

Paleovegetation data-model agreement in western North America for 0 ka, 6 ka, and 21 ka

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Paleoenvironmental data are often compared with model simulations of past climate and vegetation to explore and evaluate model performance. For this study, we compared western North America paleovegetation reconstructions for 0 ka, 6 ka, and 21 ka with simulated vegetation for the same time periods. We used climate data produced by coupled atmosphere-ocean and atmosphere-ocean-vegetation general circulation models for the Paleoclimate Modelling Intercomparison Project phase 2 (PMIP2) and phase 3 (PMIP3; <http://pmip3.lsce.ipsl.fr/>). The climate data were downscaled to grids with spatial resolutions of 30-minutes and finer. These downscaled climate data were used to simulate equilibrium vegetation for each time period using BIOME4, an equilibrium biogeography model, following a vegetation simulation protocol being developed for PMIP3. The simulated vegetation was compared with fossil pollen and macrofossil data for the study area that were converted into biomes using a modified version of the BIOME6000 biomization method. We evaluate the agreement between the reconstructed and simulated paleovegetation and discuss possible causes of data-model disagreement. This research is a contribution to PMIP3 data syntheses and data-model comparison efforts.