
The ERA5-Land Global land surface reanalysis

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Abstract

ECMWF has produced the ERA5-Land dataset, a dynamical downscaled version of the land component of the ERA5 global reanalysis. The production of this dataset has been motivated, primarily, to serve the land surface community, and other communities focused on land applications, requiring a multi-decadal consistent dataset at resolutions higher than those currently offered by atmospheric reanalysis.

ERA5-Land is a unique dataset of its kind that provides a global scale description of the most important land variables through a single simulation driven by near-surface atmospheric fields from ERA5, with thermodynamical orographic adjustment of temperature. The global projected horizontal resolution is 9 km (around 4 times finer resolution than ERA5), matching the ECMWF TCo1279 operational grid, and therefore providing consistent input for Numerical Weather Prediction and climate studies involving land water resources, but also for accurate hydrological and agricultural modeling. Owing to its relatively low computational cost, forefront model developments can also be quickly tested before the production phase.

ERA5-Land is currently available in the Copernicus Climate Data Store from 1981 to present, with 2-3 months delay with respect to the real time. However, the synchronization with

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ERA5T mode will also make it possible to provide close to NRT updates. The production of the back-extension from 1950 to 1980 is completed and is currently under verification before made it available.

This presentation will provide an overview of the ERA5-Land dataset and the main findings of a substantial evaluation exercise against in-situ data from different networks around the world and global satellite-based reference datasets.

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