Discussion on High latitudes freshwater flux for JRA55-based forcing.

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Discussion on Antarctic freshwater flux for JRA55-based forcing.

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Some vocabulary

- Basal melt, iceberg calving, iceberg melt

Information needed for ocean / sea-ice models

- Grounding line flux
  
  the volume of ice-shelves exhibits strong trends (dH/dt)

(NB: no river run-off in Antarctica)
Two recent studies provide estimates of the distribution of calving rates and melt rates (Depoorter et al. 2013; Rignot et al. 2013)

Combines: altimetry (dh/dt), modelling, field observations, ice flow reconstructions

\[ GLF + SMB - CF - BMB = \frac{dH}{dt} \]

Previous studies: grounding line flux (GLF), rate of thinning of ice-shelves (dH/dt)

Problem solved provided your ocean model uses an interactive icebergs models

("climatological" values, only representative of the recent decade)
Iceberg meltwater flux over the Southern Ocean (Merino et al. 2016)


- Iceberg melt shows a large seasonality (cf SST)
- especially in the Ross sea and in the Admunsen sea.
- Melt is concentrated in three branches of subpolar gyres
- A large fraction of the total melt occurs in the South Atlantic
Information needed for JRA55 based forcing (1/2)

[ x ] Climatology of Antarctic iceberg melt

+ update : inter-annual forcing + extension to the coast.

[ x ] Source points for Antarctic icebergs (from Deeporter)

Iceberg meltwater flux
nc file

Distribution of iceberg point sources.
xls file

Nacho Merino's website: http://neichin.github.io/personalweb/material/meltwater/
Information needed for JRA55 based forcing (2/2)

[ ~ ] Files for Antarctic basal melt (caution: grid dependent)

importance of spreading the flux over depth

(key for sea-ice and circulation over shelves)

what kind of information should be provided?
ice-shelves location + flux + depth?

[ ? ] Greenland freshwater forcing? (see J. Bamber)