Two Post-Doc / PhD positions at KIT within Aon Collaboration

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 Groups "Regional Climate and Weather Hazards" (Prof. Dr. Joaquim Pinto) and “Regional Climate Modelling” (Dr. Patrick Ludwig) focus on an integrated analysis of extreme weather and climate events, climate change, climate variability, risk assessment and regional climate model development. Particular attention is given to the links between the weather, climate, regionalisation and risk assessment perspectives associated with extreme events.

We have two open postdoctoral / PhD positions within the Aon Collaboration.

**Duties Position #1 (dynamical downscaling):** Your task is to perform and evaluate high-resolution simulations for European summer convective storms with ICON for the historical time period (ERA5-Reanalysis). A downscaling and nudging strategy will be developed for the ICON model with aimed resolutions of 3km and 1km. The resulting high-resolution wind gust and precipitation fields will be validated against observational and remote sensing datasets. Further, the resulting losses will also be estimated and compared to insurance data (e.g. PERILS).

**Duties Position #2 (post-processing, statistical downscaling):** You will focus on the postprocessing and bias correction of the high-resolution ICON runs (from Position #1) and statistical downscaling of wind gust and heavy precipitation fields associated with summer convective storms based on other RCM datasets. Both traditional approaches and machine learning methods will be tested. The objective is to generate a consistent high-resolution summer convective storm dataset for Europe (~ 1km) and analyze decadal variability and possible long-term trends.

The KIT PI's are Prof. Dr. Joaquim Pinto and Dr. Patrick Ludwig. The project is run in close collaboration with Impact Forecasting, the catastrophe modelers division of Aon.

**Requirements:** A PhD / MSc in Meteorology, Climate Science, Earth Sciences, or related disciplines. The applicant must be proficient in spoken and written English.

**Additional qualifications (Position #1):** For this position, experience with numerical modelling is required. Experience with ICON would be advantageous. The candidate should also be experienced in scientific programming (e.g., linux, python, fortran, ncl, cdo, Matlab, R). German language skills are helpful but not mandatory.

**Additional qualifications (Position #2):** For this position, 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 (all in one PDF):
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:** 01-02-2024 or as otherwise agreed.

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

**Scope of employment:** 100% for postdocs over 3 years; 75% for Phds over 4 years

For further information about this position please contact: Joaquim Pinto (joaquim.pinto@kit.edu), Dr. Patrick Ludwig (patrick.ludwig@kit.edu)

Please send the documents requested above for the application all in one pdf file by 01 November 2023 to the PIs (per e-mail), clearly stating in the subject which position you are applying to.

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. You are also welcome to contact the International Scholars & Welcome Office at scholar@intl.kit.edu.