Copernicus European regional reanalysis

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Abstract

The Copernicus European regional reanalysis (https://climate.copernicus.eu/regional-reanalysis-europe) is produced as part of the Copernicus Climate Change Service (C3S). We will give an overview on the service main objectives as well as we will present produced data.
In the first phase of the service, systems inherited from the FP7 project UERRA (Uncertainties in Ensembles of Regional ReAnalyses, http://www.uerra.eu) were applied extending the UERRA-HARMONIE as well as the MESCAN-SURFEX datasets. These datasets contain analyses of the atmosphere, the surface and the soil. Data are available for the period 1961 – July 2019 through Copernicus Climate Data Store (CDS).

The next generation of the regional reanalysis for Europe comprises three components:
- CERRA (5.5 km horizontal resolution)
- CERRA-EDA (10-member ensemble at 11 km resolution)
- CERRA-Land (5.5 km horizontal resolution)

In addition to the higher resolution, CERRA is more sophisticated than UERRA. For instance, more observations are assimilated into CERRA, in particular remote sensing data. The production of CERRA, CERRA-EDA and CERRA-Land will complete in September/October 2021 and data will become available in the CDS shortly thereafter.
The quality of the regional reanalysis in comparison to ERA5 will be shown with results of the standard HARMONIE-verification package as well as based on certain case studies. For instance, the winter storm Gudrun (January 2005, southern Sweden) will be investigated.

Keywords: Regional reanalysis for Europe, UERRA, CERRA, Copernicus service, Comparison to ERA5

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