The future of ISMASS

Report Authors: Frank Pattyn (fpattyn@ulb.ac.be) - BELGIUM, Catherine Ritz (catherine.ritz@univ-grenoble-alpes.fr) - FRANCE, Francisco Navarro (francisco.navarro@upm.es) – SPAIN, Edward Hanna (EHanna@lincoln.ac.uk) - UK

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

<table>
<thead>
<tr>
<th></th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spent</td>
<td>0</td>
<td>5000</td>
<td>2500</td>
<td>2500</td>
</tr>
<tr>
<td>(US$)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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, Helko 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
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.


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 Antarctic (led by Hélène 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

<table>
<thead>
<tr>
<th>Year (YYYY)</th>
<th>Purpose/Activity</th>
<th>Amount (in USD)</th>
<th>Contact Name</th>
<th>Contact Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>ISMASS Workshop SCAR2020</td>
<td>2500</td>
<td>Frank Pattyn</td>
<td><a href="mailto:fpattyn@ulb.ac.be">fpattyn@ulb.ac.be</a></td>
</tr>
</tbody>
</table>
Usage of funds and desired results

- ISMIP6/MISOMIP workshops 2019: Funding 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 ISMSS 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.
- ISMSS 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)

Major collaborations
Within SCAR
- SCERCE (F. Pattyn is also SC member)
- AntClim21
XXXV SCAR Delegates Meeting  
Davos, Switzerland, 25-26 June 2018

- 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

<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>E-mail</th>
<th>Principal Expertise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edward</td>
<td>Hanna</td>
<td><a href="mailto:ehanna@lincoln.ac.uk">ehanna@lincoln.ac.uk</a></td>
<td>Surface mass balance, Greenland Ice Sheet, climate science</td>
</tr>
</tbody>
</table>

Membership

Leadership

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

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

Other members

<table>
<thead>
<tr>
<th>First Name</th>
<th>Last Name</th>
<th>Affiliation</th>
<th>Country</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dan</td>
<td>Dixon</td>
<td>University of Maine</td>
<td>USA</td>
<td><a href="mailto:Daniel.Dixon@umit.maine.edu">Daniel.Dixon@umit.maine.edu</a></td>
</tr>
<tr>
<td>Xavier</td>
<td>Fettweis</td>
<td>Université de Liège</td>
<td>Belgium</td>
<td><a href="mailto:Xavier.Fettweis@ulg.ac.be">Xavier.Fettweis@ulg.ac.be</a></td>
</tr>
<tr>
<td>David</td>
<td>Holland</td>
<td>New York University</td>
<td>USA</td>
<td><a href="mailto:david.holland@nyu.edu">david.holland@nyu.edu</a></td>
</tr>
<tr>
<td>Andrew</td>
<td>Shepherd</td>
<td>University of Leeds</td>
<td>UK</td>
<td><a href="mailto:A.Shepherd@leeds.ac.uk">A.Shepherd@leeds.ac.uk</a></td>
</tr>
<tr>
<td>Pippa</td>
<td>Whitehouse</td>
<td>Durham University</td>
<td>UK</td>
<td><a href="mailto:pippa.whitehouse@durham.ac.uk">pippa.whitehouse@durham.ac.uk</a></td>
</tr>
<tr>
<td>Ellyn*</td>
<td>Enderlin</td>
<td>Univ. of Maine (APECS rep.)</td>
<td>USA</td>
<td><a href="mailto:ellyn.enderlin@gmail.com">ellyn.enderlin@gmail.com</a></td>
</tr>
</tbody>
</table>

*Early Career Scientists

Requests to the Secretariat
None