ac.uk
Peter Washam	Georgia Institute of Technology	peter.washam13@gmail.com
Andrew Wells	University of Oxford	andrew.wells@physics.ox.ac.uk
Rosie Williams	British Antarctic Survey	chll1@bas.ac.uk
Paul Winberry	Central Washington Univ	paul.winberry@gmail.com
Benjamin Yeager	New York University	by16@nyu.edu
Ole Zeising	Alfred-Wegener-Institut	ole.zeising@awi.de
Yixi Zheng	University of East Anglia	Yixi.Zheng@uea.ac.uk