



Coupling of COSMO/CLM and NEMO with focus on North and Baltic seas

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The region east of the Baltic Sea has been identified as a hot-spot of climate change by Giorgi, 2006, on the base of temperature and precipitation variability. Our aim is to look at the impact of the North and Baltic seas on the climate of Central Europe. We want to look at the climate system in a more complete way with an active atmosphere-ocean-ice interaction in order to obtain a model system that is physically more consistent with reality. For this purpose, we have coupled the atmosphere model COSMO/CLM to the ocean model NEMO, which includes the sea ice model LIM. The models are coupled via the OASIS coupler. This coupler interpolates heat, fresh water, momentum fluxes, sea level pressure and the fraction of sea ice at the interface in space and time. For the North- and Baltic seas, the coupled run has large biases compared with the E-OBS reference data. However, these biases are in the usual range of biases found in other COSMO-CLM studies. Compared with observations, the coupled model in this study has, most of the time, smaller biases than the uncoupled atmospheric model. The spatial distribution of temperature biases in spring, summer and resemble the yearly mean distribution; however, the bias magnitudes vary among those three seasons, with summer showing the largest warm bias among the three seasons, up to 3 K in southern Europe.