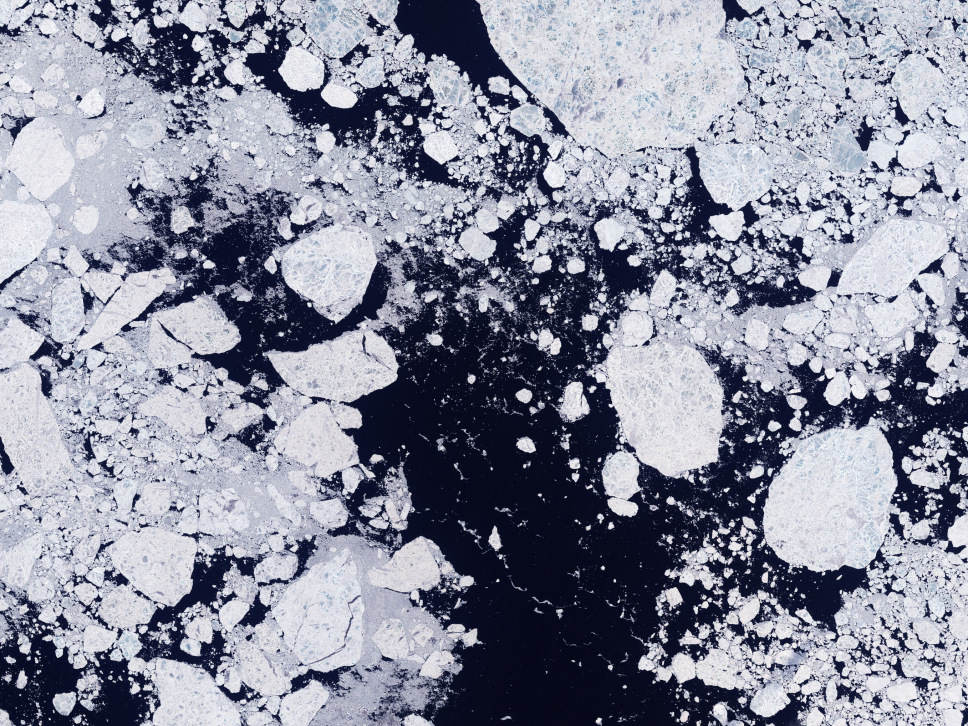


Atmospheric response to Arctic sea ice loss in CAM: An ensemble approach

Hans Chen

Department of Meteorology
The Pennsylvania State University

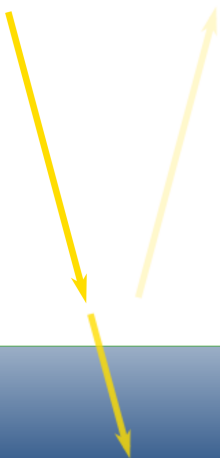


Shortwave
radiation

Longwave
radiation

Sensible and
latent heat

Moisture

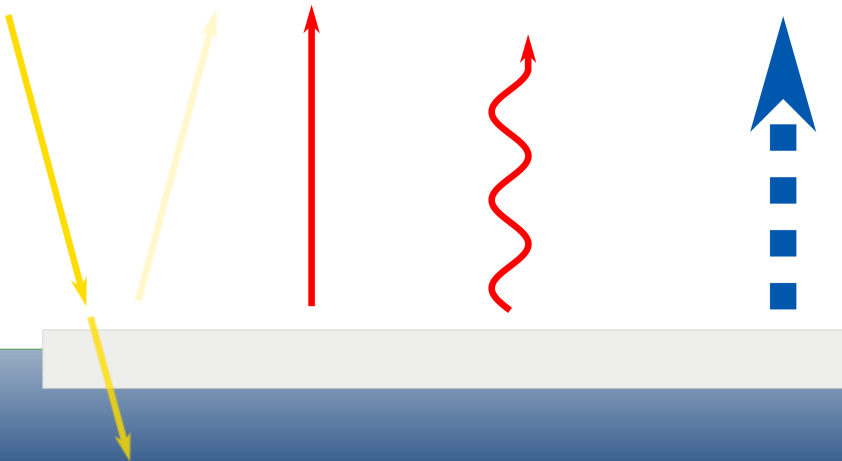


Shortwave
radiation

Longwave
radiation

Sensible and
latent heat

Moisture

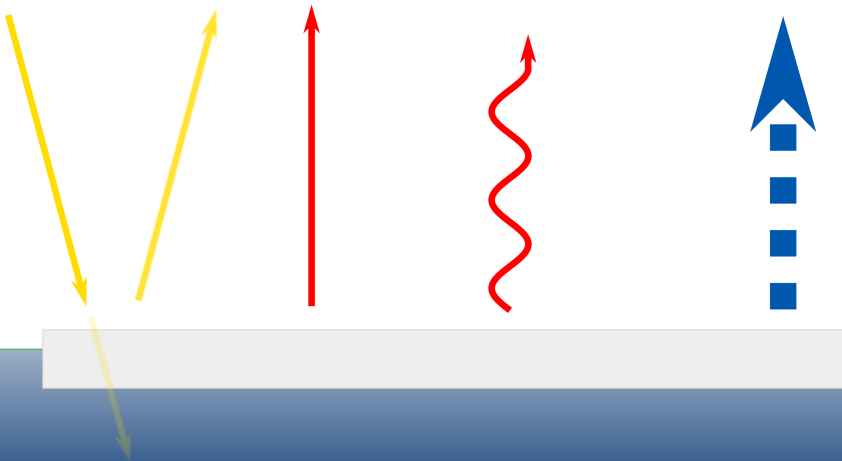


Shortwave
radiation

Longwave
radiation

Sensible and
latent heat

Moisture



Shortwave
radiation

Longwave
