



## **MPI-ESM-HAM: an atmosphere-ocean model with interactive aerosols**

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One way to study the role of aerosols and, in particular, indirect aerosol effects in the climate system is via fully coupled global climate models that include such effects. Here we present such a model. We started from the Max Planck Institute Earth System Model (MPI-ESM) in the version used for the Coupled Model Intercomparison Project phase 5 (CMIP5). To this model we added a detailed description of aerosols and cloud-aerosol interactions (Hamburg Aerosol Module, HAM; double-moment cloud microphysics scheme). We refer to this model variant as MPI-ESM-HAM. Besides giving an overview of MPI-ESM-HAM, we elaborate on its tuning. Preindustrial control as well as historical simulations are presented. In view of the close relation between MPI-ESM-HAM and MPI-ESM, it is of further interest to compare these simulations with their CMIP5 MPI-ESM counterparts. Finally, we present characteristics of some alternative worlds, which come as side products from the tuning process.