

**Simulating the Mid-Pliocene Warm Period with CCSM4**

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We use the Community Climate System Model (CCSM4), version 4, to simulate the Mid-Pliocene warm period, using fully-coupled ocean, land, atmosphere and sea ice models at a 1-degree ocean and atmosphere resolution. The Mid-Pliocene warm period defines an interval between 3.29 and 2.97 Ma when the Earth's climate is considered to have been warmer than present day. Because this warmth occurs during a period when the continents were close to their present day configuration, it is tempting to use the Mid-Pliocene warm period as an analog for future warming. Atmospheric CO<sub>2</sub> concentrations are estimated to have been about 405 ppm. Atmospheric methane concentrations were likely also higher though no proxy reconstructions are currently available to estimate Pliocene methane levels. Sea level may have been as high as 25 meters above present, with much reduced land ice over Greenland and East Antarctica. We forced the model with Prism-PlioMIP reconstructions of paleo-geography, topography, ice sheets, vegetation patterns, and atmospheric CO<sub>2</sub> concentrations. We initialized the land model carbon pools from an 1850 pre-industrial control simulation, ocean model from reconstructions of ocean temperature anomalies, and ran the model for 500 simulated years. We will present results on regional changes in temperature and precipitation as well as changes in the behaviour of the monsoons and ENSO.