radiation

Sensible and
latent heat

Moisture



Shortwave
radiation

Longwave
radiation

Sensible and
latent heat

Moisture



Shortwave
radiation

Longwave
radiation

Sensible and
latent heat

Moisture



Local effect

Shortwave
radiation

Longwave
radiation

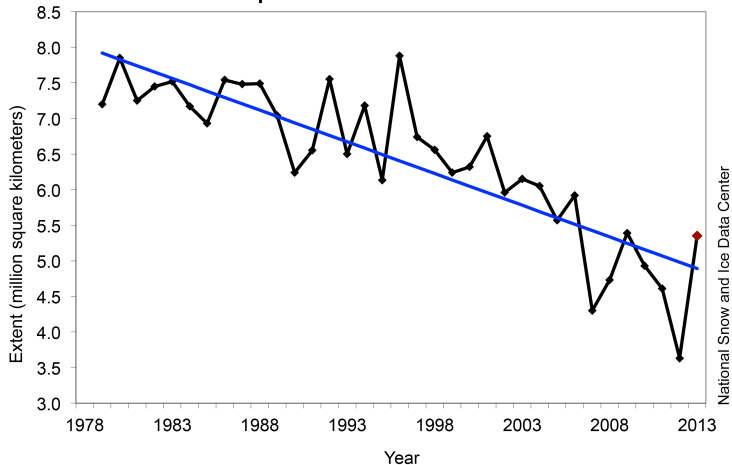
Sensible and
latent heat

Moisture



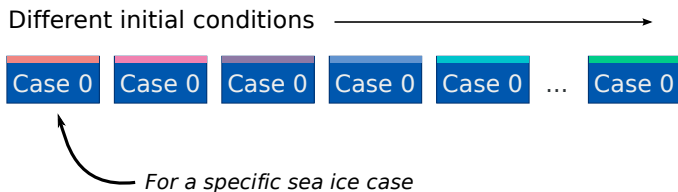
Why are we interested in Arctic sea ice?

Average Monthly Arctic Sea Ice Extent September 1979 - 2013

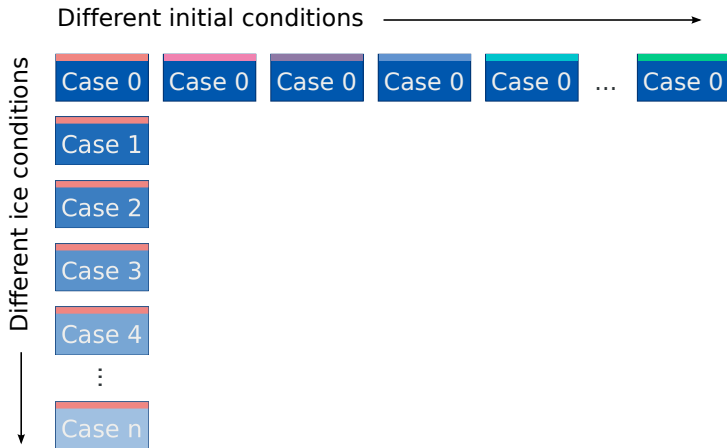


National Snow and Ice Data Center

What can we contribute?



