



European vegetation evolution during the Holocene simulated by Planet Simulator and CARAIB

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A transient Holocene simulation is carried out with an Earth system model of intermediate complexity (Planet Simulator). The spectral model is based on the moist primitive equations conserving momentum, mass, energy and moisture. For this study, the Planet Simulator is used in T21/5L-resolution and coupled to the LSG (large-scale geostrophic)-ocean model with orbital and CO₂-forcing. The evolution of the European vegetation over the Holocene in response to the climate change is investigated using the dynamic vegetation model CARAIB (CARbon Assimilation in the Biosphere). Time slice simulations from 10 ky BP until the preindustrial period are carried out at high resolution using a specific European vegetation classification including 26 BAGs (Bioclimatic Affinity Groups; Laurent et al., *J. Veg. Sci.*, 15, 739-746, 2004.). The results of the diagnosed vegetation distribution during the Holocene reflect the development of warmer and moister conditions at the Middle Holocene (around 6 ky BP). Broad-leaved deciduous trees expand in several parts of Western and Central Europe at the expense of needle-leaved evergreen trees, which prevail at the beginning of the Holocene.