BayCEER Kolloquium

Lectures in Ecology and Environmental Research

Summer 2017

UNIVERSITÄT BAYREUTH

Thursday
04.05.2017
12:00 in S21, GEO

Dr. Bjoern Maronga

Institute of Meteorology and Climatology,
Universität Hannover

Simulation of radiation fog in the nocturnal atmospheric boundary layer using a turbulence-resolving model

Fog as a meteorological phenomenon in the atmospheric boundary layer can have a high impact on the economy but also on personal safety. The total economic loss that is associated with fog events on aviation, marine and land transportation are comparable to those of winter storms. Despite improvements in numerical weather prediction models over the last years, fog forecasting is still highly inaccurate. The main reason for this is the fog's considerable variability in space and time as a result of the nonlinear interaction between several processes, including radiative cooling/warming, turbulent mixing, cloud microphysics, and the atmosphere-surface-soil interaction - processes that are only partly resolved by state-of-the-art forecasting models.

In this presentation, the typical life cycle of a radiation fog event is conveyed. The key processes relevant for radiation fog that forms in the nocturnal atmospheric stable boundary layer are outlined and their interaction is analyzed by using a comprehensive set of high-resolution turbulence-resolving large-eddy simulations using the model PALM, which has been developed at the Institute of Meteorology and Climatology at Leibniz Universität Hannover. Special focus will be given on the importance of the adequate representation of all revelant processes in the modeling system and the interaction between atmosphere, surface, and underlying soil.

Bayreuth Center of Ecology and Environmental Research

Bayceer

The lectures are an inter-disciplinary platform for students, junior and senior scientists. Abstracts and further information: www.bayceer.uni-bayreuth.de/kolloquium/