What can we contribute?



Model

- NCAR Community Atmosphere Model (CAM) 5.3
- Prescribed monthly SST and sea ice
- $4^\circ \times 5^\circ$ finite volume grid

Model

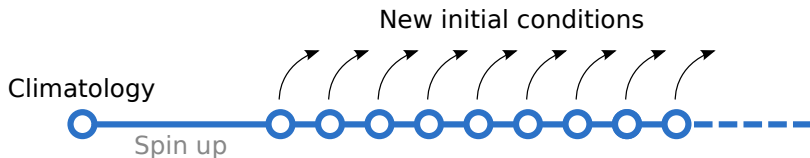
- NCAR Community Atmosphere Model (CAM) 5.3
- Prescribed monthly SST and sea ice
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Climatology



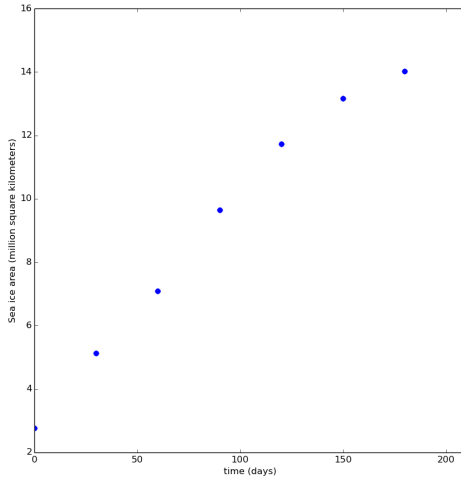
Model

- NCAR Community Atmosphere Model (CAM) 5.3
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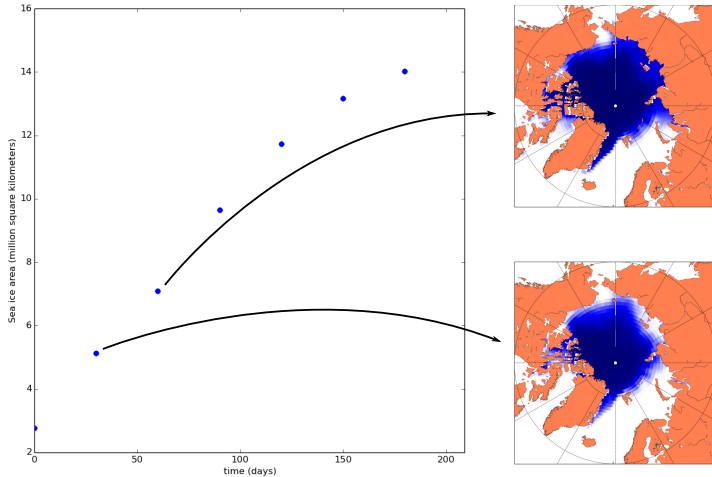




