Professorship for Remote Sensing Applications
TUM School of Engineering and Design
Technische Universität München

We seek for our team a

Doctoral Researcher in Integrated GNSS-InSAR Analysis of Horizontal and Vertical Velocity Fields for Crustal Deformation Analysis (full-time position as Research Associate, E13, in DFG Research Training Group) (m/f/d)

About us

The Professorship of Remote Sensing Applications (https://www.asg.ed.tum.de/rsa), Department of Aerospace and Geodesy, TUM School of Engineering and Design, focusses on methodological research on the analysis and integration of multi-source remote sensing data. Our work aims to extract high-precision spatiotemporal information on Earth system processes across spatial and temporal scales. Current research themes include deformation monitoring from geospatial time series data, complex topographic and landscape dynamics, and the development of data-driven methods to study natural hazards, climate-related changes, and human-environment interactions.

About the project

The doctoral researcher project aims to evaluate whether surface motions predicted by geophysical models and geological observations can be reliably extracted from GNSS-derived velocity fields, augmented by InSAR, to distinguish deformation signals related to sub-lithospheric mantle flow from uplift contributions driven by other geophysical processes. This research addresses the challenge of separating overlapping sources of surface deformation in regions with complex geodynamics, for which the Basin-and-Range province in western North America serves as test case. The area benefits from a dense network of continuously recording GNSS stations as well as extensive InSAR coverage, enabling high-resolution interpolation of surface motions. The project will utilize these datasets together with supporting geological and geophysical information made available through EARTHSCOPE and the Plate Boundary Observatory (UNAVCO/IRIS). By integrating geodetic, geological, and geophysical constraints, the project seeks to assess how well mantle-driven deformation can be identified within a dense GNSS velocity field and what improvements InSAR interpolation provides. This research establishes a foundation for more reliably isolating deep-seated geodynamic processes from near-surface effects, thereby advancing methods for interpreting surface deformation in tectonically active regions.
This project is part of the UPLIFT Research Training Group (RTG) at TUM and the Ludwig-Maximilians-Universität (LMU) München under the auspices of the Munich GeoCenter: https://www.asg.ed.tum.de/iapg/uplift/, and is jointly supervised with the TUM Professorship of Satellite Geodesy.

Requirements

We are looking for highly motivated candidates holding a Master's degree from an academic university in geosciences, geodesy, geophysics, geology, physics, aerospace engineering, computational science and engineering, mathematics, or a related field. Ideally, candidates bring cross-disciplinary competences across these areas and a strong interest in geodetic research.
Applicants should have good programming skills in a scientific programming language (e.g., Python), and experience with remote sensing and geodetic data analysis (InSAR, GNSS, time series and spatiotemporal processing methods). Geological expertise is an asset.
Candidates are expected to be motivated to independently investigate scientific questions and to actively contribute to an international, interdisciplinary research environment.

Excellent English skills (written and spoken) are required, as well as a willingness to collaborate closely with other members of the UPLIFT Research Training Group and external partners. We are seeking individuals with the aspiration to become future leaders in their chosen field of research.

We offer

- We offer a full-time position as research assistant (E13), limited to three years with the objective to pursue a doctoral degree. Part-time employment is generally possible.
- Payment will be based on the Collective Agreement for the Civil Service of the Länder (TV-L), E13.
- Access to a modern and international workplace with a close connection to the research institute (Aerospace and Geodesy), GeoCenter and related TUM and LMU groups. Main workplace will be the TUM campus in Ottobrunn.
- TUM strives to raise the proportion of women in its workforce and explicitly encourages applications from qualified women.
- The position is suitable for disabled persons. Disabled applicants will be given preference in case of generally equivalent suitability, aptitude and professional performance.

Application

We look forward to your application. Please send a single PDF file to applications.rsa@ed.tum.de by 21 December 2025 to ensure full consideration. We will continue reviewing applications received after this date until the position is filled. The starting date of the position is as soon as possible, or upon agreement (please indicate availability in your application).
For specific questions regarding the position not answered in this call for applications, you may contact Prof. Dr. Katharina Anders (k.anders{at}tum.de).

As part of your application, you provide personal data to the Technical University of Munich (TUM). Please view our privacy policy on collecting and processing personal data in the course of the application process pursuant to Art. 13 of the General Data Protection Regulation of the European Union (GDPR) at https://portal.mytum.de/kompass/datenschutz/Bewerbung/. By submitting your application, you confirm to have read and understood the data protection information provided by TUM.