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High resolution regional reanalysis over Ireland using the HARMONIE NWP system

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Using the high resolution HARMONIE numerical weather prediction (NWP) system, we have generated a 35-year reanalysis dataset for Ireland on a 2.5 km grid. The forecast model was run over a domain covering Ireland, the UK and northern France using lateral boundary conditions provided by ERA-Interim analysis and forecast fields. Local Irish surface observations and conventional observations stored in ECMWF's MARS archive were assimilated using 3-dimensional variational (3DVAR) assimilation for upper air variables and optimal interpolation for surface parameters.

The outputs from this reanalysis extend the knowledge gained from observations as the grid is much finer than the observational coverage and includes parameters which are not routinely observed. It is envisaged that this high resolution dataset will be used for applications such as renewable energy, agriculture, hydrology, as well providing information on biases in the forecast model.

This dataset contains over 100 gridded data fields. Here we present an initial analysis of temperature, precipitation and wind fields.