

Ice Sheets: Weather versus Climate

A 1.5-day ISMASS workshop planned for Reykjavik, 23-24 August 2022, sponsored by CliC, IASC and SCAR and affiliated with Cryosphere 2022 (<https://www.cryosphere2022.is/>)

The last two decades have seen various unusual changes in the ice sheets, with the breakup of massive ice shelves from the Antarctic Peninsula and several major surface melt events in Greenland perhaps being most iconic. But how reflective are short-term extreme events of longer-term change and what is role of external forcing (e.g. climate change) versus internal variability (e.g. short-term variations in atmospheric and oceanic circulation and ice dynamics)? This 1.5-day workshop will explore the degree to which short-term fluctuations and extreme events in the ice sheets (both Greenland and Antarctica) in the last two decades reflect their longer-term evolution and response to ongoing climate change. Considerable recent progress, summarised in the Intergovernmental Panel on Climate Change's AR6 WG1 August 2021 report, has been made on current state-of-the-science understanding of ice-sheet change. However, despite amplified global warming that has recently occurred over Greenland and around the Antarctic Peninsula, significant uncertainties remain concerning mass changes of the ice sheets during the rest of this century. Two major open questions relate to dynamic mass losses and potential non-linear feedbacks from Antarctica but also melt- and dynamic- related feedbacks from Greenland. We will consider the interplay of forcings from the ocean and atmosphere and their interactions with ice-sheet changes on timescales of days to centuries. Information on the historical mass changes of both Greenland and Antarctica before the modern satellite era is distinctly limited but may be improved through the recent availability of new datasets, whilst the modelling community has embraced advancing computer capability and novel simulation approaches. We will discuss recent innovations and recommendations for the next 5-10 years that are required in observations, process studies and modelling efforts to make further major breakthroughs in understanding how ice sheets change and the resulting local to global impacts: for example, in sea-level rise and extreme weather. Fully realising advances in climate and ocean models, as well as ice-sheet modelling, is an essential part of improving the understanding of ice-sheet changes and sensitivity. This workshop will consist of a mix of invited keynote talks and panel/discussion sessions that will address these crucial issues from a multi-disciplinary perspective.



We currently plan this to be an in-person event (COVID restrictions permitting). **Please contact Edward Hanna (ehanna@lincoln.ac.uk), putting “ISMASS Iceland workshop” in the subject header of your email, if you are interested in participating.** We envisage that at least 50 places will be available, possibly more depending on interest, and places will be allocated on a ‘first come, first served’ basis. There is no registration charge but participants planning to attend the Cryosphere 2022 symposium during the same week (linked above, and which has a very complementary programme) will need to register/pay for that.

ISMASS workshop organising committee: Edward Hanna (University of Lincoln, UK; ehanna@lincoln.ac.uk), Guðfinna Aðalgeirsdóttir (University of Iceland), Heiko Goelzer (NORCE, Norway), Catherine Ritz (Université Grenoble Alpes, France), Thorsteinn Thorsteinsson (Icelandic Meteorological Office), and an APECS member TBC.