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Climate and climate variability over the last 8000 years in high-resolution transient palaeo-simulations

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Three high-resolution transient simulations over the Holocene period of the last 8000 years and several related sensitivity time-slice simulations have been performed with the Max Planck Institute Earth System Model MPI-ESM.
The simulations feature a relatively high horizontal resolution in the atmosphere (approx. 1.875 deg) and in the ocean (12 to 180 km).
One experiment is forced by changes in the orbital forcing, greenhouse-gases, and land-use change only.
A second simulation is forced in addition by changes in the stratospheric aerosol distribution (volcanic eruptions), spectral solar irradiance variations (solar-cycle changes) and stratospheric ozone.
In a third simulation, the carbon cycle is fully interactive with the ocean alkalinity being nudged to recapture the reconstructed atmospheric CO_2 increase.
The high-resolution transient Holocene simulations allow for a better understanding of the climate system with its interaction between internal variability and externally forced climate signals.
This contribution presents an overview of first results regarding global temperature and precipitation series and characteristic global patterns of temperature, precipitation and vegetation changes.