Phylogenetics and Earth system change

The International Masters Program *Earth System Dynamics and Evolution* funded by the Elite Network of the Bavarian State Ministry of Science and The Arts invites applications for a post-doctoral candidate position (Entgelt-/Bes.Gr. TV-L E13 or A13 100%, up to 5 years) at the Friedrich-Alexander University of Erlangen-Nuremberg (FAU), Germany.

The position will **start 1st October 2026** (fixed start date).

Research: *Integrating life and Earth system data through Bayesian phylogenetics*
This project will develop approaches to combining evidence across life and Earth systems using statistical phylogenetics as a framework. Evidence of long-term evolutionary processes can come from molecular sequence data, morphology, or fossil occurrences. Meanwhile, evidence of other Earth system processes can come from paleoclimate reconstructions or geochemical proxies. The uncertainties associated with divergent data sources are complex and pose challenges for their integration. We will apply new Bayesian phylodynamic models and explore strategies for propagating uncertainties across spheres, with a view to identifying key transitions in Earth systems through empirical case studies. Subsequent directions could include the use of machine learning approaches to enhance the use of additional evidence and approaches to modeling co-phylodynamics (the interactions between groups of co-evolving species).

Teaching: The candidate will be responsible for supporting training in statistics, programming, and the development of a new module in *Earth Systems Data Science*, together with the Department of Data Science at FAU. The candidate will teach up to 5 SWS (Semesterwochenstunden), approximately 3-4 contact hours per week during the semester. Candidates will also contribute, in line with career stage and interests, to broader program activities, including student admissions, shared infrastructure initiatives, and networking events.

Required skills:

- PhD in Biological, Ecology, Paleontology, Geology or a related discipline, with a focus on computational and analytical approaches
- A strong background in statistics
- Programming skills (R, Python, C++ or Java)

- Experience working with relevant empirical databases (e.g., NCBI, Paleobiology Database)
- Experience with high performance computing
- Affinity for interdisciplinary research questions
- Interest for understanding Earth System processes and their complex interactions
- Demonstrated capacity for independent research
- Willingness to conduct independent research and pursue a habilitation
- Good reporting and presentation skills
- Excellent level of written and spoken English
- Ability to work independently, to critically assess own results, and to cooperate within a wider research team across disciplines

Advantageous skills:

- Working knowledge of geochemistry or geochemical cycles
- Experience with Bayesian statistics, statistical phylogenetics, simulations or modelling uncertainties

The position is part of the International Master Program *Earth System Dynamics and Evolution* project (6 core funded post docs). Active participation and interaction in the joint research seminars, workshops, and annual research retreats is required. Proficiency in German is advantageous but not required, as the working language is English. However, we strongly recommend learning German for daily life (courses are available at FAU and other nearby institutions, e.g., VHS). The candidate will be affiliated with the FAU Professorship for Systems Paleobiology, which focuses on quantitative approaches to studying the evolution of life, combining evidence from biological and geological systems.

For your application, please send a single PDF to es-master@fau.de, as subject.
The PDF should comprise:

- Cover letter (indicating which project you are applying for, and stating your background and motivation for the project) (max. 1 page)
- CV, including a list of relevant publications (max. 3 pages)
- A short research and teaching concept (max. 2 pages)
- University degree certificates
- The contact details for potential references

Deadline for application: 09.04.26.

For further information on this subproject contact: Prof. Dr. Rachel Warnock, Professorship for Systems Paleobiology, FAU, e-mail: rachel.warnock@fau.de.