



Air-sea flux and deep water formation in the Western Mediterranean

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A regional ocean-atmosphere coupled model is used to investigate the relation between the air-sea flux and the deep water formation in the Gulf of Lion, western basin of the Mediterranean Sea. The atmospheric component of the coupled model is LMDZ with a horizontal resolution of 30 km, and the oceanic component is NEMO-MED8 at 1/8 degree of resolution. Two simulations are performed with this coupled model. The first one is driven by the ERA-40 re-analyses from 1958 to 2000 and the second one is a climate-change scenario simulation with driving conditions from a global scenario run. The scenario run covers the period from 1951 to 2050. In the first simulation, the mean state of the Western Mediterranean is quite realistic, which allows to examine the temporal evolution of the mixed layer depth. Since the simulation is a fully coupled one, it is thus possible to extract the feedback signal from the oceanic convection to air-sea fluxes. In the scenario run, it is observed that the deep water formation is in decrease when the global warming is incorporated.