



New Master Thesis Topic

Title: Analysing Urban Pollution Regimes in Bremen Using Meteorological Observations and Simulations

Short description (with picture if possible):

This project focuses on understanding pollution regimes in Bremen by combining meteorological observations and advanced modelling techniques. The project involves setting up and operating a weather station to collect hightemporal-resolution observational data. These observations will serve as a basis for running meteorological simulations at various spatial resolutions and with different model configuration options (e.g., physics schemes, parameterizations).

A key aspect of the project is evaluating the simulation results against realworld observational data to identify strengths and weaknesses in model performance. The results will then be integrated with air quality measurements to explore and differentiate pollution regimes, shedding light on the interactions between meteorological conditions and air quality dynamics in Bremen.

Skills needed:

Good understanding of meteorology and atmospheric chemistry Familiarity with numerical modelling, good understanding of the fundamentals Experience with data analysis and programming (e.g. Python) Experience in setting up and operating observational instruments Ability to process and analyze large datasets Strong problem-solving and analytical skills

Name of the IUP research group incl. two-line description of the research area The Laboratory for Modeling and Observation of the Earth System (LAMOS; AG Vrekoussis) focuses on understanding the emission, transport, transformation, and deposition of atmospheric pollutants. Our research emphasizes the impact of anthropogenic and natural emissions on air quality and the quantification of sources and sinks of various atmospheric species using atmospheric chemistry models and satellite observations.

Topic for students of
☑ M.Sc. Environmental Physics
☑ M.Sc. Space Sciences and Technologies

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