Post-Doc position at KIT to assess intensity and structural changes of extreme mid-latitude cyclones in a warming climate (ClimXtreme2)

Karlsruhe Institute of Technology (KIT), Institute of Meteorology and Climate Research

KIT is a distinguished research university that combines three core tasks – research, education and innovation – into a single mission. With 9,300 employees and almost 25,000 students, it is one of the largest institutions of research and higher education in natural sciences and engineering in Europe. KIT was awarded the title "University of Excellence" within the German Excellence Strategy launched by the federal and state governments on 19 July 2019. In the area of Atmospheric Science, KIT was ranked #1 in Germany and #8 worldwide in the 2019 Shanghai Ranking.

The Institute of Meteorology and Climate Research (IMK) participates in the KIT Centers "Climate and Environment" and "MathSEE (Mathematics in Sciences, Engineering, and Economics)" and contributes significantly to the program "Changing Earth" of the Helmholtz Association. The department “Troposphere Research” IMK-TRO (http://www.imk-tro.kit.edu/english/index.php) focuses on troposphere research, climate variability and change, water cycle and trace substance budgets. The Working Group "Regional Climate and Weather Hazards" (http://www.imk-tro.kit.edu/english/7144.php) focusses on an integrated analysis of extreme weather and climate events, climate change, climate variability and risk assessment. Particular attention is given to the links between the weather, climate, regionalisation and risk assessment perspectives associated with extreme events.

One of the large projects we are involved in is the BMBF “Climate Change and Extreme Events” – Phase 2 (ClimXtreme2) consortium, which examines the not yet unambiguously determined relationship between climate change and extreme weather events.

We have an open position for a postdoctoral candidate for a period of 30 months within the ClimXtreme sub-project “A6 CyclEx: Intensity and structural changes of Extreme mid-latitude Cyclones in a warming climate”.

Duties: As a Post-Doc, you will work within the BMBF ClimXtreme2 sub-project “A6 CyclEx”. The scale-dependent representation of the dynamical and thermodynamical processes relevant for cyclone intensification is crucial for the assessment of future changes of windstorms. We investigate the changes in the intensities and frequencies of extreme mid-latitude cyclones in a warming climate and uncertainties related with the representation of diabatic processes. First, cyclone statistics and related uncertainties are analyzed from CMIP6 models. The Pressure Tendency Equation approach (PTE; Fink et al., 2012) and a detection method for ascending air streams (Quinting and Grams, 2022) are used to quantify the role of diabatic processes. Second, designed experiments with the ICON model with different resolutions down to convective permitting scales (2.5 km) are performed (Chen et al., 2023). The impact of climate change on the selected case studies is assessed following a pseudo-global-warming approach. Implications for impacts associated with cyclones like extreme precipitation and wind extremes are assessed.

The sub-project PIs are Prof. Dr. Joaquim Pinto (KIT), Dr. Julian Quinting (KIT) and Prof. Dr. Aiko Voigt (University of Vienna). Research is run in close collaboration with further ClimXtreme2 sub-projects at KIT and at other German research institutions involved in Module A.

Requirements: A PhD in Meteorology, Climate Science, Earth Sciences, or related disciplines. The applicant must be proficient in spoken and written English.
**Additional qualifications:** For this position, extensive experience in statistics, extreme event diagnostics and scientific programming (e.g., linux, python, fortran, idl, ncl, cdo, Matlab, R) are required. German language skills are helpful but not mandatory.

**The application should contain:**

- A Curriculum Vitae.
- A cover letter stating your scientific interests and what motivates you to apply for this position.
- A list of scientific publications.
- Contact details (incl. email and telephone number) of two references.

The candidates will be short-listed based on the materials in the application, the top ranked candidates will be interviewed digitally and the references will be collected.

**Salary:** The remuneration is based on the collective agreement of the public service in the remuneration group TVL E13.

**Starting date:** 01-01-2024 or as otherwise agreed.

**Terms and conditions of employment:** The group is based on the research campus of KIT located about 10 km to the North of Karlsruhe city centre.

**Scope of employment:** 100%

**For further information** about this position please contact: Prof. Dr. Joaquim Pinto, e-mail: joaquim.pinto@kit.edu.

Please send the documents requested above for the application all in one pdf file by **25 October 2023** to Prof. Dr. Joaquim Pinto under the above e-mail.

KIT actively supports equality, diversity and inclusion, and as an equal opportunity employer, KIT 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.

Are you considering moving to Germany to work at KIT? If so, you will find a lot of information about working and living in Germany at [http://www.intl.kit.edu/ischolar/index.php](http://www.intl.kit.edu/ischolar/index.php). You are also welcome to contact the International Scholars & Welcome Office at scholar@intl.kit.edu.