

HyMeX - Intense weather events and air-sea interactions in the regional WRF-NEMO coupled simulation (MORCE platform) over the Mediterranean

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The MORCE (Model Of the Regional Coupled Earth system) simulation, using the regional coupled system WRF-OASIS-NEMO for the 1989-2008 period, is here examined in terms of strong winds and intense precipitation events. In this simulation, the horizontal resolution of the non-hydrostatic atmospheric model WRF is 20km. The Sea Surface Temperature comes from the eddy-resolving Mediterranean circulation model NEMO-MED12 with a $1/12^\circ$ resolution. The coupling frequency (SST and fluxes exchange managed by OASIS) is 3 hours. We first study the extremes of wind, evaporation and precipitation in the atmospheric model. A preliminary investigation of their role on the hydrological cycle interannual variability will be presented during the workshop. Then, we examine air-sea interactions during intense weather events, with a comparison to simulations using separately the two compartment models (uncoupled runs). Finally, we extend our comparison to observations and to former modelling studies on several real cases of intense precipitation and/or strong local wind. In particular, we examine a sequence of intense events in November 1999 in the South-Eastern France, with a Mistral event (5 to 9 November 1999) followed by heavy precipitation (12 and 13 November 1999).