

Short CliC-sponsored Workshop on “Understanding Linkages Between Different Elements of the High-Latitude Cryosphere – How Important Are They?”

Dear friends and colleagues,

can I please draw your attention to a short (2-3 hour) workshop to be held on the Friday afternoon immediately following the conclusion of the IGS International Sea Ice Symposium, and at the symposium venue (C3 Conference Centre). The workshop objective is to gauge community interest in, and determine how best to carry forward, a proposed new “targeted activity” aimed at identifying and better understanding linkages between different “elements” of the high-latitude cryosphere of both hemispheres, and how change in one may affect others, with wider ramifications. As defined by the WCRP CliC (Climate and Cryosphere) Project (<http://www.climate-cryosphere.org/>), a “targeted activity” is a mechanism designed to help increase our understanding of the relationship between climate and the cryosphere, CliC sponsors 3- to 5-year targeted activities that are meant to have a discrete outcome(s) in a timely manner.

It is hoped that development of such an initiative will provide a unique opportunity to bridge and link (integrate) current and planned work in the fields of sea ice, ice sheet, ocean, permafrost and atmosphere – with a view to encouraging a more holistic view of the high-latitude cryosphere, its role in the climate system and its response to climate change/variability. How does change/variability in one cryosphere “element” affect other elements, what feedbacks are involved, and on what scales etc? The recent work by Bintanja et al. (2013), for example, highlighted the potentially crucial role played by upper-ocean freshening due to enhanced ice-shelf basal melt in driving the observed trend towards increasing coverage of Antarctic sea ice since the late-1970s. Another example of a potentially-important yet subtle cross-cryosphere linkage is the apparent relationship between loss of sea ice (both pack and fast ice) in the Arctic and permafrost warming and erosion on adjacent land masses (e.g., Lawrence et al., 2008).

The specific aims of this first workshop are to tap into the collective wisdom attending the IGS symposium to: i) gauge and hopefully engender the interest in the sea ice community in this newly-proposed targeted activity, and find out how it ties in with existing/planned work; ii) determine how best to carry it forward (with a view to linking it to other associated international activities e.g., within CLIVAR, CliC and SCAR etc.); and iii) lay the foundations for subsequent (larger) cross-disciplinary workshops.

This first workshop itself naturally follows on from the special cross-disciplinary session at the IGS International Sea Ice Symposium on “*Sea ice interaction with ice sheets, ice shelves and icebergs*”.

The workshop agenda will initially involve a concise overview of the CliC Project, followed by a few short presentations to introduce this new initiative and stimulate discussion. An initial line of discussion could be whether an appropriate starting point to give the activity initial momentum would be a (first-ever) review paper on the current state of knowledge of cross-linkages and feedbacks between different elements of the cryosphere, and their response to climate change.

All attending (and registered at) the IGS Sea Ice Symposium are welcome - please come equipped with your thoughts and ideas.

Very best wishes, Rob Massom