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# Evaluation of the Mediterranean surface heat fluxes with a regional coupled model

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Surface heat fluxes over the Mediterranean Sea are not very well known, even the total heat flux integrated over the whole basin is quite divergent among authors. This work tries to characterize and quantify the spatial distribution of surface heat fluxes and the temporal variability by using a regional coupled sea-atmosphere model over the Mediterranean region. The atmospheric model LMDZ zoomed over the Mediterranean is coupled to MED8, an oceanic general circulation model for the Mediterranean Sea. We analyze a 43-year simulation for the period ERA40, from 1958 to 2001 to determine the distribution and variability of heat fluxes. Heat fluxes can be divided up into 2 categories: radiative (solar and infrared) and turbulent (sensible and latent heat flux). The regional coupled model is forced in the atmosphere by the ERA40 dataset (temperature and wind) at the lateral boundary. Variability of the surface heat fluxes is studied in relation to the SST in the regions of deep water formation (Gulf of Lions, Adriatic Sea, and Aegean Sea). An attempt is also make to determine the relation to the atmospheric regimes. The North Atlantic Oscillation (NAO) is firstly used to determine the atmospheric general circulation over the North Atlantic and the impact on the Mediterranean sea surface heat fluxes. Other atmospheric circulation indexes, such as WeMo and MO indexes are also studied.