

## Environmental Meteorology

The lowest layers of the atmosphere and meteorological conditions near the earth's surface are of particular importance for nature and society. This is where human life influences nature directly and where changes of the natural environment have an immediate impact on human living.

Anthropogenic emissions as well as their transport and interaction with emissions from nature widely determine the quality of life and human wellbeing not only in urban areas. In order to adapt life to continuously changing environmental conditions, the anthropogenic impact on the environment needs to be simulated and studied also at very local scales. On the other hand, modelling local scale atmospheric flow and transport phenomena within the lowest range of the atmospheric boundary layer with obstacle- and turbulence resolving numerical model remains to be one of the big challenges in atmospheric research and applied environmental meteorology. The Environmental Meteorology Project is dealing with the specific challenges of modeling environmental flow and dispersion phenomena at smallest scales by combining numerical modeling with corresponding data from the Environmental Wind Tunnel Lab EWTL at UHH. Research is focusing primarily on a more comprehensive understanding and improved mathematical and physical description of shear-induced turbulence and its impact on transient flow and dispersion phenomena within the so-called Prandtl-Layer. In the project, the development of various types of numerical models for local-scale flow and dispersion problems is supported and models are continuously validated for example in the context of urban climate simulations, for emergency response hazmat dispersion modeling, concerning air quality modeling or in the context of renewable energy production.