



SDM 26
 Agenda Item: 4.4.8
 Person Responsible: C Ritz et al.

**XXXV SCAR Delegates Meeting
 Davos, Switzerland, 25-26 June 2018**

The future of ISMASS

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Summary of activities and other important issues

- A model intercomparison initiative on West Antarctic Glacier-Ocean was organized at the New York University Campus in Abu Dhabi, United Arab Emirates, on 16-18 May 2016, focused on coupling of ice sheet and ocean models, organized by David and Denise Holland.
- An ISMASS Workshop that addressed the impact of 1.5°C global warming on Greenland & Antarctic ice sheets, held in Brussels from 11-13 January 2017 with the purpose of preparing a review paper on the contribution of Greenland and Antarctic ice sheets to future sea level under a 1.5°C warmer climate (in line with the Paris agreement).
- Catherine Ritz gave presentations on the above activity at: (1) 2017 European Geosciences Union meeting; and (2) WCRP/IOC conference on “Regional Sea Level Changes and Coastal Impacts” in New York in July 2017.
- There will be an ISMASS related session during next Open Conference in DAVOS in 2018. CR5: “Interactions between ice mass balance, the solid Earth, and sea-level changes” (C. Ritz convener)
- ISMASS will organize a one day workshop on 15 June 2018 as a side meeting of the above Open Conference. Title: “Update on mass balance of Greenland and Antarctica (linkages between data and models)”. A review article should be an outcome of this workshop (Contact Edward Hanna).

Recommendation

ISMASS bridges scientific groups and communities involved in better understanding of and improving projections of sea level change (past, present and future). This happens under the form of meetings and targeted initiatives. ISMASS is a long-standing working group that refocused its attention in 2012 to ice sheet mass balance and sea level. For that purpose, ISMASS is not solely a SCAR initiative, but is also linked to IASC and CliC. The main website of ISMASS is hosted by CliC.

Summary Budget 2017 to 2020

	2017	2018	2019	2020
	Spent	Allocated	Request	Request
(US\$)	0	5000	2500	2500



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Progress and Plans

Major Outcomes/Activities

The Expert Group on Ice Sheet Mass Balance and Sea Level (ISMASS) is co-sponsored by the Scientific Committee on Antarctic Research, the International Arctic Science Committee (IASC), and the WCRP Climate and Cryosphere Project. The goals of ISMASS are to promote research on the estimation of the mass balance of ice sheets and its contribution to sea level, to facilitate the coordination among the different international efforts focused on this field of research, to propose directions for future research in this area, to integrate observations and modelling efforts, as well as the distribution and archiving of the corresponding data, to attract a new generation of scientists into this field of research, and to contribute to the diffusion, to society and policymakers, of the current scientific knowledge and the main achievements in this field of science. Further details on the goals of ISMASS can be found in the Terms of Reference at: <http://www.climate-cryosphere.org/activities/groups/ismass>.

An Ice Sheet Mass Balance and Sea Level (ISMASS) workshop was held in Brussels from 11-13 January 2017 with the purpose of preparing a review paper on the contribution of Greenland and Antarctic ice sheets to future sea level under a 1.5° C warmer climate (in line with the Paris agreement). This workshop was funded by SCAR (on 2017 funds) and CliC. Discussions at the meeting led to the conclusion that the review paper would address the following: forcing (non-linearities, SMB, circulation changes, feedbacks...), advances in understanding processes; uncertainties since IPCC Assessment Report 5 (calving, GIA, basal processes...); expected centennial response for Greenland and Antarctica, and expected long-term response (including commitment). The resulting review paper is planned to feed into the IPCC Special Report on 1.5 degrees. Participants at the meeting were Frank Pattyn (organizer), Lionel Favier, Gael Durand, Catherine Ritz (co-organiser and chair of ISMASS), Xavier Fettweis, Edward Hanna, Michiel van den Broeke, Heiko Goelzer, Xylar Asay-Davis, Alexander Robinson, Tony Payne, Helene Seroussi and Sophie Nowicki. Rob DeConto joined by Skype. The paper is currently under review with Nature Climate Change.

