

We are excited to announce that the Collaborative Research Centre 301

The Tropopause Region in a Changing Climate

will be funded by Deutsche Forschungsgemeinschaft, starting 1 July 2021!

If you are looking for a PhD position, a student assistant job or a Postdoc opportunity, you can find a wide range of topics at the seven collaborating institutions: From laboratory and wind tunnel to field measurements, complex theoretical projects especially with aerosol-chemical and dynamical topics as well as their embedment in Earth system modelling on different scales.



Find out more at <https://tpchange.de/open-positions>

- 1 PhD in project A03 „Aerosol nucleation in the upper troposphere“ at JGU
- 2 PhDs or PostDocs in project A04 „Sources and processes controlling aerosol composition in the UTLS – From tropical monsoon to extratropical regions“ at JGU and MPIC
- 1 PhD in project A05 „Molecular fingerprints of organic aerosol in the UTLS region“ at GUF
- 2 PhDs in project A06 „Source apportionment of UTLS refractory aerosol and ice-nucleating particles“ at TUDa
- 2 PhDs in project A07 „Processing of organic compounds in ice particles during deep convective transport into the UTLS“ at JGU
- 2 PhDs in project B01 „Fine scale composition gradients and mixing at the tropopause region“ at JGU
- 2 PhDs in project B02 „Transport of aerosols and precursors from the boundary layer into the UTLS“ at JGU, TUDa and MPIC
- 1 PhD and 1 PostDoc in project B03 „Deep exchange with the UTLS: the Tibetan pipe“ at GUF
- 1 PhD in project B04 „Structure formation and mixing in the extratropical tropopause region“ at JGU
- 3 PhDs and 1 PostDoc in project B06 „Impact of small-scale dynamics on UTLS transport and mixing“ at GUF and JGU
- 1 PhD and 1 PostDoc in project B07 „Impact of cirrus clouds on tropopause structure“ at JGU and GUF
- 2 PhDs in project B08 „Lagrangian analysis of role of extratropical cyclones for UTLS aerosol/humidity“ at JGU
- 2 PhDs in project C01 „Large scale variations of water vapour and ice supersaturated regions“ at JGU and FZJ
- 1 PhD in project C05 „Transport processes regulating the lowermost stratospheric ozone reservoir“ at JGU and LMU
- 1 PostDoc in project C06 „The importance of upper troposphere aerosol transport and processing for low and mid troposphere aerosol concentrations“ at GUF
- 1 PhD in project C07 „The composition of the global UTLS nowadays and at the end of the 21st century“ at DLR and JGU
- 1 PostDoc in project Z01 „Central coordination and observational data synthesis“ at JGU

The research programme

Climate change is without doubt the most urging global problem of the near future and climate projections are of enormous political and socioeconomic relevance. Such estimates are highly dependent on the accurate representation of the atmospheric dynamics, chemical composition, aerosol loading, cirrus clouds and circulation feedbacks in the altitude region of 10 km to 20 km, the upper-troposphere/lower stratosphere (UTLS) region.

However, knowledge about even the present day global distribution of key constituents that are of relevance for climate in this region, such as water vapour, ozone, ice particles, and aerosols is surprisingly incomplete. The complexity of this region is a result of the coupling of processes from the nano- or micrometer scale, e.g. atmospheric aerosol formation, turbulence and mixing to the regional and planetary scale.

In the new Collaborative Research Centre TPChange we will identify, disentangle, and quantify dynamical, microphysical, and aerosol-chemical processes that are relevant for the UTLS composition and its role in climate. This will be achieved by field measurements, laboratory studies, theoretical approaches, and multiscale numerical modelling. Based on an improved process understanding, we will develop parametrisations of relevant small-scale processes to improve state of the art climate models and to better quantify the impact of UTLS processes on composition and dynamics and on Earth's future climate.