Job announcement

University of Bonn is offering a full-time position for an

Experienced Postdoc for the Coordination of the Simulation Laboratory Terrestrial Systems

in the framework of Geoverbund ABC/J

starting at the earliest opportunity

Geoverbund ABC/J pools and connects the expertise and resources of its geoscientific member institutes at the Universities of Bonn and Cologne, RWTH Aachen University and Forschungszentrum Jülich. The research focus of Geoverbund ABC/J is on the investigation of the dynamic Earth-human system. Together, researchers in the ABC/J region aim to identify and solve current global challenges in the fields of evolution of life and Earth, environmental dynamics, georesources management and geo-risk assessment. Furthermore, Geoverbund ABC/J is committed to the continuous progress of the ABC/J region by providing the best possible conditions for outstanding research and the promotion of young academics. As a mediator between science, politics and society, Geoverbund ABC/J strives to increase the visibility of the region's national and international reputation in the field of geoscience.

In 2012, Geoverbund ABC/J founded the centre of excellence for High-Performance Scientific Computing in Terrestrial Systems (HPSC TerrSys). The centre supports, coordinates and enables HPSC in geosciences within Geoverbund ABC/J and beyond. The open position is at the Simulation Laboratory Terrestrial Systems (SimLab TerrSys), which is a part of HPSC TerrSys and the Jülich Supercomputing Centre (JSC), operating one of the most powerful HPSC infrastructures in Europe. The Simulation Laboratories at JSC are domain-specific research units, acting as interfaces between the computational science communities and the HPSC resources at JSC.

SimLab TerrSys conducts HPSC in geosciences and contributes to an improved understanding and prediction of geophysical, hydrological, meteorological and bio-geochemical processes in terrestrial systems. The focus is on the development and application of highly efficient, parallel modelling tools, especially fully coupled terrestrial simulation platforms from groundwater into the atmosphere. These tools are used in applied research topics such as integrated terrestrial modelling with a focus on the water cycle, regional climate modelling, data assimilation, inversion of geophysical observations, transport processes, geothermal energy, and geodesy over a wide range of spatial and temporal scales.

Job description

- Coordination of and active participation in HPSC service and support, as well as research and development activities of SimLab TerrSys
- Close collaboration with HPSC TerrSys, JSC, and other SimLabs in the Computational Science Division and with JSC's cross-sectional groups (e.g., Performance Analysis, Application Optimization, Visualization)
- Facilitation of fluent communication between all HPSC activities and the research scientists involved in Geoverbund ABC/J; research in overlapping areas between HPSC and geosciences
- Participation in ongoing work, e.g. near real-time, fully coupled, ultrahigh-resolution forecasts, climate change simulations up to continental scales, as well as research on water cycle processes, land-atmosphere coupling, and groundwater hydrodynamics, as part of national and international projects and collaborations
- Setup, development, and extension of new and existing parallel scientific software tools, parameterizations, or processing chains, with a focus on two-way coupled high-resolution subsurface–land surface–atmospheric simulation platforms such as Terrestrial Systems Modelling Platform (www.terrsysmp.org); HPSC aspects include efficient, hybrid parallelizations, utilization of accelerators, scientific visualization, and future exascale applications
- Contribution to solutions for the big data challenges in geosciences, as well as the application and advancement of data assimilation techniques and data synthesis approaches; handling of a broad range of in situ and remotely-sensed measurements
- Testing and use of the latest (JSC) HPSC systems (including heterogeneous architectures) for a wide range of usage scenarios and numerical experiments, including porting, profiling, and tuning; development of standard implementations, optimum use cases; code maintenance; developments towards petascale applications

Job requirements

- A university degree in a geoscience discipline, computer science, physics, civil engineering, applied mathematics, or related fields with a doctoral degree and at least two years of experience as a postdoc, as well as relevant scientific publications
- Knowledge in the areas of meteorology, hydrology, numerical methods and especially the modelling of fluxes at compartmental interfaces is desirable
- Experience in HPSC and modelling, preferably in geosciences (e.g., atmosphere, hydrology, ocean, vegetation, or biogeochemical cycles)
- Proven experience in simulation code porting, profiling, and tuning; affinity to various aspects of highperformance computing
- Proven (parallel) programming skills with FORTRAN, and/or C/C++, and ideally also Python under Linux; experience in professional software development
- Ability to work both independently and collaboratively in an international, interdisciplinary team across institutes; very good communication and organizational skills; experience in supervision of research projects and technical staff
- Experience in scientific project acquisition and coordination
- Very good command of the English language

Job conditions
- Salary and social benefits in conformity with the provisions of the Collective Agreement for the Federal States (TV-L)
- Employment for a fixed term of two years in a full-time position with possible longer-term prospects
- Employment by the Meteorological Institute of the University of Bonn (MIUB)
- Main place of employment will be JSC on the campus of Forschungszentrum Jülich with a vibrant, international, and interdisciplinary working environment that is ideally situated between the cities of Cologne, Düsseldorf, and Aachen
- Participation in national and international conferences and workshops
- Opportunities for scientific and technical training conducted by international experts

Application & Contact

If you have any questions regarding technical issues, please contact the acting scientific coordinator of SimLab TerrSys, Dr. Klaus Görgen (k.goergen@fz-juelich.de), or Prof. Clemens Simmer (csimmer@uni-bonn.de). For queries concerning the general application process, please contact the coordinator of Geoverbund ABC/J, Dr. Daniel Felten (d.felten@fz-juelich.de). Please send your detailed application as one single PDF file with a maximum size of 5 MB to geoverbund@fz-juelich.de.

The University of Bonn is an equal opportunity employer.

The deadline for applications is 30.09.2016

Further information
www.hpsc-terrsys.de
www.meteo.uni-bonn.de
www.geoverbund.de