Sensitivity study of the role of vegetation in Miocene climate change

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Abstract

The Miocene Climate Optimum (MCO) at 15 ma is a geologically recent warming event with a temperature of 3º-5ºC higher than today but with atmospheric CO₂ only about half its present value. Study of the MCO has implications for present day climate research to elucidate factors other than CO₂ which may contribute to current global warming. Here we attempt to study the role of vegetation which can potentially contribute about 2ºC warming to the MCO. We develop a novel methodology to merge oceanic palaeo-bathymetry grids with continental palaeo-topography grids to produce Miocene boundary condition for palaeoclimate modelling and apply updated NCAR coupled climate models, CCSM3 and CAM3.1. In this presentation, we show recent results of our model simulations inferred from modern conditions and proxies.