The German Climate Computing Centre (DKRZ) is the central data processing facility for the German climate and Earth system modelling and is one of the leading facilities in this area. DKRZ operates supercomputers in the highest performance class, modern high-performance clusters and graphics systems as well as one of the largest data and archive systems worldwide. DKRZ participates in many national and international projects aiming to improve the infrastructure for climate modelling. Through its research group on scientific computing DKRZ is linked to the department of informatics of the University of Hamburg.

DKRZ invites applications for two Research Associates (m,f,d) within the research theme „High-Performance Computing and Data-Intensive Science“ of the excellence cluster CLICCS „Climate, Climate Change and Society“.

CLICCS is an ambitious research program at Universität Hamburg and its partner institutions. Funded by the German Research Foundation (DFG), it is part of Germany’s Excellence Strategy. The program aims to understand climate changes, taking into account internal variability, extreme events, and unexpected side effects, addressing the natural and social spheres as well as their interactions.

A focus of CLICCS is on research and development to meet the challenges arising from increasing computational requirements of climate research on the one hand, and bottlenecks limiting the efficiently scalable exploitation of high-performance computing on the other hand. Two top-level objectives in this respect are the conceptual improvements as well as development and application oriented evaluation of innovative methods in the areas of (i) climate model software engineering, especially for ICON (ii) Data Life Cycle Management Methods. The activities contribute to a “cross-disciplinary lab”, where CLICCS computer and data scientists collaborate with climate scientists and model developers.

We invite applications in these two areas:

**Topic 1: Climate model software engineering, especially for ICON**

Reference DKRZ 11

The goals of the particular position are

- Evaluation and application of a domain-specific-language (DSL) in order to maximize flexibility, programmability and performance portability to heterogeneous hardware solutions across different climate models.
- Investigate further approaches to the concept of separation of concerns for the efficient development of climate models. This includes also initiation of collaboration with other research projects in the area of software engineering.

**Specific Responsibilities:**

- Participate in the design and development of a high-level DSL for the ICON climate and weather model.
- Evaluate the usability of the DSL and the performance of the DSL-generated code for algorithms implemented in ICON
- Foster the dialogue between CLICCS domain scientists and computer scientists to establish cooperation for improving performance portability and maintainability of ICON

**Qualifications & skills:**

- A university degree, preferably PhD, in Computer Science, Applied Mathematics, Computational Physics/Engineering or related fields
- Basic knowledge about parser concepts and software engineering
- Solid knowledge of FORTRAN
- Basic knowledge of Python/C++
- UNIX/LINUX shell scripting languages
- In-depth knowledge of HPC environments and operation of high scaling applications
- Experience in complex software development and familiarity in software version control systems (preferably Git)
- Fluency in English (spoken and written)
- Capacity for teamwork in an interdisciplinary environment

For further information, please contact Dr. Joachim Biercamp (biercamp@dkrz.de).

Topic 2: Data Life Cycle Management Methods

Reference DKRZ 12

As part of CLICCS and as a communicative team member of the Data Management Department at DKRZ, you will take on a variety of data management tasks in the context of the interdisciplinary cooperation in CLICCS and increasing requirements with regard to data generation, storage and analysis:

- Optimization of research data management in CLICCS through collaborative development of sustainable concepts and concrete solutions.
- Transfer of the solutions into practice.
- Initiation of projects within the intersection of climate research and data sciences.

Qualifications & skills

- University degree, preferably PhD, in Geosciences, Computer Science, or related fields
- You have experience in the conception, realization and evaluation of climate model experiments and their interplay with data infrastructures
- Sound background in handling observational data
- You have good and proven knowledge in software development, especially Python
- Excellent verbal and written communication skills (German and English)
- Analytical and problem-solving skills
- Ability to get on with others and be a team-player
- Willing to travel for work purposes

For an informal discussion about the post, please contact Hannes Thiemann (Thiemann@dkrz.de)

What we offer

The positions are offered for two years with a possible extension up to six years. Payment will be in accordance with German public service positions (TVOeD), including extensive social security plans.
How to submit your application for this post

Please submit
• A letter of interest
• A detailed curriculum vitae
• Supporting material

as single pdf file indicating the reference to bewerbungen@dkrz.de

Deutsches Klimarechenzentrum GmbH - Bundesstraße 45a - 20146 Hamburg