

Evaluation of the CMIP5 palaeo-simulations

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The Palaeoclimate Modelling Intercomparison Project (PMIP) community has assembled a wide range of well-documented palaeo-data sets for the evaluation of the Last Glacial Maximum, mid-Holocene (Tier 1) and last millennium (Tier 2) climate and carbon-cycle simulations in CMIP5. These include quantitative reconstructions of terrestrial climates and sea-surface temperatures, and reconstructions of important earth-system variables including vegetation composition, fire regimes, peat accumulation, surface hydrology, dust deposition and ocean circulation and productivity. These reconstructions, and the growing portfolio of tools and techniques for making comparisons between model simulations and palaeo-observations, will allow us to test the capability of the models used for future climate projections to represent climates radically different from the modern one. Data-model comparisons in palaeo-mode are also providing improved constraints on climate sensitivity, quantification of key feedbacks in the climate system, an understanding of the relationship between short-term climate variability and changes in mean climate, and a better understanding of the mechanisms of regional climate changes. This talk will showcase ongoing data synthesis efforts and model-evaluation work within the PMIP project and show how this contributes to an assessment of the reliability of the CMIP5 models.