Other 2017/18 Highlights:

- Catherine Ritz, ISMASS Chair, attended the 13th Session of the CliC Scientific Steering Group held on February 17-18, 2017, in Wellington, New Zealand.
- Catherine Ritz gave presentations on the ISMASS Workshop above at: (1) 2017 European Geosciences Union meeting; and (2) WCRP/IOC conference on "Regional Sea Level Changes and Coastal Impacts" in New York in July 2017.

Notable Papers

1. Nowicki, S. M. J., Payne, A., Larour, E., Seroussi, H., Goelzer, H., Lipscomb, W., Gregory, J., Abe-Ouchi, A., and Shepherd, A.: Ice Sheet Model Intercomparison



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Project (ISMIP6) contribution to CMIP6, Geosci. Model Dev., 9, 4521-4545, <https://doi.org/10.5194/gmd-9-4521-2016>, 2016. This work provides a comprehensive overview of development in CMIP6-ISMIP6 model intercomparisons of the Greenland and Antarctic ice sheets.

2. Asay-Davis, X. S., Cornford, S. L., Durand, G., Galton-Fenzi, B. K., Gladstone, R. M., Gudmundsson, G. H., Hattermann, T., Holland, D. M., Holland, D., Holland, P. R., Martin, D. F., Mathiot, P., Pattyn, F., and Seroussi, H.: Experimental design for three interrelated marine ice sheet and ocean model intercomparison projects: MISMIP v. 3 (MISMIP +), ISOMIP v. 2 (ISOMIP +) and MISOMIP v. 1 (MISOMIP1), Geosci. Model Dev., 9, 2471-2497, <https://doi.org/10.5194/gmd-9-2471-2016>, 2016.
3. Goelzer, H., Nowicki, S., Edwards, T., Beckley, M., Abe-Ouchi, A., Aschwanden, A., Calov, R., Gagliardini, O., Gillet-Chaulet, F., Golledge, N. R., Gregory, J., Greve, R., Humbert, A., Huybrechts, P., Kennedy, J. H., Larour, E., Lipscomb, W. H., Le clec’h, S., Lee, V., Morlighem, M., Pattyn, F., Payne, A. J., Rodehacke, C., Rückamp, M., Saito, F., Schlegel, N., Seroussi, H., Shepherd, A., Sun, S., van de Wal, R., and Ziemen, F. A.: Design and results of the ice sheet model initialisation experiments initMIP-Greenland: an ISMIP6 intercomparison, The Cryosphere, <https://doi.org/10.5194/tc-2017-129>, accepted, 2018.

Forthcoming Activities

- There will be an ISMASS related session during next Open Science Conference in DAVOS in 2018. CR5: “Interactions between ice mass balance, the solid Earth, and sea-level changes” (C. Ritz convener)
- ISMASS will organize a one day workshop on 15 June 2018 as a side meeting of the above Open Conference. Title: “Update on mass balance of Greenland and Antarctica (linkages between data and models)”. A review article should be an outcome of this workshop (Contact Edward Hanna)
- ISMASS will continue to endorse the ice-sheet-ocean model intercomparisons by helping organizing workshops related to this issue (e.g., MISOMIP) and ISMIP6 that currently proposes three model intercomparisons being part of CMIP6, i.e., InitMIP Greenland (led by Heiko Goelzer), InitMIP Antarctica (led by H el ene Seroussi) and ABUMIP (Antarctic buttressing of ice shelves, led by Frank Pattyn).
- We will hold an ISMASS Steering Committee Meeting on 17 June (at the Davos SCAR open conference).

