

The MARUM - Center for Marine Environmental Sciences at the University of Bremen is looking for a

**Postdoctoral Research Scientist (f/m/d)
on Climate Modelling and Intercomparison German pay scale: E13 TV-L (100%)**

in the framework of the DFG funded Transregional Collaborative Research Centre TRR 181 “Energy Transfers in Atmosphere and Ocean”, project S3:” Climate Model Intercomparison”. The position will be filled as soon as possible. The contract ends at the end of the project on 30 June 2028 (according to §2 WissZeitVG).

The position is located at the Faculty 1 (Physics/Electrical Engineering), Institute for Environmental Physics (IUP) in the Department of Climate Modelling (<https://www.iup.uni-bremen.de/deu/forschung/climate-modelling/>) led by Prof. Dr. Veronika Eyring (<https://www.pa.op.dlr.de/~/VeronikaEyring/>). It will be performed in close cooperation with the Center for Marine Environmental Sciences (MARUM) of the University of Bremen and the Center for Earth System Research and Sustainability (CEN), Institute of Oceanography at the University of Hamburg.

Description

Energetic inconsistencies in present climate models feature errors of the same magnitude as the energy imbalance of Earth's climate system due to anthropogenic greenhouse gas emissions. This leads to biases that limit the models' ability to project climate relevant physical processes. The collaborative research centre TRR 181 “Energy Transfers in Atmosphere and Ocean” aims to address these shortcomings by deepening the physical understanding of energy transfers between the main dynamical regimes, i.e., geostrophic motions, gravity waves, and turbulence.

The successful candidate will particularly contribute to the synthesis project S3 on the analysis of the impact of parameterisations and numerical schemes developed within TRR 181. The successful candidate will evaluate the project models ICON and IFS-FESOM in comparison to Earth observations and other models participating in the Coupled Model Intercomparison Project (CMIP), with a focus on assessing improvements in the newly developed parametrizations and numerical schemes of the project. Historical and future simulations in addition to the Diagnostic, Evaluation and Characterization of Klima (DECK) experiments will be performed and analysed. The successful candidate will become part of the development consortium of the Earth System Model Evaluation Tool (ESMValTool, <https://esmvaltool.org/>).

Field of activity:

The department of Climate Modelling of the Institute of Environmental Physics at the University of Bremen invites applications for a new **Postdoctoral Research Scientist position** in the field of **Climate modelling and intercomparison**. The successful candidate will be responsible for tasks related to climate model intercomparison within the TRR 181 synthesis project S3 in close cooperation with the Center for Earth System Research and Sustainability, Institute of Oceanography at the University of Hamburg (Dr. Friederike Pollmann) including frequent visits there. The tasks include:

- Conceptual preparation and execution of climate model simulations for the intercomparison of ICON and IFS-FESOM including various ICON configurations (e.g. TRR-ICON, ICON-XPP, ICON-ML)
- Application of diagnostic tools, in particular ESMValTool, to evaluate the performance of core TRR 181 parameterisations in coupled climate simulations in ICON and IFS-FESOM in different climate states

- Development and application of innovative diagnostics (including machine learning diagnostics) for the comprehensive evaluation of different subgrid-scale parametrizations and numerical schemes
- Assessment of the TRR 181 project models in comparison to Earth observations and other CMIP models
- Developments for efficient use of km-scale and Earth system model data in ESMValTool.
- Technical development of ESMValTool
- Further development of automated tuning methods with machine learning procedures and tuning of the climate model ICON (atmosphere only and coupled simulations)
- Contribution to the project synthesis and summary of TRR 181's impacts on model quality for the wider scientific community
- Documentation and software as open source
- Preparation of project reports, computing time applications and reports, and participation in project meetings and teleconferences
- Presentation and publication of scientific results
- Support in the supervision of young scientists, PhD and Master students
- Support in the acquisition of third-party funding including monitoring funding opportunities,
- Support in writing third-party funding applications
- Support of the application and recruitment process for new employees

