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Climate change on Mediterranean Region

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In the framework of European CIRCE Project, the object is to understand and to explain how climate will change in the Mediterranean area and to give some information about economical and social impacts.

In order to give a realistic description of future climate in Mediterranean Region, at first we want to provide a comprehensive assessment of the Mediterranean climate variability and teleconnection for current climate.

We applied PROTHEUS, a Mediterranean model, comprehensive of atmospheric and oceanic components, nested in ERA40 meteorological fields, over a domain (-10, 40 ˚E; 22 , 57 ˚N), with a spatial resolution of about 30km.

We investigate how global and Mediterranean climates interact and we describe the properties of the atmosphere and the ocean, as well as the radiative fluxes, the role of cloudiness, the water cycle.

The first analysis regards PROTHEUS simulations with stand-alone atmospheric model, for the year 2000, in which the atmospheric fields (geopotential, temperature, wind and precipitation) at the surface and at different pressure levels are analysed and compared with the ECMWF analysis. Moreover the surface wind fields simulated over Mediterranean Sea are compared with QuikScat measures.

Then trends and variability of atmospheric and oceanic physical parameters from 1951 to 2000 are analysed and compared to observed climatic trends, distinguishing land/sea grid-points, at different time scales.