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Press Release

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New milestone in climate change monitoring: ECMWF unveils ERA5 preview

One year after the Paris Agreement, the European Centre for Medium-Range Weather Forecasts (ECMWF) launches its most powerful global climate monitoring tool to date, ERA5.

The publication of the first data from ERA5, representing a two-month period, marks a milestone for climate reanalysis at ECMWF.

Produced by the EU-funded Copernicus Climate Change Service operated by ECMWF, this latest development in the ERA series improves on its predecessors through:

- **Offering a much improved spatial resolution**
- **Providing hourly estimates of atmospheric variables**
- **Providing a consistent representation of uncertainties**
- **Using more satellite observations**
- **Giving access to all input observations**

Global climate reanalysis provides critical resources for understanding and monitoring the processes associated with climate change, and for informing scenarios of future climate change. Reanalysis combines information from past and present meteorological observations with modern forecast models, using data assimilation techniques originally developed for numerical weather prediction.

ERA5 provides a new numerical description of the recent climate and contains estimates of atmospheric parameters such as air temperature, pressure and wind at different altitudes, and surface parameters such as rainfall, soil moisture content and ocean wave height.

The Head of the Copernicus Climate Change Service at ECMWF, Jean-Noël Thépaut, said: *"With better use of observations, an improved description of physical processes and a considerably higher spatial and temporal resolution, ERA5 creates new global datasets to monitor climate change, for research,*

education, and for commercial applications. For the first time, users will have access to hourly estimates of atmospheric variables at a horizontal resolution of 31 km, and on 137 levels from the surface up to 1 Pa (around 80 km)."

Another novelty of ERA5 is that it will produce a 10-member ensemble of climate reconstructions for all parameters and levels. This new feature is based on the Ensemble of Data Assimilations (EDA) system developed at ECMWF, which explicitly accounts for errors in the observations and in the forecast model. Users will be able to access data that will allow them to assess the confidence they can have in the analysis for various parameters, at different times and places.

ERA5 is the fifth generation of ECMWF atmospheric reanalyses of the global climate. ECMWF climate reanalyses started with the FGGE reanalyses produced in the 1980s, followed by ERA-15, ERA-40 and most recently ERA-Interim.

As a first step in the transition from ERA-Interim to ERA5, an ERA5 dataset covering two months is now available to enable users to adapt their systems to replace ERA-Interim. This release is an important milestone: it marks the beginning of a two-year journey which will progressively allow users to look back in time at the weather of the past 40 years.

All ERA5 data products are open access and free to download. They are hosted in ECMWF's main archiving repository for meteorological data, MARS (Meteorological Archival and Retrieval System), and are available to the public through the ECMWF Web API.

Notes for editors

All ERA5 data products, which are open access and free to download, will include information about uncertainties, which will be provided for each parameter at 3-hourly intervals and at a horizontal resolution of 62 km. Compared with ERA-Interim, many new parameters, such as 100-metre wind components, will be available as part of the output. A database containing all input observations, together with detailed information about how they are used, will be available to users. Altogether, the entire ERA5 production will generate roughly 5 petabytes of data. Please note that the ERA5 preview data published today are provisional and may be superseded in the final release of ERA5 data.

More information about ERA5 is available at:
<https://climate.copernicus.eu/climate-reanalysis>

The European Centre for Medium-Range Weather Forecasts (ECMWF) is an intergovernmental organisation, developing and producing global weather predictions. It is supported by 34 Member and Co-operating States.



ECMWF operates the [Copernicus Atmosphere Monitoring Service](#) and [Copernicus Climate Change Service](#) on behalf of the European Commission and contributes to the [Copernicus Emergency Management Service](#).

Academic and environmental institutions from across Europe, including national meteorological services, play an integral role in making Copernicus a success.

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