



Contribution ID: 126

Type: **Talk (15min + 5min)**

Met.3D: Rapid exploration of gridded atmospheric data with interactive 3-D visualization

Thursday 27 February 2025 12:00 (20 minutes)

Visualization is an important and ubiquitous tool in the daily work of weather forecasters and atmospheric researchers to analyse data from simulations and observations. The domain-specific meteorological research software Met.3D (documentation including installation instructions available at <https://met3d.readthedocs.org>) is an open-source effort to make interactive, 3-D, feature-based, and ensemble visualization techniques accessible to the meteorological community. Since the public release of version 1.0 in 2015, Met.3D has been used in multiple visualization research projects targeted at atmospheric science applications, and has evolved into a feature-rich visual analysis tool facilitating rapid exploration of gridded atmospheric data. The software is based on the concept of “building a bridge” between “traditional” 2-D visual analysis techniques and interactive 3-D techniques powered by modern graphics hardware. It allows users to analyse data using combinations of feature-based displays (e.g., atmospheric fronts and jet streams), “traditional” 2-D maps and cross-sections, meteorological diagrams, ensemble displays, and 3-D visualization including direct volume rendering, iso-surfaces and trajectories, all combined in an interactive 3-D context. In the past year, we have been able to significantly advance the Met.3D code base (available at <https://gitlab.com/wxmetvis/met.3d>) to make the tool more stable, usable, and to integrate visualization techniques not commonly available in other visualization tools. In this presentation, we introduce our software to the RSE community, show some examples, and discuss challenges of developing the software in an atmospheric science research environment.

I want to participate in the youngRSE prize

no

Primary author: RAUTENHAUS, Marc (Visual Data Analysis Group, Hub of Computing and Data Science, Universität Hamburg)

Co-authors: Mr FISCHER, Christoph (Visual Data Analysis Group, Hub of Computing and Data Science, Universität Hamburg); Mr VOGT, Thorwin (Visual Data Analysis Group, Hub of Computing and Data Science, Universität Hamburg)

Presenter: RAUTENHAUS, Marc (Visual Data Analysis Group, Hub of Computing and Data Science, Universität Hamburg)

Session Classification: Visualization with Research Software

Track Classification: Research Software: visualisations and analysis