PlioMIP2 – CP Template for Individual Group Papers

Abstract -

@ author's discretion

Introduction -

@ author's discretion

Model description -

@ author's discretion but please include a detailed description of the model and model version employed rather than simply a reference to a previous paper(s). Resolution in vertical and horizontal, grid point or spectral, parameterization schemes etc. Also referencing papers which assess the model relative to e.g. present-day/palaeo observations/proxies can be useful.

Experimental Design

(PlioMIP experiment completed) @ author's discretion but should include:

Pre-industrial:
Please document choice of conditions - CMIP6 or PMIP boundary conditions for pre-industrial control.

Document source and details for local (your own) boundary condition data sets for the pre-industrial (land/sea mask; topography, ice sheets, vegetation, sea surface temperatures, sea-ice, aerosols, solar constant, orbital parameters). For experiment 2 document data set used for ocean initialisation.

Pliocene:
Please document choice of standard or enhanced PlioMIP2 boundary condition data sets (did you change the land/sea mask in your model?)

Based on the above please document the choice of PRISM4 boundary conditions used (version of land/sea mask, topography, ice sheets, vegetation, lakes and soils).

Did you use PRISM deep ocean temperatures for initialisation, if not what did you use instead?

Document trace gas values, solar constant, aerosols, orbital parameters.

Did you apply the topography using the anomaly method? Did you perform any additional adjustments of any kind? If not by anomaly method state clearly the choice of the absolute or an alternate method. How did you deal with the removal of the West Antarctic Ice Sheet and other local land/ocean changes? How were ocean gateways treated?

If running with dynamic vegetation please provide a description of the state initialised from and if using prescribed vegetation please provide as much information as you can for the method of translating and integrating the PRISM vegetation into your own models.

Document the model spin up for both pre-industrial and Pliocene experiments. Did you complete the required integration length? Please provide a time series of (at least) global 2m air temperature and ocean temperature integral 1000 m to bed to demonstrate that your model reached equilibrium. What period did you use to calculate the climatological means?

Results @ author's discretion but should include for the pre-industrial and Pliocene the following:
A table with basic values including at least:
TOA global energy imbalance (Wm_{-2})
Global mean annual surface air temp (°C) with the delta T
Global mean total precipitation rate (mm/day)
Figure(s) showing pre-industrial and Pliocene (plus delta) annual zonal (global/land and ocean-only) mean surface air temp (°C)
Figure showing @ least Plio minus pre-industrial SAT (°C) for the annual mean, DJF and JJA (regular lat/long projection)
Figure as above for total precipitation rate (mm/day)
Annual mean and delta SSTs
As above for salinity
Atlantic and Pacific overturning stream function (zonal basin average).

Derived Analyses and Discussion @ author's discretion
You could include reference to degree of polar amplification, ITCZ and monsoon behaviour, THC, ENSO, NAO. You could also examine regional impacts of imposed boundary conditions. Arctic response to vegetation, sea-ice and ice sheet change, Antarctic response to WAIS and EAIS deglaciation/reduction, atmospheric response to changed Pacific equatorial SST gradient etc. Results from forcing factorization experiments, CO2 sensitivity tests etc.

Conclusions @ author's discretion

References