

The institute for Atmospheric and Environmental Sciences at Goethe-Universität Frankfurt invites applications for a

## PhD position (m/f/d)

funded within the Transregional Collaborative Research Centre 301

TPChange – The Tropopause Region in a Changing Atmosphere

by the German Research Foundation (DFG, Deutsche Forschungsgemeinschaft).

Within TPChange we aim to improve the understanding of relevant multiscale processes in the tropopause region and to specify their impact on composition, dynamics and ultimately on future climate and climate variability. The PhD candidate will work in project B03

## Deep exchange with the UTLS: the Tibetan pipe

This project aims to improve the understanding of and quantify the role of the highest mountain ranges and plateaus in the transport of water vapor, other trace gases, and aerosols between the atmospheric boundary layer (ABL) and the upper troposphere/lower stratosphere (UTLS). Reaching this goal will improve the understanding of the climate system and enhance the ICON-based climate modelling system that will be used and adopted in this project. The project focusses on the ABL to UTLS exchange over the geographical area of the Tibetan plateau (TiP) and the Himalayas with its foothills. Two transport mechanisms will be investigated: (a) dry deep mixing with tropopause folds and very deep ABLs (up to 5 km above the plateau level) in boreal winter and spring, and (b) deep convection over the TiP, the Himalayas, and Himalayan foothills in the monsoon season.

The project's overall goal is threefold: First, to improve the process understanding of deep exchange over the TiP by a systematic investigation of the impact of local factors, such as small-scale topography, thermal circulations, and soil moisture, on ABL structure and deep exchange over the TiP. Second, to determine minimum resolution requirements for the accurate representation of ABL structure, local circulations, and deep exchange, including processes such as venting of ABL air by thermal circulations, local triggering of moist convection, and transport across the tropopause. Third, to develop LES benchmark simulations of deep exchange cases for the evaluation of coarser-resolution ICON simulations.

The project will be supervised by Professor Juerg Schmidli. In addition, collaborations within the TP Change project are planned (projects A04, B02, B04, B08 and a close collaboration with project B06 is expected).

### Requirements

The ideal candidate holds a MSc in meteorology, geophysics (or related field) and has a strong background in atmospheric dynamics and mountain meteorology. Experience with numerical modelling and analysis of atmospheric phenomena is highly desirable.

### Employment conditions

The position is offered for 4 years and the place of employment will be Frankfurt am Main. The targeted starting date is Summer 2021.

### Applications and deadline

Please send applications to [tpc\\_jobs@uni-mainz.de](mailto:tpc_jobs@uni-mainz.de), including a motivation letter including your preferred project, CV, copies of relevant certificates, preferred starting date, and the names and contact information of at minimum two references. Review of all applications will start on **1 July 2021** and will continue until the position is filled. For further information, please contact [schmidli@iau.uni-frankfurt.de](mailto:schmidli@iau.uni-frankfurt.de)

TPChange offers a comprehensive and structured training for early career researchers. In addition to self-organised activities such as workshops, trainings and a guest program, the successful candidate will have the opportunity, if desired, to pursue international research visits. The consortium conducts an ambitious program to gradually enhance gender equality on all career levels.

The institute for Atmospheric and Environmental Sciences at Goethe-Universität Frankfurt actively supports equality, diversity and inclusion, and as an equal opportunity employer, the institute for Atmospheric and Environmental Sciences at Goethe-Universität Frankfurt explicitly encourages applications from women as well as from all others who will bring additional diversity to the university's research and teaching. Applicants with disabilities will be preferentially considered if suitably qualified.

We look forward to your application!

#### **Notes on Data Protection**

<https://www.verwaltung.personal.uni-mainz.de/files/2020/09/Datenschutz-BewerberInnen.pdf>