



**ALFRED-WEGENER-INSTITUT**  
HELMHOLTZ-ZENTRUM FÜR POLAR-  
UND MEERESFORSCHUNG



The Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research (AWI) is a member of the Helmholtz Association (HGF) and funded by federal and state government. AWI focuses on polar and marine research in a variety of disciplines such as biology, oceanography, geology, geochemistry and geophysics thus allowing multidisciplinary approaches to scientific goals.

## **PostDoc (m/f/d) "Process-oriented analysis of high-resolution ICON simulations in the Arctic"**

### **Background and Tasks**

The section Atmospheric Physics at the **Alfred Wegener Institute (AWI) in Potsdam, Germany**, invites applications for a **PostDoc position** (m/f/d) funded within the project "Synoptic events during MOSAiC and their Forecast Reliability in the Troposphere-Stratosphere System (SynopSys)" by the German Federal Ministry of Education and Research (BMBF). Within this project, AWI together with the collaboration partners (University of Bremen, German Weather Service DWD) aim to evaluate and enhance to the weather predictive capability in the Arctic.

Specifically, the **PostDoc project** at AWI is about:

### **Process-oriented analysis of high-resolution ICON simulations in the Arctic**

The overarching objectives of SynopSys are to evaluate and enhance the predictive capability of ICON-NWP (ICOsahedral Nonhydrostatic Numerical Weather Prediction model) over the Arctic region by utilizing the unique measurements of synoptic processes and events during the MOSAiC expedition (<https://mosaic-expedition.org/>) and an in-depth process-oriented analysis of synoptic events.

Focus of the PostDocs research will be an assessment of selected synoptic events during MOSAiC, such as occurred cyclone events. A special emphasis is on the identification and understanding of the (thermo-)dynamical mechanisms related to the synoptic event development. This includes the analysis of contrasting cases in terms of the season (winter vs. summer events), location/surface condition (events over the central Arctic vs. the marginal ice zone), and event characteristics (short vs. extended duration/life time, normal vs. extreme cyclone). The key tool for this work will be simulations with the ICON-NWP model applied as limited area model over the Arctic. A high resolution down to ca. 3 km is envisaged. Sensitivity studies will be performed with respect to the resolution and changes in parametrizations. Potential candidates for the latter are cloud microphysics, vertical stability or surface turbulent fluxes. The modeling work is embedded in a corresponding analysis of MOSAiC observations and ERA5 reanalysis.

## Tasks

Overall, the objectives of the work include:

- selection and observational-based analysis of synoptic event cases,
- performance and evaluation of the ICON-NWP model applied on an Arctic-focussed domain,
- analysis and sensitivity studies to clarifying the mechanisms behind the synoptic event development.

## Requirements

- PhD degree in meteorology, physics, or related fields. Experience in climate/numerical modelling and working with reanalysis and climate model data is required.
- A good knowledge in climate physics and dynamics with a focus on the atmosphere is expected.
- Good skills in statistical data analysis and scientific programming (R, Python, Fortran, C, Matlab, or similar) are required.
- Experience with Unix-like operating systems is an advantage.
- Good English language skills are expected.
- You are expected to disseminate results on international conferences and in leading scientific journals.

## Further Information

For further information, please contact **Dr. Annette Rinke** (Annette.Rinke@awi.de; +49(331)288-2130).

This is a full-time position, limited to 2 years, starting July 1st, 2021. It is also suitable for part-time employment. The salary will be paid in accordance with the Collective Agreement for the Public Service of the Federation (Tarifvertrag des öffentlichen Dienstes, TVöD Bund), up to salary level 13. The place of employment will be **Potsdam**.

Postdocs have to register with AWI's postdoc office [PROCEED](#), thereby gaining access to a set of tailor-made career development tools.

## The AWI is characterised by

- our scientific success - excellent research.
- collaboration and cooperation - intra-institute, national and international, interdisciplinary.
- opportunities to develop – on the job, aiming at other positions and beyond AWI.
- a culture of reconciling work and family – an audited and well-supported aspect of our operation
- our outstanding research infrastructure – ships, stations, aircraft, laboratories and more.
- an international environment – everyday contacts with people from all over the world.
- having an influence – fundamental research with social and political relevance
- flat hierarchies – facilitating freedom and responsibility
- exciting science topics, with opportunities also in technology, administration and infrastructure

Equal opportunities are an integral part of our personnel policy. The AWI aims to increase the number of female employees and therefore strongly encourages qualified women to apply.

Disabled applicants will be given preference when equal qualifications are present.

The AWI fosters the compatibility of work and family in various ways and has received a number of awards as a result of this engagement.

**We look forward to your application!**

Please forward your application by **May 5<sup>th</sup> 2021** exclusively online.  
Reference number 21/78/D/Kli-b

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