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Impact of climate change scenarios in the Mediterranean Sea from a regional ocean model

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Significant differences in the Mediterranean Sea water characteristics are foreseen to appear during twenty first century, as reported in the Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2007).
Main changes could be a warmer and drier ocean that would lead to warming and saltening waters. Mean sea level increase, thermohaline circulation variations, and deep water convection changes could be some of the direct consequences.
Seven 140-years (1960-2099) long simulations were carried out with the regional high-resolution ocean model NEMOMED8, following the scheme described in Somot et al. (2006).
Differences between the set of experiments were the characteristics of the regional and global climate models used to force the regional ocean model, and the time frequency to insert these boundary and initial conditions in. Forcings are air-sea fluxes at the surface, Atlantic buffer zone, and river runoff water.
Model stability was checked out with a control run (1961-2000) under present climate conditions, then, beyond 2000, three scenarios runs were carried out under the SRES-A1B, A2, and B1 scenario forcings.
The ensemble of simulations allows us to do many analyses, as the Mediterranean thermohaline circulation evolution, surface water characteristics, the winter ocean deep-water formation at different areas, Gibraltar Strait and surface fluxes, and sea level variations.
In particular, this study mainly focuses on evaluating the behavior of the Mediterranean basin, under the impact of the scenario choice along the 21st century.
Additional studies are planned to answer some issues as the uncertainty assessment, and the model sensitivity to the forcings.