The Intstitute of Climate and Energy Systems (ICE-4) at Forschungszentrum Jülich 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 C03 – work package 1 to 3.

Improving process understanding and model representation of stratospheric water vapor and related climate feedbacks

Water vapour (H_2O) in the upper troposphere and lower stratosphere (UTLS) is a key player for global radiation and surface climate. The processes which determine the H_2O concentration in the UTLS region are manifold and encompass large scale transport through the tropopause region as well as small scale processes like convection. However, current global climate models simulate large moist biases in the UTLS which, in turn, may cause significant biases in simulated feedbacks and predictions. It is therefore crucial to investigate the processes responsible for moistening the UTLS using observations and models. This PhD position focuses on analysis of observational data which were collected and homogenized in Phase 1 with the following tasks:

- Analysis of multiple aircraft observational datasets for convective signatures in the lower stratosphere
- Air mass origin tracing using trajectory calculations and global satellite data
- Determine the contribution of convection moistening in the different datasets

Requirements

The ideal candidate holds a MSc in meteorology, physics, computer science or similar. Solid programming skills (e.g. Python) are desirable. Experience with observational and climatological data sets would be an advantage.

Employment conditions

The place of employment will be Jülich. The targeted starting date is 1st January 2026 and the project will last until 30th June 2029. The salary and social benefits are based on the labour agreement for the public sector employment (TVöD).

Applications and deadline

Please send applications with reference to the code **C03-PHD-FZJ** as one single pdf file to **tpc_jobs@uni-mainz.de**, including a motivation letter including your preferred project, CV, copies of relevant certificates, preferred starting date, and the names of at minimum two references.
Review of all applications will start on **4th December 2025** and will continue until the position is filled.
For further information, please contact Christian Rolf (c.rolf@fz-juelich.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.
ICE-4 actively supports equality, diversity and inclusion, and as an equal opportunity employer, ICE-4 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!