Abstract

This presentation will discuss a further approach to modeling dynamically changing Gaussian spatiotemporal fields. In this approach, the dynamics are introduced by embedding deterministic velocities into a stochastic spatiotemporal Gaussian model. This way, a dynamically inactive stochastic field with given a spatial and temporal covariance structure gains dynamics that, in general, follow a deterministic pattern. Here I make an important connection between the resulting stochastic field and underlying deterministic dynamics by demonstrating that in the case of isotropic spatial dependencies, the observed random velocities are centered at the velocities of the underlying physical flow. Finally, I will discuss strategies for simulation of such fields and give foundation for fitting and prediction procedures that are based on obtained results.