Budget

Year (YYYY)	Purpose/Activity	Amount (in USD)	Contact Name	Contact Email
2020	ISMASS Workshop SCAR2020	2500	Frank Pattyn	fpattyn@ulb.ac.be



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2019	ISMIP6/MISOMIP workshops 2019	2500	Frank Pattyn	fpattyn@ulb.ac.be
2018	ISMASS Workshop 15/06/2018-Polar 2018 Davos	3500	Edward Hanna	EHanna@lincoln.ac.uk
2018	Contribution to publication fees article "1.5°C"	1500	Catherine Ritz	catherine.ritz@univ-grenoble-alpes.fr
Total		10000		

Usage of funds and desired results

- ISMASS Workshop 15/06/2018-Polar 2018 Davos: Funding for ECR attendance and invited speakers (some of them ECRs). Expected deliverable is a high-profile paper reviewing the current state and perspectives of the ice-sheet mass balance, combining observations and modelling.
- Contribution to publication fees article "1.5°C": These are expected fees for the review paper on the contribution of Greenland and Antarctic ice sheets to future sea level under a 1.5-degreeC warmer climate. The article was submitted and is under review.
- ISMIP6/MISOMIP workshops 2019: Funding attendance of ISMASS reps. to either/both of this workshops (and co-organization of them). Both are expected to produce papers on the results of the corresponding model intercomparisons.
- ISMASS Workshop SCAR2020: Funding for ECR attendance and invited speakers (some of them ECRs). The precise theme will be defined on the light of the advances on the reports related to IPCC AR6.

Percentage of the budget for support of early career researchers

2018: > 50%
 2019: ca. 50%
 2020: > 50%

Percentage of the budget to be used for support of scientists from countries with developing Antarctic programmes - none

Linkages

Direct support from outside organisations

- CliC: support for 1.5°C workshop in Brussels (co-supported by SCAR)
- IASC: support for attendance of ISMASS Chair to 13th Session of the CliC Scientific Steering Group held on February 17-18, 2017, in Wellington, New Zealand.

Major collaborations

Within SCAR

- SCERCE (F. Pattyn is also SC member)
- AntClim21



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- PAIS

Outside SCAR

- IASC Cryosphere Working Group (F. Navarro is also the Chair)
- WCRP-CliC (E. Hanna is also CliC activity leader)

Outreach and Capacity Building

- Capacity building has been mainly accomplished through the participation or ECR in the ISMASS-organized activities, mostly workshops.
- Regarding capacity building, it is planned to strengthen the links with APECS.
- Outreach and communication has been mostly accomplished through the use of ISMASS website.
- We plan to put more emphasis on using ISMASS website (plus SCAR and IASC resources) to communicate findings and distribute press releases.

SCAR Fellowship Reviewers

First Name	Last Name	E-mail	Principal Expertise
Edward	Hanna	ehanna@lincoln.ac.uk	Surface mass balance, Greenland Ice Sheet, climate science

Membership

Leadership

Role	First Name	Last Name	Affiliation	Country	Email	Date Started	Date Term is to End
Chair	Catherine	Ritz	Université Grenoble Alpes	France	catherine.ritz@univ-grenoble-alpes.fr	2012	2018
SCAR rep.	Frank	Pattyn	Université Libre de Bruxelles	Belgium	fpattyn@ulb.ac.be	2012	2018
CliC rep.	Edward	Hanna	University of Sheffield	UK	E.Hanna@Sheffield.ac.uk	2012	2018
IASC rep.	Francisco	Navarro	Universidad Politécnica de Madrid	Spain	francisco.navarro@upm.es	2012	2018

**Early Career Scientists*



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Other members

First Name	Last Name	Affiliation	Country	Email
Dan	Dixon	University of Maine	USA	Daniel.Dixon@umit.maine.edu
Xavier	Fettweis	Université de Liège	Belgium	Xavier.Fettweis@ulg.ac.be
David	Holland	New York University	USA	david.holland@nyu.edu
Andrew	Shepherd	University of Leeds	UK	A.Shepherd@leeds.ac.uk
Pippa	Whitehouse	Durham University	UK	pippa.whitehouse@durham.ac.uk
Ellyn*	Enderlin	Univ. of Maine (APECS rep.)	USA	ellyn.enderlin@gmail.com

**Early Career Scientists*

Requests to the Secretariat

None