# PhD position in the field of atmospheric sciences: Identification of snowfall processes from ground-based in situ observations (m/f/d)

Founded in 1409, Leipzig University is one of Germany's largest universities and a leader in research and medical training. With around 30,000 students and more than 5000 members of staff across 14 faculties, it is at the heart of the vibrant and outward-looking city of Leipzig. Leipzig University offers an innovative and international working environment as well as an exciting range of career opportunities in research, teaching, knowledge and technology transfer, infrastructure and administration.

The Leipzig Institute for Meteorology (LIM, https://www.physgeo.uni-leipzig.de/en/institute-for-meteorology) at the Faculty of Physics and Earth Sciences seeks to fill the above position at the earliest opportunity.

POSITION & PROJECT DESCRIPTION

Precipitation is an important but poorly understood component of our climate system. The exact pathways through which ice crystals, liquid water, cloud dynamics, and aerosol particles interact during precipitation formation are not well understood. During snowfall formation, vapor depositional growth leads to myriad crystal shapes depending on temperature, humidity, and their turbulent fluctuations. Aggregation combines individual crystals into complex snowflakes. Riming describes the freezing of small droplets to ice particles so that they rapidly gain mass. In other words, the shape of snow particles is a fingerprint of the dominant processes during snowfall formation. In this project, we propose to use these fingerprints to quantify how the different snowfall formation processes contribute to total precipitation in terms of mass or frequency of occurrence.
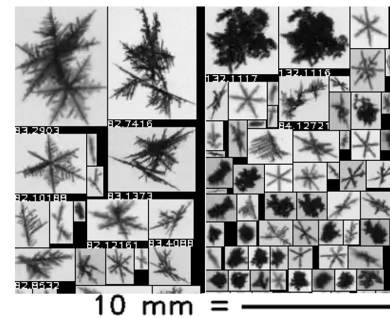
sample measurements of the VISSS precipitation sensor

The PhD student will conduct independent research as part of the drOPS (clouD and pRecipitation Observations for Process Studies) group at LIM for the Evaluating Microphysical Pathways Of Midlatitude Snow Formation (EMPOS) project. The candidate will develop and apply machine learning data products for the Video In Situ Snowfall Sensor (VISSS) to quantify riming and aggregation from in situ observations. The VISSS measurement uncertainties will be quantified. The required data set will be collected during a field campaign at Hyytiälä, Finland. Together with a PhD student of the collaboration partner C. Hoose at KIT, the observations will be compared with the ICON (Icosahedral Nonhydrostatic) model using the advanced P3 (Predicted Particle Properties) microphysics scheme, which has a novel approach to the treatment of rimed particles. The goal is to evaluate and improve the snowfall simulation in ICON. Results will be published in peer-reviewed journals and presented at international conferences.

TERMS OF EMPLOYMENT

The funded Ph.D. position (75% of the TV-L E13 pay scale of the German public sector) is awarded for 3 years, is open immediately, and should be filled by summer 2023 at the latest. We offer a productive and interdisciplinary working environment including comprehensive supervision and integration into the thriving Leipzig Graduate School on Clouds, Aerosol and Radiation (http://www.lgs-car.tropos.de/).

QUALIFICATION REQUIREMENTS

Applicants should have a Master's degree in meteorology, physics, or a related field. We expect a strong interest in atmospheric science, especially cloud physics, in situ observations, and machine learning. Previous experience in these areas would be an advantage for the position. Experience with high-level scientific programming for data analysis, such as Python, is desirable. Candidates must have excellent communication skills in written and spoken English.

APPLICATIONS

Interested candidates should send their applications, including a letter of motivation, curriculum vitae, BSc and MSc transcripts or records, other qualifications, and contact information of two referees, as a single PDF file to

maximilian.maahn@uni-leipzig.de by March 22, 2023.

Please note that it is not possible to guarantee confidentiality and prevent unauthorized access by third parties when communicating via unencrypted e-mail.

SELECTION

Leipzig University aims to increase the proportion of women in positions of responsibility and therefore expressly invites qualified women to apply. Severely disabled persons – or persons deemed legally equal to them under Book IX of the German Social Code – are encouraged to apply and will be given preference in the case of equal suitability.

Please contact the project leader Dr. Maximilian Maahn **maximilian.maahn@uni-leipzig.de** for questions regarding to the position.

Privacy information

If you choose to apply and send us your documents, you do so voluntarily. Any personal data contained within your application documents, or obtained during an interview, will be processed by Leipzig University – as the advertiser of the position – exclusively for the purposes of the selection process for the position advertised. It will not be passed on to third parties without your consent in the individual case. The legal basis for such data processing is Sect. 11(1) of the Saxon Data Protection Implementation Act (SächsDSDG) in conjunction with the EU General Data Protection Regulation (GDPR). The controller for the application process within the meaning of the GDPR is the addressee of the application, specified in the advertisement.

Your personal data will be stored for six months after the end of the recruitment process and then erased or destroyed in accordance with data protection regulations. You may refuse or withdraw your consent with effect for the future without giving reasons. In these cases, Leipzig University will not or no longer be able to process and consider your application. Under the GDPR, subject to the relevant statutory requirements you have the following rights vis-à-vis the addressee of the application with regard to your personal data: right of access (Art. 15 GDPR); right to rectification of inaccurate personal data (Art. 16 GDPR); right to erasure (Art. 17 GDPR); right to restriction of processing (Art. 18 GDPR); and right to object to processing (Art. 21 GDPR). If you have any questions, please contact the Data Protection Officer at Leipzig University (office: Augustusplatz 10, 04109 Leipzig). You also have the right to lodge a complaint with the Saxon Commissioner for Data Protection.