Deutsches Klimarechenzentrum GmbH
Personalverwaltung Bundesstraße 45a 20146 Hamburg

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. We are hiring a

Scientific Programmer in the Field of High Performance Computing (all genders)

Within the research-project *Monsoon-2.0* the climate model ICON will be used to perform time-slice global storm-resolving (2.5 km) simulations of the boreal-summer monsoon. The simulations will mainly be carried out on the JUWELS Booster system, which is on number 7 of the Top500 list with the most powerful supercomputers worldwide and on systems operated by our Chinese project partners.

The challenge is to develop the most suitable parallelisation strategy for an architecture, which is based on heterogeneous CPU/GPU processors. The major bottleneck and sometimes the showstopper of high resolution climate simulations is the I/O. In order to achieve high performance with ICON it is essential to enable fast parallel I/O and an optimal MPI (Message Passing Interface) communication when using several thousands of MPI-Processes. Specific libraries for I/O (CDI-PIO) and MPI Communication (YAXT) have been developed at DKRZ for this purpose. Furthermore, post processing of large data sets is a not easy to overcome hurdle.

Responsibilities:

- Porting and optimizing of the I/O Library CDI-PIO and the Communication Library YAXT on heterogeneous HPC systems
- Enabling in-situ post-processing for large scale simulations with ICON

Qualifications:

- A university degree in Computer Science, Applied Mathematics, Computational Physics/Engineering or related fields with strong relation to scientific computing
- In-depth knowledge of programming in C/C++
- Solid knowledge of parallel programming with MPI/OpenMP
- Knowledge of programming with CUDA or OpenACC is beneficial
- fluent handling of UNIX/LINUX shell scripting languages
- Solid knowledge of HPC environments and operation of high scaling applications
- Experience in complex software development and familiarity in software version control systems (preferably Git)

Personal skills:

- Fluency in English (spoken and written)
- Capacity for teamwork in an interdisciplinary environment

We offer you the opportunity to work in a flexible academic environment, follow your own initiative, and build strong collaborations within DKRZ and with scientific partners. The position will start as soon as possible (preferably March 15, 2021) and the contract is initially limited for 2 years. Payment will be in

accordance with the German public service positions (TVöD according to the applicant's qualifications), including extensive social security plans. The conditions of employment follow those of the German civil service.

How to submit your application for this post
Please submit:

1) A letter of interest
2) A detailed curriculum vita
3) Supporting material

Please send your application as a single pdf file quoting the reference DKRZ42 to bewerbungen@dkrz.de

Deadline for applying
This vacancy has been opened February 15, 2021.
The screening of the applications will begin after February 28, 2021.

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