The Max Planck Institute for Biogeochemistry (MPI-BGC) in Jena is dedicated to interdisciplinary fundamental research in the field of Earth system sciences with a focus on climate and ecosystems. The internationally renowned institute, which currently employs around 230 people, will celebrate its 25th anniversary in 2022. Jena is known for high-tech industry, internationally renowned research institutions and a modern university, but it also has a beautiful natural setting in the green Saale valley with steep limestone slopes. The city of Jena has an active student scene and a diverse cultural life. For the department of Biogeochemical integration we are looking for a Postdoctoral Researcher (m/f/d) (Full time, initially until April 30th, 2024 with possibility of extension)

Background and position description:

The Max Planck Institute for Biogeochemistry in Jena has a vacancy for a Postdoctoral Researcher (m/f/d) with strong scientific programming skills in the Department of Biogeochemical Integration. The position is primarily assigned to the Atmosphere-Biosphere Coupling, Climate and Causality Research Group. The group focuses on the feedbacks and causal links between the terrestrial biosphere and atmosphere in terms of carbon, water and energy fluxes and how this coupled system changes with increasing CO₂. We use models of varying complexity (conceptual models to fully coupled Earth system models) and combine our research with statistical analysis and modelling (machine learning to hybrid modelling) based on various Earth observation data streams. This position will mainly support the activities of the group related to the ongoing projects in the NFDI Consortium NFDI4Earth and the ERC Synergy Grant USMILE. The aim of this work is to build on the Earth System Data Lab (ESDL) and use statistical learning to isolate and attribute forced signals in key Earth system variables to various external drivers. This observation-based driver attribution work will provide the basis for data-driven constraints and parametrizations in our developments of hybrid Earth system models.

Your tasks:

- Independent research within the BGI department on atmosphere-biosphere interactions, the global carbon and water cycles, and short-term fluctuations and long-term changes in climate
- Developing and integrating a machine learning-based workflow for driver assignment in Earth observation data streams (ESDL) in Julia and/or Python
- Contributing to the development of data-driven constraints and machine-learned parametrizations based on Earth observations for application in complex numerical models (e.g., ICON-ESM)
- Authoring and contributing to publications by planning, conducting, and analyzing model experiments and observational data streams

Your profile:

- Successfully completed scientific university studies in the natural sciences, geosciences, physics, meteorology, mathematics, computer science, informatics or related fields
- PhD degree with a clear Earth system science connection and modelling or machine learning. Basic understanding of terrestrial biogeochemical cycles and atmosphere-biosphere interactions
• Excellent knowledge of at least one high-level programming language, *ideally object-oriented Fortran*, and for statistical analysis and machine learning, *ideally Python or Julia*. Further knowledge in software and scripting languages for process execution and automation (e.g. Bash) and CDO are an advantage

• Practical experience in the use of **HPC clusters**, such as the system of the German Climate Computing Centre or comparable systems, and the **development and application of complex numerical models**, such as DGVMs, GCMs or ESMs (ideally ICON)

• Ability to work independently as well as in a team

• Very good English skills, both written and spoken

**Our offer:**

• Research and collaboration in a leading international research institute

• Participation in worldwide collaborations and international conferences

• Diverse opportunities for personal development

• Flexible working hours and offers to balance work and family life, as well as plannable career paths

The full-time position as Postdoctoral Researcher (m/f/d) is to be filled as soon as possible. Part-time work is possible in principle. The position will be evaluated and graded following the collective agreement according to TVöD Bund; in addition, we will provide a pension plan based on the public service (VBL).

The Max Planck Society (MPS) strives for gender equality and diversity. The MPS aims to increase the proportion of women in areas where they are underrepresented. Women are therefore explicitly encouraged to apply. We welcome applications from all fields. The Max Planck Society has set itself the goal of employing more severely disabled people. Applications from severely disabled persons are expressly encouraged.

**Your application:**

Are you interested? Please contact Dr. Alexander Winkler ([awinkler@bgc-jena.mpg.de](mailto:awinkler@bgc-jena.mpg.de)) for any open questions. Please send us your application with cover letter, curriculum vitae as well as names and contact information of two references summarised in a PDF file (max. 10 MB) by **March 15, 2022**, quoting the reference number **08/2022** by e-mail to [bewerbung@bgc-jena.mpg.de](mailto:bewerbung@bgc-jena.mpg.de) or to the

Max-Planck-Institut für Biogeochemie  
Personalbüro: Kennwort “PostDoc”  
Hans-Knöll-Straße 10  
07745 Jena

We kindly ask you not to submit copies of your application documents only, as your documents will be destroyed in accordance with data protection regulations after completion of the application procedure.

We look forward to receiving your application!