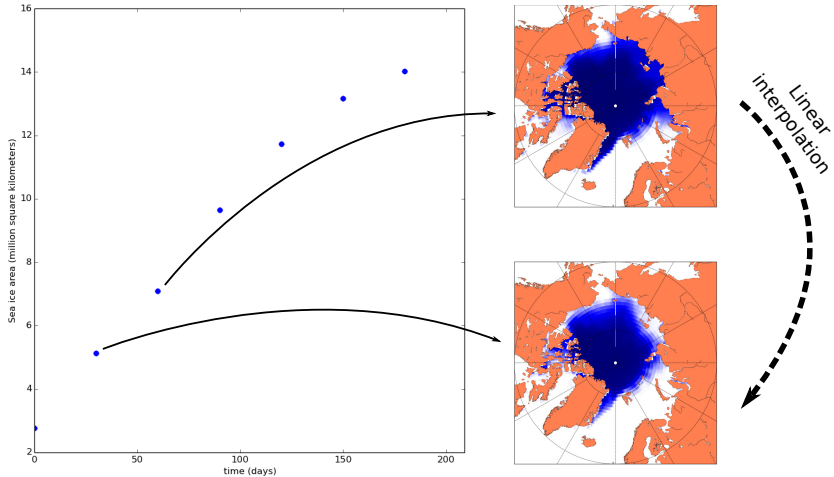
Sea ice cases



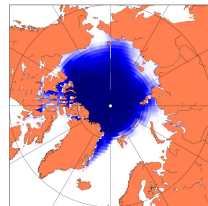
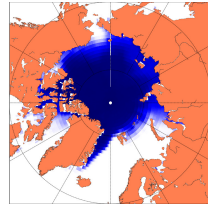
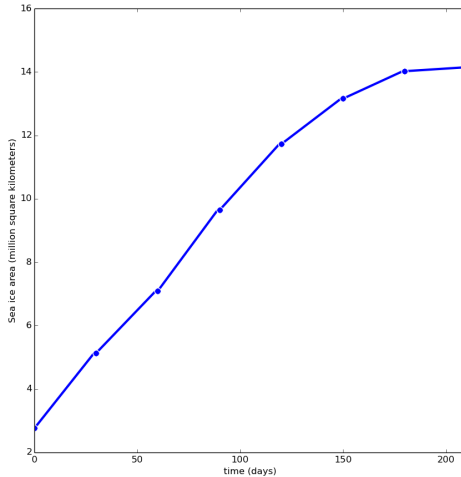
Sea ice cases



