

GFZ

Helmholtz-Zentrum
POTSDAM

HELMHOLTZ-ZENTRUM POTSDAM
DEUTSCHES
GEOFORSCHUNGSZENTRUM

The Helmholtz Centre Potsdam - GFZ German Research Centre for Geosciences is the national centre for geosphere research. As a member of the Helmholtz Association (<https://www.helmholtz.de/en/>) we are part of the largest German scientific organization. With around 1,300 employees (including our guests) we develop a sound understanding of the systems and processes of the solid Earth as well as strategies and options for action to face global change and its regional impacts, to understand natural hazards and reduce associated risks, and to assess the influence of humans on the Earth's system. The German Research Centre for Geosciences (GFZ) hosts a vibrant, international research community with broad interests in earth surface and solid earth sciences, with strong connections to partner institutions focused on climate, ecological, marine, and polar research.

In Section 4.7, Earth Surface Process Modelling (<https://www.gfz-potsdam.de/en/section/earth-surface-process-modelling/overview/>) (Department 4 "Geosystems"), (<https://www.gfz-potsdam.de/en/section/earth-surface-process-modelling/overview/>) we are looking for a:

Postdoctoral researcher (m/f/x) – Co-evolution of life and landforms

Reference Number 4367

Project description:

There is now strong evidence for links between tectonic uplift, landscape evolution and evolution of life at the Earth's surface. Examples include the distribution of micro-endemism in the lemur population in Madagascar (Horvarth et al, 2008), or the evolution of biodiversity in the Amazon Basin in relation to the Andean uplift (Horne et al, 2010). Although much advance has been made in modelling landscape evolution and speciation in response to external forcings (mostly climate), few models exist that can predict the evolution of life on an evolving landscape. In the past four years, large datasets have been gathered on tectonic uplift of the Andes, the resulting landscape evolution and climatic response and the evolution of the biota in the Atacama Desert. Yet, few attempts have been made to quantify the links between these different parts of the Earth system and their co-evolution over the past 20 Myrs. We propose to synthesize these results by further developing and using a new speciation model that we have coupled to a landscape evolution model.

This project is part of a Collaborative Research Center (CRC1211) titled "Earth Evolution at the Dry Limit" between several German universities, including the University of Cologne (CRC lead institution), the GFZ German Research Center for Geosciences Potsdam (host institution for this project) and the University of Bonn (co-supervisor institution for this project). The CRC objectives are to study the mutual evolutionary relationships between Earth-surface processes and biota in arid to hyper-arid conditions, where both biota and Earth surface processes are severely limited, predominantly by the availability of water. The focus is on the Atacama Desert of South America and the Namib Desert of Southern Africa.

The post-doctoral position will be hosted at the GFZ in Potsdam in the Earth Surface Process Modelling (<https://www.gfz-potsdam.de/en/section/earth-surface-process-modelling/>) (ESPM) group of Jean Braun, where numerical models are developed and used to investigate a wide range of physical, chemical and biological processes and interactions occurring at the Earth's surface that are driven by tectonic processes and modulated by climate (<https://github.com/fastescape-lem> (<https://github.com/fastescape-lem>)). The ESPM section hosts approximately 15 researchers (PhD students, Post-docs and senior scientists) from diverse backgrounds and with varied research interests. The postdoc is also expected to collaborate with and visit (perhaps 2-3 times per year for several days) Dietmar Quandt's group in the Nees Institute for Biodiversity of Plants (<https://www.nees.uni-bonn.de/staff/pages/dietmar-quandt/>) at the University of Bonn, where a large fraction of the phylogenetic data has been generated.

Your responsibilities:

- to use coupled numerical models of life and landscape evolution to interpret (phylo-)genetic and taxonomic data from hyper-arid regions;
- to propose and test climatic and tectonic scenarios, based on



observational constraints on the aridification and uplift of the region;

- to further develop the models as needed to test and validate those scenarios;
- to collaborate with other members of the CRC 1211 and, in particular, with members of Dietmar Quandt's group in the Nees Institute for Biodiversity of Plants at the University of Bonn, where a large fraction of the phylogenetic data has been generated;
- to interact with other members of the Earth Surface Process Modeling Section at weekly group meetings and in other informal ways;
- to present results at scientific meetings and in publications in peer-reviewed journals



Your qualifications:

- a PhD in Biological Sciences or in Earth Sciences;
- demonstrable knowledge (and preferably research experience) in biogeography or in the use and interpretation of (phylo-) genetic and taxonomic data;
- experience in the use of numerical models;
- ability to use a programming language such as Python, MATLAB, C, C++ or Fortran
- familiarity with the timescales of geological, life and climate evolution;
- proven ability to work in a collaborative and multi-disciplinary environment;
- creativity and critical thinking skills and the ability to publish, as demonstrated by a record of original and innovative publications;
- capacity for international teamwork, and excellent communication skills;
- proficiency in spoken and written English.

Start date: 01/01/21

Fixed-term: 4 years

Salary: EG13 tbc

Working hours: 39; The position is, in principle, suitable for part-time employment.

Place of work: Potsdam

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
- working at the Albert Einstein science park on the Telegrafenberg in Potsdam
- good public transport connections
- Welcome Center providing help to newly appointed researchers

Did we pique your interest?

If so, we are looking forward to receiving your application by the **05/10/20**. Please use our online application form only.

Equal opportunities are an integral part of our personnel policy. We therefore very much welcome applications from qualified women. In the case of equal aptitude, severely disabled persons are given preferential consideration in accordance with the Code of Social Law IX.

Your personal data will be treated in line with Art. 6 (1b) and Art. 88 GDPR in conjunction with § 26 BbgDSG during the selection process. After the selection process has been concluded, your application documents will be deleted, in line with data protection regulation.

In case of any further queries relating to the role's responsibilities, please contact Prof. Jean Braun (<https://www.gfz-potsdam.de/en/staff/jean-braun/sec47/>) via email. If you have any general questions about the application process, please contact Ms Buge on +49 (0) 331 288-28787.