



A Regional Earth System Perspective on the Water Budget over the Mediterranean Catchment Area.

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We present a quantitative analysis of the water content in the atmosphere, soil and ocean over the Mediterranean catchment area. The Regional Earth System developed by ENEA-ICTP, the PROTHEUS system, is an optimal modelling tool for this purpose as it explicitly accounts for the various components of the hydrological cycle and their interactions. In particular, the PROTHEUS system provides a reliable description of high resolution sea surface temperature and wind fields over the ocean, in close agreement to observations thereby providing a reliable description of air-seas fluxes (particularly the latent heat flux). In this analysis, all the terms of hydrological cycle are computed for different simulations performed by an implemented version of PROTHEUS with interactive river runoff. To assess model performances we show 1951-2050 simulation, driven at the lateral boundaries by ECHAM5-MPIOM global simulation included in the IPCC-AR4, compared against control simulation driven by ERA40, the global drivers themselves and observational datasets.

The modelling tools presented in this work, developed in the framework of CIRCE EU Project RL2 will also contribute to the Med-CORDEX activities.