Sea ice cases

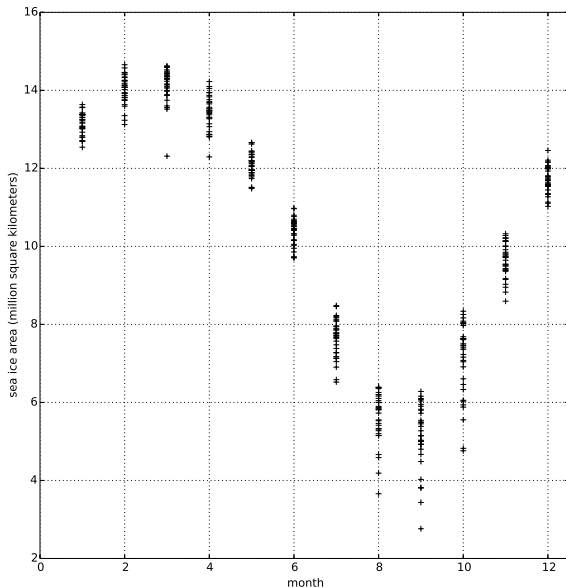


Sea ice cases

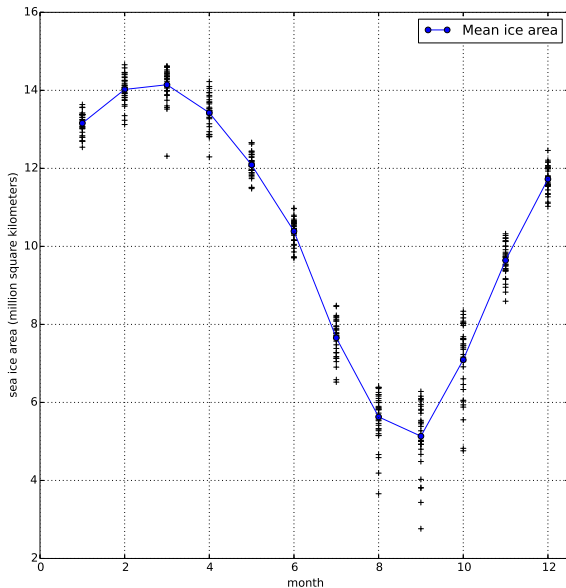


Linear
interpolation

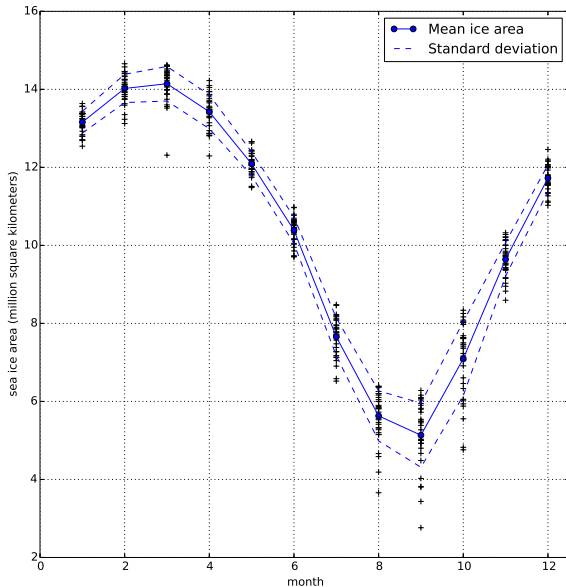
Ice area perturbations



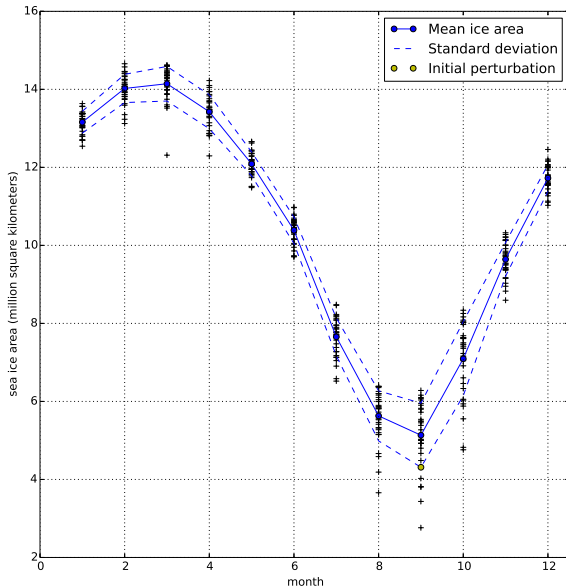
Ice area perturbations



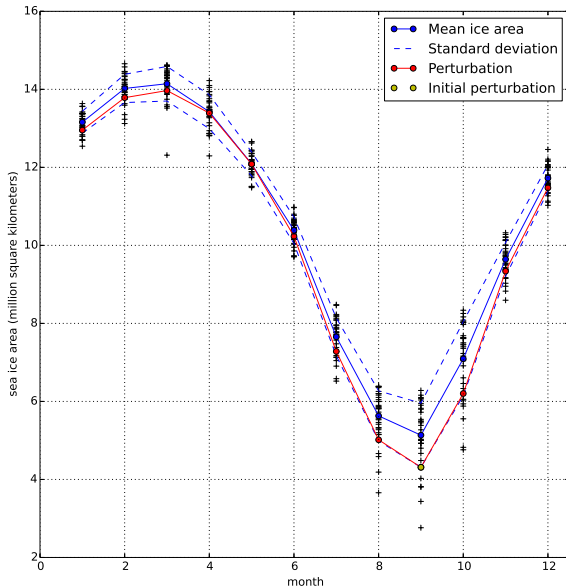
Ice area perturbations



