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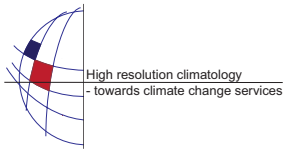

Earth System Model validation with weather station data: towards responding to user needs

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High Resolution Earth System Models (ESMs) are a key resource for climate services. RCMs can both help filling time/spatial gaps in historical data and enhance our capacity of providing tailored information on projected climate change to end-users.

A detailed and quantitative assessment of ESMs skills and limitation in describing climate variability and change is therefore an important pre-condition for reliable services.

With the perspective of responding to user needs it will be also important to compare the model skills with the expected standards.

We present a validation of the ESM PROTHEUS assembled at ENEA with daily data from 64 weather stations provided by the Italian National Air Force Centre for Weather and Climatology.

Different regimes are spanned with the data considered for the analysis, from alpine to mediterranean climates, all characterized by specific land/ocean-atmosphere interaction processes leading to well defined patterns of seasonal and interannual variability.

We identify a need to improve the regional ESM description of the seasonal cycle of rainfall in alpine areas and summer maximum temperatures in mediterranean areas characterized by low summer rainfall.

The ESM PROTHEUS provides an accurate description of climate patterns in coastal areas and over small island, corresponding to samples of the open ocean.