



Copernicus regional reanalysis for Europe

Semjon Schimanke, Per Undén, Ludvik Isaksson, Lisette Edvinsson, Martin Ridal, Esbjörn Olsson, Susanna Hopsch, and Sandra Andersson
SMHI, Norrköping, Sweden (semjon.schimanke@smhi.se)

The Copernicus regional reanalysis for Europe (<https://climate.copernicus.eu/regional-reanalysis-europe>) is produced as part of the Copernicus Climate Change Service (C3S). The regional reanalysis (RRA) provides meteorological data from 1961 to near real-time with monthly updates.

The dataset contains analyses of the atmosphere, the surface and the soil. The essential climate variables are generated with the UERRA-HARMONIE and the MESCAN-SURFEX systems. UERRA-HARMONIE is a full model system including a 3-dimensional variational data assimilation scheme for upper air observations and an OI-scheme for surface observations. MESCAN-SURFEX is a complementary 2-dimensional surface analysis system. Data is available for entire Europe at a resolution of 11km for the UERRA-HARMONIE system and at 5.5km for the MESCAN-SURFEX system. The systems provide four analyses per day – at 0 UTC, 6 UTC, 12 UTC, and 18 UTC. Between the analyses, forecasts of the systems are available with hourly resolution. More than fifty parameters are available on various level types. The data is available through Copernicus Climate Data Store (CDS), e.g. <https://cds.climate.copernicus.eu/cdsapp#!/dataset/reanalysis-uerra-europe-single-levels?tab=overview>.

In this presentation, we will focus on the available data and its quality. The quality of the data will be shown by comparisons with other reanalysis products, e.g. ERA-interim, ERA5, and EURO4M, as well as with observations. We will focus on the parameters which are most widely used such as 2m-temperature, wind speed, precipitation and solar radiation. First tests show that wind speed from the UERRA-HARMONIE system is outperforming the global reanalysis. A different study indicates that the global radiation of UERRA-HARMONIE agrees better with observations than most data from other reanalysis datasets. Finally, recommendations and possible caveats for the data usage will be discussed and illustrated for the audience.