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# 20th century simulations of the Mediterranean Sea with focus on the climate variability in the Adriatic Sea

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The interannual variability in the Mediterranean Sea has been studied intensively by various modeling groups. However, those studies are generally restricted to the second half of the 20th and the beginning of the 21st century, where reanalysis data are available as forcing. Recently, the newly generated long-term reanalysis datasets enable the extension of such studies to the entire 20th century. However, the performance of these datasets has not been fully tested. Here the long-term (1901-2010) ERA-20C and NOAA-20CR reanalysis datasets are employed as forcing in a high-resolution regional physical and biogeochemical ocean model (MPIOM-HAMOCC) to simulate the 20th century climate evolution of the Mediterranean Sea. The results are also compared with a third simulation forced by the standard NCEP dataset (1948-2010). The aim is to investigate the differences in climate variability induced by these datasets, taking the Adriatic Sea as an example. The simulated interannual variability of sea surface temperature is rather similar in all three simulations, and is consistent with long-term observational compilations. However, the simulated decadal variability of sea surface salinity and circulation pattern shows remarkable differences between the three simulations. As a consequence, the simulated variability of biogeochemical parameters exhibits quite large discrepancies. For instance, the ERA-20C simulation shows a larger interannual variability of the primary production than the NOAA-20CR simulation. First results of the analysis exploring the underlying mechanisms for these differences will be presented.