Climate Response Functions for the Arctic

Key “switches” for the Arctic Ocean

1. Wind forcing
   increasing and decreasing the wind field
   both within the Arctic basin and (just)
   outside the basin.
2. Freshwater forcing
   stepping up and down freshwater fluxes
   (R and E-P)
3. Inflows
   changes in the heat and freshwater flux
   from waters flowing in to the Arctic Ocean.

Conclusions and expected benefits from Arctic CRF study

- A focus on transient response of Arctic models is of direct relevance to Arctic climate change.
- Framework would enable the project to be informed by, and inform, observations over recent decades, as well as future projections.
- Many different kinds of models could be engaged including ocean-only, coupled, coarse resolution and eddying models.
- The robustness, or otherwise, the CRFs could be determined across a wide range of models.
- The ‘physics’ behind the form of the CRFs would become a natural theme and lead to insights into mechanisms underlying Arctic ocean and ice dynamics.
- Different forcing mechanisms can be ranked in order of importance.
- The CRFs could become the building blocks of a physically-based forecast system for the Arctic which harnesses the input of many models to refine the response functions.

Emerging themes

1. FWC of the BG
   John Marshall et al
2. Arctic Climate change, ice
   Renske Gelderloos et al
3. Arctic-Atlantic exchange
   Lars Smelserud et al
4. Arctic CRFs in coupled models
   Helen Johnson et al
5. Ice-mediated stress
   Gianluca Meneghelo et al

IDEAS?
Please get involved!