Geophysical Research Abstracts
Vol. 12, EGU2010-10723, 2010
EGU General Assembly 2010
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A coupled atmosphere-ocean regional climate model for the Mediterranean area

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The 4th IPCC report highlights the Mediterranean region as one most vulnerable regions to climate change. This vulnerability and the economical and social relevance of this region, makes very necessary the realization of high quality simulations of present day climate studies and scenario projections for that region.
The Mediterranean area is well known for its complexity from the climatic point of view, where intense local air-sea interactions and the Atlantic inflowing water drive the thermohaline sea circulation which has a feedback on the atmosphere.
This is why a coupled ocean-atmosphere regional climate model (AORCM) is expected to improve the quality of the climate modeling studies as the global coupled models have a too coarse resolution and the stand-alone atmospheric model applications cannot reproduce the ocean-atmosphere feedback.
In recent years some regional coupled models are being developed and applied to that area. Nevertheless, the ensemble philosophy of climate modeling suggests the necessity of different independent models, especially for climate scenario simulations.
We present a first test phase of an AORCM which, after a successful validation, will be used for several present climate studies and scenario simulations. Our AORCM consists of the atmosphere regional climate model REMO coupled to the regional ocean model system ROMS via the OASIS3 coupler. The average resolution is about 25km for the atmospheric component and 8km for the oceanic component, which has a finer resolution in order to obtain an eddy permitting model.
The atmospheric model covers a large domain extended to the north up to Baltic sea in order to allow to identify the characteristic large scale patterns of the Mediterranean weather.
We compare the results of a simulation of the coupled system forced by ERA-interim reanalysis to those of a stand-alone atmospheric model configuration and both to an observational datasets. In particular, the precipitation over the Iberian peninsula is validated using a new, high quality dataset.