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Using the ECMWF OpenIFS model and state-of-the-art training techniques in meteorological education

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The OpenIFS programme of the European Centre for Medium-Range Weather Forecasts (ECMWF) maintains a version of the ECMWF forecast model (IFS) for use in education and research at universities, national meteorological services and other organisations. The OpenIFS model can be run on high-performance computing systems, desktop or laptop computers to produce weather forecasts in a similar way to the operational forecasts at ECMWF.

Application of OpenIFS as training tool is wide ranging. At the universities of Helsinki, Reading and Budapest, for instance, masters students are taught modelling aspects like numerical stability, impact of spatial resolution and physical parameterization settings on the forecast quality via sensitivity studies. The single column model (part of the current OpenIFS release) is used to study a subset of physical processes in the atmosphere. In the OpenIFS user meetings, special weather events are selected to train the participants for interpretation of the ensemble forecasts, the probabilistic information, and the seasonal forecasts.

The OpenIFS user meetings and training events always demonstrate advanced and easy-to-use graphical tools and training technologies. Metview is developed at the ECMWF to analyse, visualize and evaluate the forecast outputs. OpenIFS and Metview "virtual machines" relieve us from the difficulties often found in installing on the local computing environment. They provide data, applications and documents in a package tested in-house and deployed easily (via USB or file transfer) to another site. A further step on virtualization is utilizing cloud servers, ensuring the computational resources demanded by model runs are available in the cloud space.

This presentation will show the education activity in the OpenIFS programme in detail. An overview will be given also on the forthcoming new OpenIFS model release with focus on its capabilities in new scientific areas.