

Call for Applications: PhD Position for International Doctoral Candidate

The Graduate School for Climate and Environment ([GRACE](#)) at Karlsruhe Institute of Technology ([KIT](#)) invites applications for a PhD research project for a non-German doctoral candidate, which can be financed by the Graduate School Scholarship Programme ([GSSP](#)) of the German Academic Exchange Service (DAAD). The PhD project starts in 2025.

Proposed Research Topic: Atmospheric correction of Ground-Based SAR (GBSAR) measurements using a meteorological low-cost sensor network

Supervisor: Prof. Dr.-Ing. Stefan Hinz (IPF)

Water vapor is the meteorological quantity whose modeling and prediction is least reliable. At the same time, it is the most relevant parameter that deteriorates high precision geodetic measurements in the field. This is especially true for observations in mountainous regions, where water vapor exhibits a very high degree of spatial and temporal variability. In the joint project on Dams and Induced Seismicity (DAMAST), an extensive measuring field was installed in the vicinity of the Enguri Dam in the southern Caucasus (Georgia), which includes, besides the GBSAR, GNSS antennas and around 30 meteorological multi-sensor low-cost stations. The sensors are supplemented by cameras in the optical and infrared channels as well as by high-resolution satellite data.

The aim of this research topic is to obtain the distribution of water vapor by means of machine learning approaches and to improve atmospheric correction beyond standard approaches. The research work is expected to contribute in two ways: (i) the separation of atmospheric influences from GBSAR observations to correct the runtime delays of GBSAR and other geodetic methods and to increase their quality and significance and (ii) providing a high-resolution water vapor field estimate by means of tomographic approaches, which can be used in further studies on local climate and water vapor in alpine mountain valleys.

The selected candidate will join the Radar group at the Institute of Photogrammetry and Remote Sensing (IPF) at KIT.

Specific profile of the candidate

- Above-average Master's degree in a relevant field, such as geodesy, geophysics, geoinformatics or computer science
- Strong academic background in signal processing, radar imaging or remote sensing
- Proficiency in image processing and machine learning
- Interest in working with Radar instruments and data
- Excellent teamwork skills

Formal requirements

- Completed Master's degree (or equivalent) at the starting date of the scholarship/ preparatory German course
- Graduation no more than six years prior to nomination (exceptions apply, see [DAAD website](#))

- Non-German citizenship and no residency in Germany for more than the past 15 months before nomination
- No completed PhD degree
- Proficiency in English

What we offer

- International and interdisciplinary research environment with access to the latest research infrastructure
- Possibility for DAAD full scholarship for up to four years (for details see [GSSP Guidelines and Information](#))
- Structured doctorate at the graduate school GRACE
- 3-months research stay at another research institute
- Additional funding for attending conferences, summer schools and training events
- Preparatory German course (if available and applicable)

Application documents

- Letter of motivation, including the chosen research topic
- Curriculum vitae
- Bachelor and Master degree certificates and certificates on annual examinations taken at the home university (transcript of records in original language and English translation) including grades and explaining the home university's grading system (explanation of grading system)
- Documents certifying English language skills
- List of publications (if applicable)
- Names and contact information of two referees willing to provide a recommendation letter upon request

Please send your application exclusively in PDF format by e-mail to application@grace.kit.edu. The application deadline is February 24, 2025.

Application process for a DAAD scholarship

The scholarship awardee will be selected in a two-step process. After applying at the graduate school GRACE, suitable candidates will be nominated for the scholarship and asked to upload their application in the DAAD portal. The DAAD is responsible for awarding and administering the scholarships.

Timeline

- Application deadline: February 24, 2025
- Selection of nominees and submission of application documents by nominated candidates via DAAD portal until Mid-March 2025
- Start of the PhD project: 2025 (May at the earliest)

Further Information

If you have questions regarding application documents and the application process, please contact GRACE Management at application@grace.kit.edu.

For further information on the proposed research topics, please contact Dr.-Ing. Andreas Schenk (andreas.schenk@kit.edu).