

DWD's operational roadmap: Implications for computation, data management and data analysis

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The German Weather Service DWD has recently modernized substantial parts of its numerical weather prediction (NWP) suite.

In this presentation we sketch the rationale behind these changes, which are centered around probabilistic forecasting, ensemble data assimilation and the nonhydrostatic unstructured grid point model ICON.

Moreover, we expand on DWD's NWP strategy for the mid-term future 2018-2022: Seamless integration of nowcasting and very short-range forecasts come into reach, as well as the operational simulation of aerosols, trace gases, and pollen. The rapid evolution of the operational process chain will therefore continue, in order to answer the increasing demands on forecasts and to keep up with the technological developments.

Future projections of DWD's enlarged regional models and ensemble forecasts predict a ten-fold increase of data production until 2022, let alone the dramatic rise of the computational workload. What are the implications of this trend for data analysis, data management and computation?

Naturally, this includes the discussion of the consequences for DWD's upcoming HPC procurements. Apart from this aspect, data-intensive simulation in future NWP process chains will definitely increase the importance of meta-data. With the example of DWD's ICON and COSMO models, we present some ideas on ensuring data provenance, when data can no longer be easily moved and user communities become more diverse.

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