

Understanding Interactions Between Different Cryosphere Elements: A New WCRP CliC (Climate and Cryosphere) Targeted Activity

Rob Massom

*Australian Antarctic Division and Antarctic Climate & Ecosystems Cooperative Research
Centre, Hobart, Tasmania, Australia*

Major change is occurring across the high-latitude cryospheres of both polar regions, yet little is known about the inter-relationships between the different component “elements” of the cryosphere - sea ice, ice sheet/glaciers, icebergs, snow and permafrost (connected by oceanic and atmospheric processes) - and how change in one element affects others. Tantalizing new/recent studies suggest that these linkages may be complex and involve subtle and previously-unconsidered feedbacks. The aim of this new initiative is to:

- encourage a more holistic approach to cryosphere-climate change/variability research that crosses boundaries, bridges the disciplines and links observations and modelling, “looking outside the box” in the process;
- foster and facilitate cross-disciplinary and –polar collaboration, discussion and coordination; and
- provide input towards improving parameterisation of more realistic coupling of key cryosphere components and processes in (future) Earth System models, coupled regional high-resolution models and ice sheet/shelf models.

This topic forms a new “targeted activity” of the WCRP CliC (Climate and Cryosphere) Project (<http://www.climate-cryosphere.org/activities/targeted>). As defined by CliC, a targeted activity is a focussed 3- to 5-year research activity designed to increase understanding of the relationship between climate and cryosphere.

Planned deliverables include a (first-ever) review paper highlighting the current state of knowledge (including key gaps) of cross-linkages and feedbacks between difference elements of the cryosphere, their response to climate change/variability, and how change in one element can affect other elements. Discussion is still underway as to whether this should entail a single over-arching paper or a series of separate (but interlinked) papers on more focussed/narrower topics e.g., sea ice-ice shelf interactions. Finally, a special session and workshop are planned at the IUGG (International Union of Geodesy and Geophysics) General Assembly in Prague, June 22 – July 2, 2015 (<http://www.iugg2015prague.com/>).

Should you wish to be involved and contribute to this exciting new initiative, please contact Rob Massom (Rob.Massom@aad.gov.au).

THEME – This poster topic cuts across all of the WAIS Workshop themes, and is meant to advertise and engender interest in a new initiative that is of broad relevance. As such, could the poster please be displayed throughout the meeting, if appropriate. I am not attending, but Ben Galton-Fenzi has offered to bring and look after the poster.