



Met.3D – a new open-source tool for interactive 3D visualization of ensemble weather forecasts

Marc Rautenhaus (1), Michael Kern (1), Andreas Schäfler (2), and Rüdiger Westermann (1)

(1) Technische Universität München, Computer Graphics and Visualization, Garching bei München, Germany (marc.rautenhaus@tum.de), (2) Deutsches Zentrum für Luft- und Raumfahrt, Institut für Physik der Atmosphäre, Oberpfaffenhofen, Germany

We introduce Met.3D, a new open-source tool for the interactive 3D visualization of numerical ensemble weather predictions. The tool has been developed to support weather forecasting during aircraft-based atmospheric field campaigns, however, is applicable to further forecasting, research and teaching activities. Our work approaches challenging topics related to the visual analysis of numerical atmospheric model output – 3D visualisation, ensemble visualization, and how both can be used in a meaningful way suited to weather forecasting. Met.3D builds a bridge from proven 2D visualization methods commonly used in meteorology to 3D visualization by combining both visualization types in a 3D context. It implements methods that address the issue of spatial perception in the 3D view as well as approaches to using the ensemble in order to assess forecast uncertainty. Interactivity is key to the Met.3D approach. The tool uses modern graphics hardware technology to achieve interactive visualization of present-day numerical weather prediction datasets on standard consumer hardware. Met.3D supports forecast data from the European Centre for Medium Range Weather Forecasts and operates directly on ECMWF hybrid sigma-pressure level grids. In this presentation, we provide an overview of the software –illustrated with short video examples–, and give information on its availability.