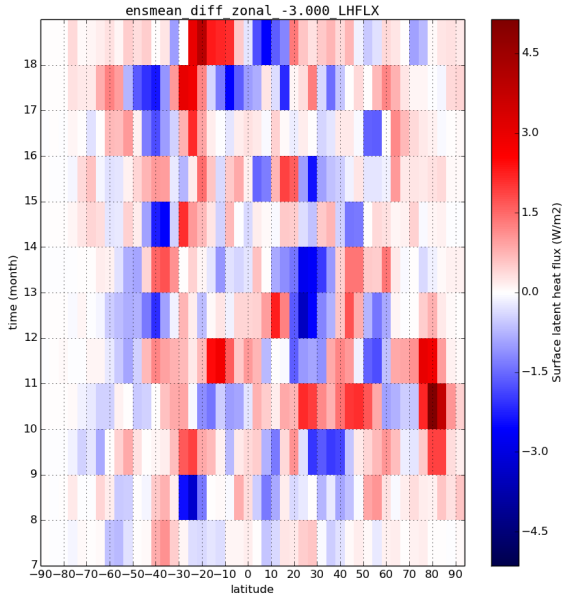
Ice area perturbations



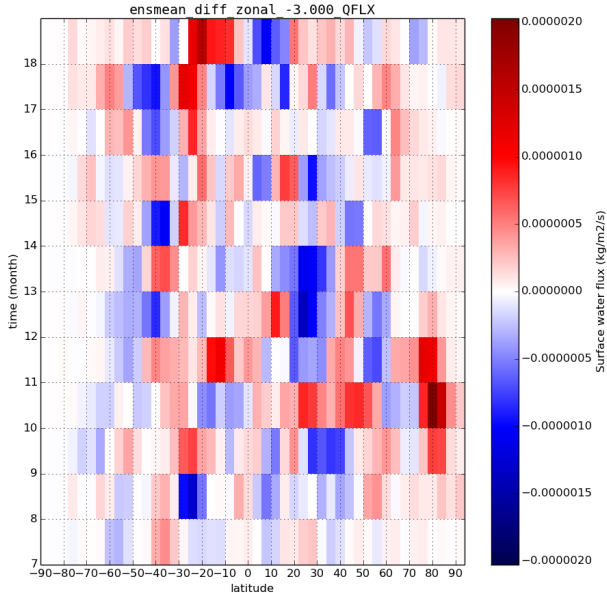
Ice area perturbations



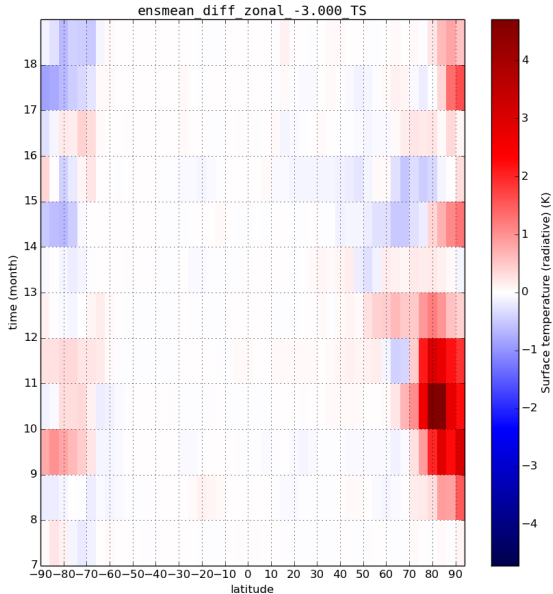
Latent heat flux



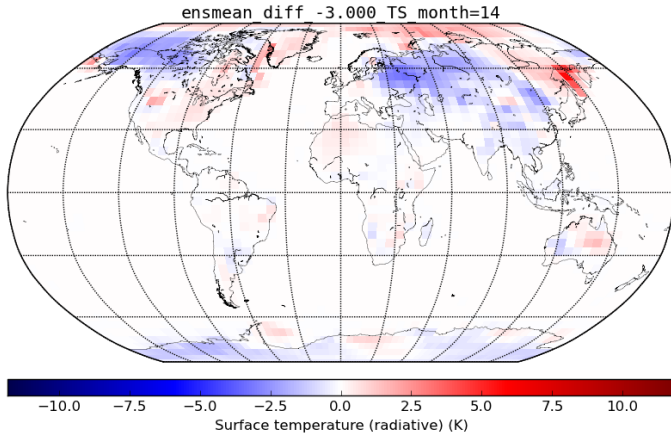
Moisture flux



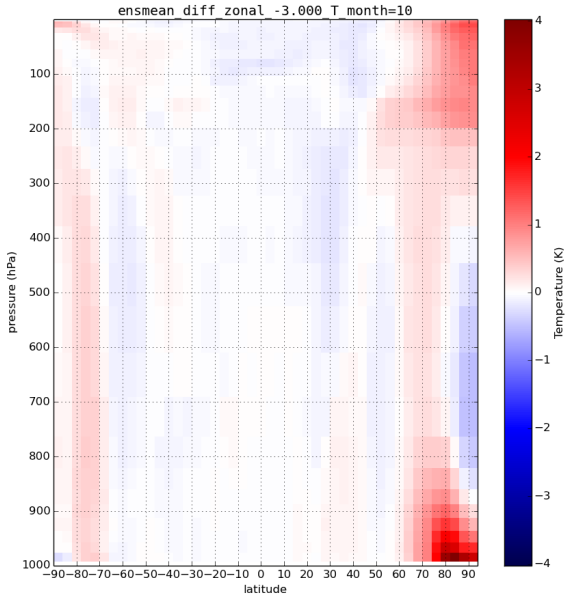
Temperature



Temperature



Temperature



Sea level pressure

