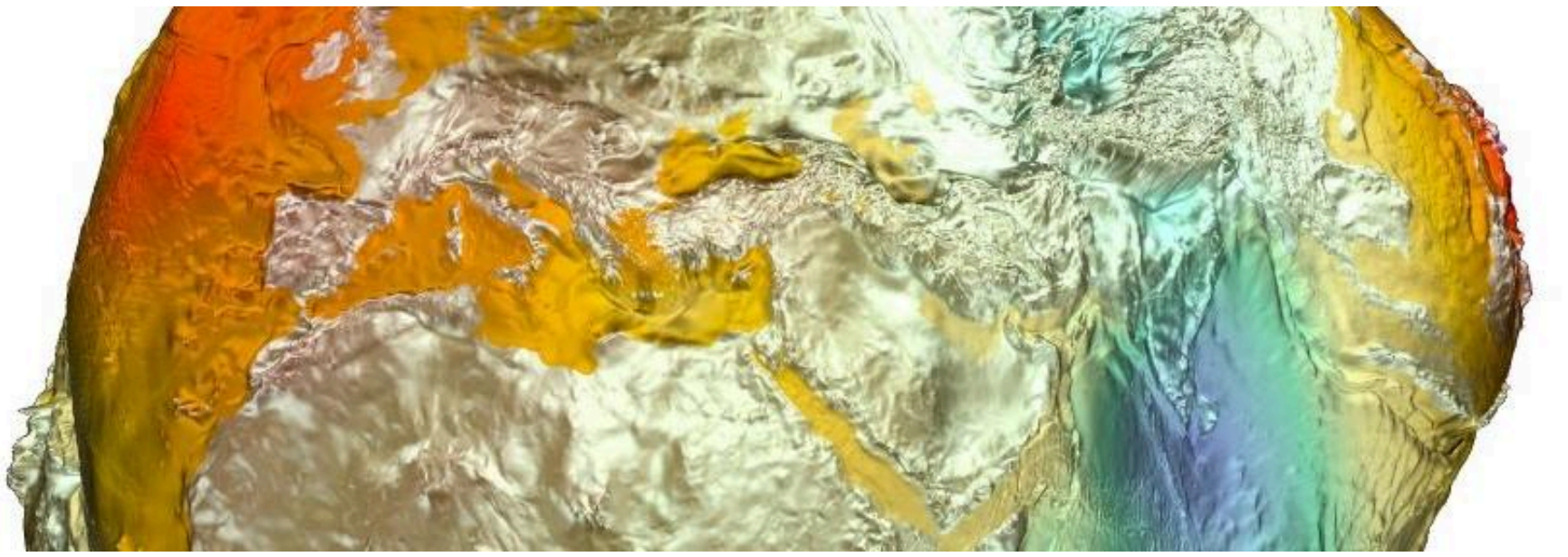
Research scientist (f_m_x) - Seismology



The GFZ Helmholtz Centre for Geosciences is one of the world's leading institutions in the field of geosciences. As part of the Helmholtz Association, Germany's largest research organisation, we address global challenges such as natural hazards, climate change and the sustainable use of resources. In doing so, we combine cutting-edge research with social relevance. Our international staff - around 1,200 employees and approx. 500 guests - work in a multidisciplinary way and with a unique infrastructure to research the dynamic processes of the Earth system. Our vision: "Taking the pulse of our Earth to safeguard a habitable planet."

For section 2.1 "Physics of Earthquakes and Volcanoes" (https://www.gfz.de/en/section/physics-of-earthquakes-and-volcanoes/overview)(department “Geophysics (https://www.gfz.de/en/geophysics)”), we are looking for a:

Research scientist (f_m_x) - Seismology

Reference Number 11691

Earthquakes induced by human activities, such as deep geothermal energy production, can cause ground shaking that raises concerns among local communities. Understanding earthquake source processes and predicting the resulting ground motions, including their uncertainties, are important for assessing seismic impacts and supporting transparent communication with stakeholders.

Within the BMWE-funded collaborative project "Seismological Analysis and Societal Relevance of Deep Energy Projects (SAURIER)", GFZ is responsible for the subproject "TRansparent Interpretation and Characterisation of Earthquake RAdiation Patterns through probabilistic moment TensOr inversion and PGV Simulations (TRICERATOPS)". We are looking for a motivated researcher with a strong background in seismology and experience in earthquake source analysis and seismic waveform processing.

