

Arctic contribution to future storm track uncertainty

Tim Woollings, with Ben Harvey and Len Shaffrey

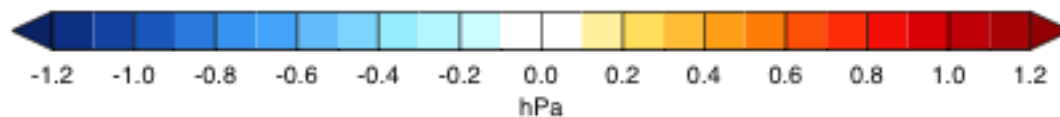
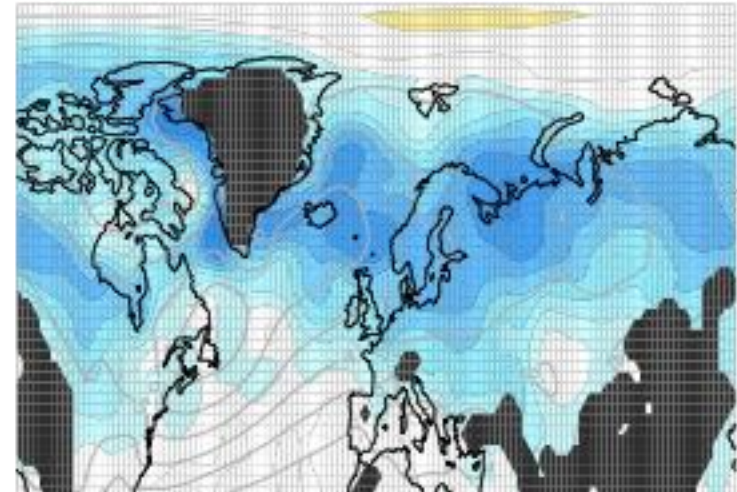
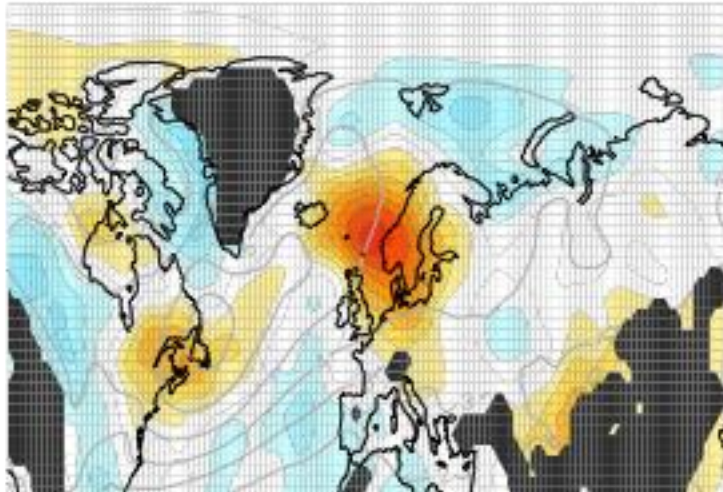
Aim: To understand sources of uncertainty in storm track response (CMIP3: end 21C – end 20C).

Method: Atmosphere model (HadGAM2) forced by SSTs, sea ice etc.

DJF: MSLP storm track (6-2dbp)

a1b - ctrl

a1bp_arctic - a1bm_arctic

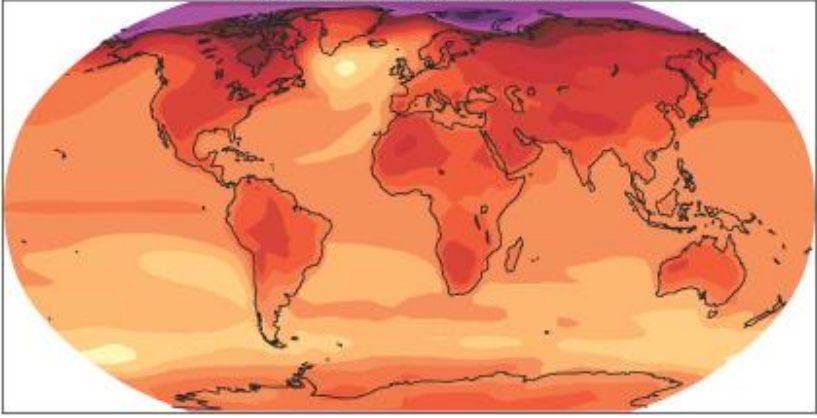


Response to ensemble mean forcing

Response to spread in Arctic forcing

Tim Woollings, with Caroline Ely, Hylke de Vries and Ed Hawkins

A1B: 2080-2099

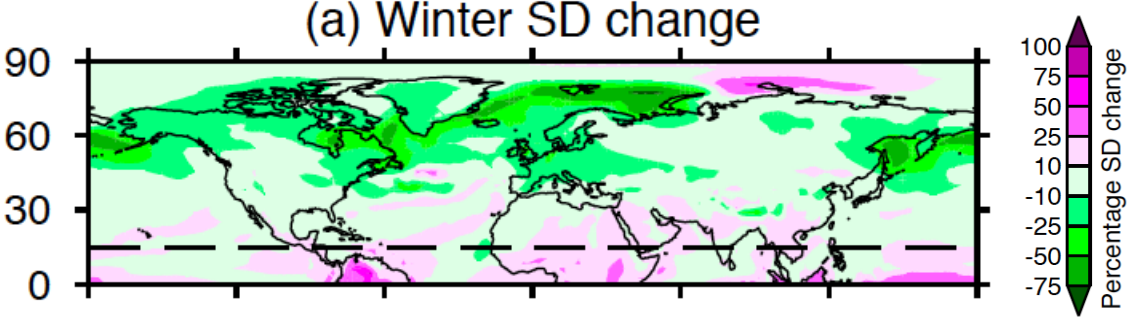


- Temperature variability (and extremes) often due to thermal advection.

$$T' \approx \mathbf{u}' \cdot \nabla \bar{T}$$

- Warming pattern => temperature gradients generally weaken.

Change in variability in ESSENCE (ECHAM5)



Change estimated using only change in mean temperature gradients

