



## **Reduced numerical precision in data storage for weather and climate simulations**

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Most meteorological quantities that are predicted in weather and climate simulations show very large error bars. Still, physical fields are typically stored with many decimal digits accuracy. If we reduce numerical precision, we can reduce data volume and either reduce cost for data storage or increase output frequency or the number of fields that are stored.

We study a reduction in precision for model output of ensemble forecasts and long term simulations with the Integrated Forecast System at the European Centre for Medium-Range Weather Forecasts (ECMWF). We compare data at different levels of precision that is stored in the GRIB data format which is used as standard for model output at ECMWF. The GRIB format allows to store real numbers as scaled integer values with the precision (in number of bits per variable) specified by the user. The investigation of numerical precision and information content in data storage for weather and climate simulation is part of the ESiWACE project ([www.esiwace.eu](http://www.esiwace.eu)).