

Visual analysis of dynamic processes



Contribution ID: 20

Type: **not specified**

Visualization techniques for the analysis of ensemble variability

Tuesday, 10 January 2017 10:30 (1 hour)

In many scientific fields, the recognition that predictability is limited has led to a paradigm shift in how predictions of dynamic processes are created. Instead of making a single deterministic computation of the future field state, ensembles of many numerical simulations are computed—based on a set of possible initial states and random variations to account for model uncertainty—and predictions take the form of probabilities of occurrence of specific features derived. In meteorology, ensemble forecasting is used to estimate the uncertainty inherent in the prediction of weather events, by providing a representative sample of the possible states of the atmosphere that could evolve out of perturbed initial conditions and different models.

In my talk I will address ensemble visualization techniques, which aim at analysing the variability of an ensemble, so that from the rate of divergence of the individual ensemble members the uncertainty of a single weather forecast can be estimated stochastically. I will shed light on ensemble visualization techniques for specific features in scalar- and vector-valued ensembles, such as iso-contours and particle trajectories, and I will hint on some basic problems we encountered when dealing with ensemble data, such as curve and shape comparison, visual abstractions for ensembles, as well as the visual representation of probabilities.

Primary author: Prof. WESTERMANN, Rüdiger (Technical University Munich)

Presenter: Prof. WESTERMANN, Rüdiger (Technical University Munich)

Track Classification: Lectures