Requirements

- Completed scientific university studies (Master's degree/university diploma) in physics, physical oceanography, meteorology, data science, computer science or similar fields
- PhD in physics, physical oceanography, meteorology, data science, computer science or similar fields
- Excellent programming skills and demonstrated skills in scientific computer programming
- Experience in working with climate model data and large data sets
- Excellent written and verbal communication skills
- Applicants should be proficient in English, and enjoy working in an international and interdisciplinary team
- Readiness to join in-person meetings with our collaborators in Bremerhaven and Hamburg
- Enthusiasm, motivation, and creativity

Additional (desired) skills:

- Experience in Earth system modelling, parameterisation and climate science
- Experience in using high performance computer systems

Your Benefits

At the "Climate Modelling" department we provide excellent facilities with opportunities to work with world-renowned experts in the field of Earth system modelling and machine learning. The department develops innovative methods, including machine learning techniques to improve Earth system models and their evaluation with observations with the aim to better understand and project climate change.

MARUM (<http://www.marum.de>) has developed into an internationally recognized centre for marine research with a focus on the geosciences, anchored at the University of Bremen. MARUM aims to support its PostDoc scientists in their professional development and personal growth in order to advance their independent research as well as their professional and academic careers (<https://www.marum.de/en/education-career/postdocs.html>).

The Climate Modelling" department is strongly linked to international research activities within the World Climate Research Programme (WCRP), with substantial contributions particularly to the Coupled Model Intercomparison Project (CMIP), and contributes regularly to international climate of the Intergovernmental Panel on Climate Change (IPCC). The Postdoc can benefit from a dynamic group and close collaboration with the Center for Earth System Research and Sustainability, Institute of Oceanography at the University of Hamburg as well as the TRR 181 network. The successful candidate will also be a member of the project's research training group ENERGY (funding by DFG pending), which connects the participating universities and research institutes and provides dedicated training courses, ample opportunity for (international) networking, and a mentoring program to support career development. The TRR 181 is committed to reconciling family commitments with an academic career and fosters a flexible, open and tolerant working environment.

General Information:

Open to unconventional approaches in research and teaching, the University of Bremen has retained its character as a place of short distances for people and ideas since its founding in 1971. With a broad range of subjects, we combine exceptional performance and innovative potential. As an ambitious research university, we stand for research-based learning approaches and a pronounced interdisciplinary orientation. We actively pursue international scientific cooperation in a spirit of global partnership.

Today, around 23,000 people learn, teach, research and work on our international campus. In research and teaching, administration and operations, we are firmly committed to the goals of sustainability, climate justice and climate neutrality. Our Bremen spirit is expressed in the courage to dare new things, in supportive cooperation, in respect and appreciation for each other. With our study and research profile and as part of the European YUFE network, we assume social responsibility in the region, in Europe and in the world.

The university is family-friendly, diverse and sees itself as an international university. We therefore welcome all applicants regardless of gender, nationality, ethnic and social origin, religion/belief, disability, age, sexual orientation and identity.

As the University of Bremen intends to increase the proportion of female employees in science, women are particularly encouraged to apply.

Disabled applicants will be given priority if their professional and personal qualifications are essentially the same.

Contact:

Dr. Katja Weigel weigel@iup.physik.uni-bremen.de and Dr. Friederike Pollmann friederike.pollmann@uni-hamburg.de

Please send your application (Cover letter, CV, at least two letters of recommendation and copies of your degree certificates) with reference to **job advertisement number A003-24** by **31 July 2024** as a **single PDF** file by e-mail to bewerbung-A00324@marum.de

or by mail to

Universität Bremen
Institut für Umwelphysik
Sekretariat „Klimamodellierung“
Frau Sandra Smit
Otto-Hahn-Allee 1
28359 Bremen

We kindly ask you to send us only copies (no portfolios) of your application documents, as we cannot return them. They will be destroyed after the selection process has been completed. Any application costs cannot be reimbursed.