

The Helmholtz Centre Potsdam – GFZ German Research Centre for Geosciences is the national research centre for Earth sciences in Germany. With approx. 1280 employees, the GFZ is conducting interdisciplinary research on the “System Earth” and the influence of humans on the planet. As a member of the Helmholtz Association, it is part of Germany’s largest science organization. Section 2.6 “*Seismic Hazard and Risk Dynamics*” invites applications for a

PhD Position “Modelling of crustal stress” (m/f) Job Vacancy No. 0926

The crustal stress state is for the site selection process of a deep geological repository (DGR) for high-level nuclear waste a key criterion. Knowledge of the stress field is also essential for the understanding of the earthquake cycle and other underground usage such as deep geothermal systems or gas storage. However, stress data are quite sparse and unevenly distributed. Thus, the challenge is to derive from these data a continuous description of the 3D stress field and its spatio-temporal changes due to natural and induced processes. Our working group is an international key player in this research field and we seek for a motivated PhD candidate to strengthen our team and to further develop our tools and improve our understanding of crustal stress.

The PhD position is part of the BMWi project SpannEnD “*Spannungsfeld Endlager Deutschland*” with the Karlsruhe Institute of Technology KIT and the TU Darmstadt as partners where two complementary PhD positions will start as well. The project is integrated in our working group “*Analysis and modelling of crustal stress*” which is part of the GFZ section 2.6. Even though the general project context is the DGR site selection process, the work focusses on basic research to quantify the criticality of the crustal stress by means of 3D geomechanical-numerical models.

Your tasks:

- Set-up and testing of a geomechanical-numerical model workflow to bridge from borehole to regional scales
- Implementation of a semi-automatic model calibration procedure using stress magnitude data
- Development of a quality-ranking scheme for stress magnitude data from different methods
- Introduction of a quality-weight of the stress magnitude data that are used for model calibration
- Validation of the model workflow and quantify the model uncertainties
- Interpretation and publication of the results and presentations at international conferences
- Documentation and presentation of the results for the German regulator body (BfE in Berlin)

Your qualifications:

- Master’s degree (or equivalent) in Geophysics or Physics (or equivalent) is mandatory
- Experience in numerical simulation tools and programming skills (e.g. Python or C/C++) are of advantage
- Business fluent in German and fluent in English is essential

Starting date: as soon as possible

Fixed term: 3 years

Working hours: PhD is part-time 75% (currently 29.5 h/week)

Salary: The pay scale grouping will be into pay group EG 13 TVöD-Bund (Tarifgebiet Ost) provided that all tariff related, professional and personal requirements are met.

Location: Potsdam

You can expect a very diverse and challenging job in an international work environment that is characterized by exciting research projects. The compatibility of work and family life is of particular concern to the GFZ. Therefore, it offers the opportunity for flexible working time and workplaces. Moreover, there is a kindergarten located on the research campus.

The GFZ is a partner with Geo.X (www.geo-x.net), and as such it is well connected with other geoscience institutions in Potsdam und Berlin. Geo.X forms the largest regional cluster of geoscientific expertise in Europe and offers excellent opportunities for cooperation and development.

Please submit your application by **22nd June 2018** quoting the reference **No. 0926** via email to applications@gfz-potsdam.de. Please combine your application documents (letter of motivation, CV and certificates) into a single PDF file with a size of up to 3 megabytes.

Equal opportunity is an inherent part of our personnel policy. Therefore we are particularly welcoming applications from qualified women. Severely disabled persons will be given preferential treatment in the case of equal qualification.

We will retain your application documents for at least three months, even if the application is not successful. If you have any questions regarding this job offer, please feel free to call Ms Buge at +49 (0) 331-288-28878.

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