The **Institute for Geophysics und Meteorology** at the **University of Cologne** (UoC) invites applications for a

Research Associate Position (Post-Doc) in Meteorology

The *Climate Monitoring and Diagnostics* group of the Hans-Ertel-Centre for Weather Research (HErZ) offers a new position starting as soon as possible. HErZ is a competence centre consisting of five research groups aimed at conducting basic research in tight collaboration with the German Meteorological Service (Deutscher Wetterdienst - DWD). The *Climate Monitoring and Diagnostics* group is based at the two universities of Cologne and Bonn situated in one of the most attractive regions in Germany due to a vivid cultural and international scene as well as the proximity to natural parks. With approximately 50,000 students, the University of Cologne is one of the largest universities in Germany and ranks among the Excellence Universities. It employs over 600 professors and 7,000 academic and non-academic staff.

The open position has the following research focus: **Impact of new observation systems on regional reanalysis** (see Project Description below for more details)**.**

From the future position holders, we expect an interest in:

- Reanalysis generation and application

- Ensemble based data assimilation

- Optimizing the use of renewable energies

- Remote sensing and new/unused meteorological observations

Applicants should have a PhD degree in meteorology or another relevant field of the natural sciences. To be successful, you need to be knowledgeable and/or experienced in

- the areas of numerical weather prediction, data assimilation, ensemble generation (application of meteorological data in renewable energies is a plus)

- advanced programming experience in shell scripts, Fortran90 and/or C, Python and/or R

- strong familiarity with UNIX or Linux operating systems and HPC environments

We expect a good command of written and oral English, the willingness to present research results at scientific conferences, and the ability to collaborate with others.

We offer you

- a diverse and fair working environment

- support in reconciling work and family life

- flexible working time models, full-time positions suitable for job sharing

- extensive advanced training opportunities

- occupational health management offers

- local transport ticket at a discount for UoC employees

The position is awarded for two years, after the successful completion of a 6-month probationary period. If the applicant meets the relevant wage requirements and personal qualifications, the salary is based on remuneration group TVL-13 of the pay scale for the German public sector. The University of Cologne promotes equal opportunities and diversity in its employment relations. Women are expressly encouraged to apply and given priority in accordance with the Equal Opportunities Act of North Rhine-Westphalia (Landesgleichstellungsgesetz – LGG NRW). We expressly welcome applications from individuals with severe disabilities or people of equivalent status. Severely disabled applicants of equal merit and qualifications will be given priority.

Interested candidates should send a complete application package (CV; motivation letter describing background, training and research interests matching the position; degree certificates; and contact information of two references) as a single PDF to Ulrich Löhnert (ulrich.loehnert@uni-koeln.de) until October 10, 2019.

Project description

The positions to be filled are all within a continuing project building upon the work and experience of the *Climate Monitoring and Diagnostics* group since the implementation of HErZ eight years ago. In the group, the COSMO reanalysis system was developed, two reanalysis data sets have been produced and exploited with respect to specific applications. In the current (third) phase of the Hans-Ertel-Centre, the group will develop an ultra-high-resolution reanalysis and assess its use in renewable energy applications in collaboration with the Cologne Energy Economics Institute, strengthening the group's expertise towards an interdisciplinary research focus of meteorology and economics. The overall goal of this position is to develop a tool to quantify the impact of a changing observing system on a high-resolution regional reanalysis. The regional focus will be on the Rhein-Ruhr Area (RRA), the most heavily populated area in Germany with a dense coverage of meteorological observations. Through close cooperation with DWD (headquarters Offenbach and regional administration Essen), the past and present status of the observation network in the RRA will be obtained. Ensemble Sensitivity Analysis (ESA) to estimate the potential impact of these observations on parameters relevant for renewable energy applications (i.e. hub-height wind and solar radiation) will be carried out. In addition, the successful candidate will develop a new framework for an Observation System Simulation Experiment (OSSE). The idea here is to characterize the improvements of a retrospective climate analysis system over the past decades due to including more sophisticated and advanced observation networks, i.e. with a higher spatial density and accuracy. In addition, the position holder will assess the potential benefits of applying novel ground-based observing systems with a focus on remote sensing of the atmospheric boundary layer by means of thermodynamic profilers (e.g. microwave radiometer, infrared spectrometer) and Doppler lidar.