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The Kiel Climate Model

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A new global coupled atmosphere-ocean-sea ice model, the Kiel Climate Model (KCM), has been developed within the PRISM framework from existing component models (ECHAM5 atmosphere and NEMO ocean-sea ice models) using the OASIS3 coupler. KCM does not employ flux adjustments.

The simulated mean state is quite realistic and compares well with other state-of-the-art coupled models. The equatorial Pacific climate is well represented in terms of the annual mean, the annual cycle and the interannual variability. In particular, the equatorial Pacific cold bias is much reduced relative to other models. Furthermore, the simulated ENSO variability is largely consistent with observations, both in terms of the strength and period. Different physical interfaces have been tested for the sea ice, in which the thermodynamics are either included in the ocean or in the atmosphere.

The sensitivity to different resolutions (T31L19 or T63L31 with ORCA2), number of exchange fields, and exchange frequency and other technical issues will also be discussed.