



## **The Mediterranean variability in summer in an ensemble of regional simulations under present and future conditions.**

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The observed interannual variability in the Western Mediterranean in summer is less connected with the North Atlantic variability than in other seasons. The most characteristic traits of this variability are warming and cooling episodes with a characteristic time scale of 4-5 years. The periodic events have been related to anomalous precipitation in Europe. In the present work we have studied the impacts that the anomalous sea surface temperature variability has on the atmospheric variables on the European continent, in observations and also in simulations performed with an ensemble of coupled models. The observations analyzed are anomalies of sea surface temperature, sea level pressure and specific humidity at 850 hPa from ERA-40 Reanalysis dataset and precipitation from CRU. The simulated variability was monitored by anomalies of the same variables in historical (1950-2000) and future (2001-2050) conditions. In the simulations for the climate of the future, the atmospheric composition was specified according to the scenario conditions A1B. The ensemble of simulations were performed in the frame of the CIRCE project and developed at INGV, IPSL, MPIM and MeteoFrance. In the case of INGV, the coupled model consists of a regional ocean (Tonani et al. 2008) coupled to the ECHAM 5.4 atmosphere (Roeckner et al. 2003). For the IPSL model, the atmospheric model LMD-med (Li 2006) was coupled to the oceanic NEMO-med8 (Somot et al. 2006) inside the coupled global model LMDZ/OPA-ORCA2). The MPIM model was built from the regional atmospheric model REMO (Jacob et al., 2001) coupled to a regional ocean model, the MPI-OM (Marsland et al., 2002) nested in the same coupled global model used by INGV. Lastly, the model in MeteoFrance was made of the global atmospheric model Arpege (Dequé 2007) coupled to the regional ocean NEMO-MED8, that was nested in the global coupled NEMO-ORCA2 (Madec et al., 2008).

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