The successful candidate will contribute to developing and applying probabilistic methods for earthquake source characterisation and physics-based ground motion modelling. The research will focus on quantifying the influence of earthquake source parameters and subsurface structure on predicted ground motions and their uncertainties, with the aim of estimating seismic impact zones.

Fraunhofer IEG coordinates SAURIER and brings together seismological and social science research to improve the assessment and communication of induced seismicity.

Your responsibilities:

- Analyse seismic waveform datasets and determine earthquake source parameters, particularly for small to moderate earthquakes, using probabilistic methods including uncertainty quantification
- Integrate earthquake source parameters and their uncertainties into physics-based ground motion simulations using numerical modelling tools such as Pyrocko and its Green's function modelling framework
- Investigate the sensitivity of predicted ground motions to source parameters, including focal mechanism, source depth and rupture characteristics, as well as subsurface structure
- Develop and validate probabilistic ground motion models for moderate earthquakes and contribute to the estimation of seismic impact zones
- Develop, test and document scientific software and reproducible analysis workflows
- Develop clear and accessible visualisations of earthquake source characteristics, probabilistic ground motion simulations and estimated seismic impact zones for different target groups, including scientists, authorities and the general public, in collaboration with social science partners at UFZ
- Collaborate with project partners and contribute to the interpretation and communication of scientific results
- Publish research results in peer-reviewed scientific journals and present findings at national and international conferences
- Contribute to project reports, meetings and scientific outreach activities

About You:

Essential Qualifications:

- A Master's degree (MSc) and a PhD in Earth Science, with a focus on seismology and geophysics
- Solid geophysical and seismological background

- Experience in local earthquake analysis, including moment tensor inversion
- Good programming skills in Python, experience in scientific data processing, and experience in developing, adapting and validating computational methods for seismological research, including the implementation of reproducible workflows in Python
- Familiarity with seismology toolboxes (e.g. Pyrocko, ObsPy) and visualisation tools (e.g. GMT, ParaView, QGIS)
- Experience in scientific research, demonstrated through a convincing and strong publication record, software contributions and other research outputs appropriate to career stage
- Good written and spoken English and the ability to communicate scientific results clearly
- Experience in collaborative and externally funded research projects

Desirable Qualifications:

- Experience in numerical seismic wave propagation or ground motion modelling
- Knowledge of probabilistic inversion methods, uncertainty quantification or sensitivity analysis
- Experience with induced seismicity and analysis of moderate earthquakes

What we offer:

- Ambitious and varied tasks in a dynamic and international research environment
- State-of-the-art equipment
- Public service benefits
- Extensive training opportunities
- Professional career advice offered by our in-house Career-Centre
- Flexible working hours and conditions
- Support with finding a good work-life balance offered by benefit@work
- Institute day-care centre on site



Start date: 1st April 2027
Fixed-term: 24 months
Salary: The position is classed as salary group 13 according to “TVöD Bund”. The salary group is determined on the basis of the Collective Wage Agreement and the respective personal qualifications.
Working hours: Part-time 50% (currently 19.50 h/week)
Place of work: Potsdam

Have we piqued your interest?

If so, we look forward to receiving your application by **9th December 2026**. Please use our online application form only.
Required documents: letter of motivation, CV, academic degree certificates/grades

The GFZ actively promotes diversity and equal opportunities. We explicitly welcome applications from all qualified individuals, regardless of ethnic and social origin, nationality, gender, sexual orientation and identity, religion/belief, age, and physical or neurodiverse abilities.

“Diversity in perspectives” is one of GFZ's core values. As an integral part of supporting diversity at our centre, we actively promote women in science and in leadership positions. To know more about our Diversity policies, contact the diversity team. If you need more information about our gender equality policies, please do not hesitate to contact our Equal Opportunities Officer (https://www.gfz.de/en/career/the-gfz-as-an-employer/employee-representation) and check our Equal Opportunities Plan & Cascade Model (https://www.gfz.de/en/career/the-gfz-as-an-employer/equal-opportunities).

We look forward to applications from people who enjoy working in diverse teams, where everyone feels respected and valued and can fully develop their own talents. Applicants with severe disabilities and equalised persons will receive preferential consideration if equally qualified.

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Data protection information for applicants (https://www.gfz.de/en/career/job-offers#c95430)

In case of any further queries regarding the field of activity, please contact Dr. Daniela Günther (mailto:daniela.guenther@gfz.de) via email. If you have any general questions about the application process, please contact our recruiting team at our phone number +49 (0) 331-6264-28787.