

The German Climate Computing Center (DKRZ) is one of the leading facilities for climate and Earth system modelling. DKRZ operates supercomputers in the highest performance class, modern high-performance clusters and visualization 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 look for a

## Scientific Programmer (m/f/d)

in the field of

## High Performance Computing

You will contribute to an exciting project that aims to port a

## Next Generation Climate Model

to one of the world's most

## Powerful Supercomputers

### Our offer:

We offer a challenging position at the interface of high performance computing and climate science. You will be based in Hamburg, but an internship of a few weeks or months in China (Wuxi or Beijing) might be envisaged. The contract is limited to 2.5 years. The salary will be according to your personal qualification based on German regulations for the Civil Service (TVöD). Starting date is October 2019 or later.

The research project Monsoon-2.0 is part of a cooperation of the BMBF (the German Federal Ministry of Education and Research) and MOST (the Chinese Ministry of Science and Technology). The central task is to port the German ICON model to the Chinese Sunway TaihuLight Supercomputer for the purpose of performing storm-resolving simulations of the boreal-summer monsoon.

With a peak performance of 125.4 Pflop/s, the Sunway TaihuLight system is currently the third-ranked system of the TOP500 list of the most powerful supercomputers worldwide. The specific challenge of this project is to exploit the most suitable parallelism for this architecture, which is based on heterogeneous many-core processors connected by a special network. Key components to achieve high performance with ICON are efficient on-chip thread-level parallelism of the code, fast parallel I/O, and optimal communication for very large number of MPI-processes.

### Your responsibilities:

- You will work on porting and optimizing ICON and related DKRZ-developed libraries to the Sunway TaihuLight System
- You will use OpenACC as well as software tools specific to the TaihuLight system
- As preparation you will familiarize yourself with the TaihuLight Hard- and Software environment

- You will interact with specialists in China, including a potentially longer visit to China.

#### **Your qualifications:**

- A university degree in Computer Science, Applied Mathematics, Computational Physics/Engineering or related fields
- Expert knowledge in parallel programming with MPI/OpenMP, in particular in FORTRAN
- Experience with OpenACC or other directive based approaches would be an advantage
- 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)

#### **Personal skills:**

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

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

The call is open until the position is filled. The review of applications will start on September 1<sup>st</sup>, 2019. Please submit your informative application containing a cover letter, detailed curriculum, and supporting material as pdf file via email to [bewerbungen@dkrz.de](mailto:bewerbungen@dkrz.de) using the identifier *DKRZ16*.