

The newly established **Helmholtz-University Young Investigator group “Aerosol effects on cloud ice, precipitation and climate”** (<http://imk-aida.fzk.de/Hoose>) at the Karlsruhe Institute of Technology, Institute for Meteorology and Climate Research - Atmospheric Aerosol Research (IMK-AAF), has an opening for a PhD student to work on

Simulation of Biological Aerosol Influence on Clouds on Regional Scales

Aerosol-cloud interactions are one of the largest factors of uncertainty in future climate projections and simulations of the hydrological cycle, including quantitative precipitation prediction. Many microphysical processes cannot be explicitly resolved in numerical models on regional and global scales, but have to be parameterized. Cloud ice-phase processes, which are particularly important for precipitation formation especially in mid-latitudes, are often treated in a simplistic manner. This is partly due to a lack of physical understanding of these processes. The aim of the Young Investigators Group is to develop and test numerical parameterizations, based on experimental results obtained at IMK-AAF and elsewhere, for models on different scales, to simulate possible aerosol effects on the cloud liquid and ice phase more realistically.

Biological particles (e.g. bacteria, pollen) have been observed to be highly efficient ice nuclei. In recent field measurements, they were found inside snow and ice crystals, which suggests that they also contribute to cloud ice formation in the real atmosphere. The assessment of their importance in different seasons and regions and for different types of clouds is the topic of this project. This project will be carried out in collaboration with the COSMO-ART developers group at IMK-TRO (<http://www.imk-tro.kit.edu/3487.php>).

We are looking for a highly motivated, independent student. We offer a dynamic work environment at one of Germany's foremost research institutions for natural science and technology (read more at <http://www.kit.edu>) with attractive programs for PhD students (<http://www.khys.kit.edu>) and payment according to TVÖD 13 (75%) for 3 years. The position is available from 15 April 2010 or later.

Tasks:

- Implementing new aerosol-specific ice nucleation parameterizations into the regional model COSMO-ART
- Model studies on the impact of bioaerosols, in particular pollen, on clouds
- Evaluation of the relative importance of biological particles, mineral dust and anthropogenic aerosols for cloud ice formation in different cloud and aerosol regimes
- Comparison to observed ice nuclei concentrations and composition
- Presentation of results at conferences and workshops
- Publication in peer-reviewed journals

Qualifications:

- Diploma/masters or equivalent degree with above-average grades in physics, meteorology or a related subject
- Good programming skills (Fortran, Unix/linux shell scripts)
- Fluency in oral and written English
- Previous experience in atmospheric modeling, aerosol science and/or cloud physics would be an asset.

Please submit your application as one pdf file, in German or English, including a cover letter, preferred starting date, curriculum vitae, and contact details of 2 referees until 25 March to Dr. Corinna Hoose, corinna.hoose@geo.uio.no and Prof. Thomas Leisner, thomas.leisner@kit.edu.