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.

PhD position "Methane Hotspots? Bridging scale differences to quantify emissions from thawing permafrost" (m/f/d) – Beschreibung

Background

Permafrost thaw with ongoing climate warming destabilizes formerly frozen organic matter, making large stocks of permafrost soil C vulnerable to emission as the greenhouse gases carbon dioxide (CO_2) and methane (CH_4). In this project we aim to reconcile the results of laboratory incubations (more warming, more greenhouse gas production) and field measurements (hotspots, bright spot and not-spots under same conditions) by testing the roles of biogeochemical factors (such as plant-soil interactions) that operate between these scales and of geological and landscape factors across scales. By combining observations, laboratory experiments, and state-of-the-art analytical techniques, we can understand the controls and rates of permafrost C emissions from permafrost thaw in Arctic landscapes.

Tasks

- **Quantify CH_4 emissions across tundra landscapes** along the upland-tundra-to-coastal gradient and across multiple transects of the Arctic tundra landscape **using field chamber measurements,** collecting ancillary data in order to extrapolate CH_4 fluxes in time and space **using process-based modelling**;
- Quantify the contribution of **old permafrost carbon** vs. recent plant carbon inputs to CH_4 emissions from permafrost thaw and predict changes in CO_2 and CH_4 emissions in response to thawing permafrost in tundra landscapes using **laboratory experiments**, radiocarbon dating, and modelling;
- **Bridge scales** between potential greenhouse gas production (from laboratory incubations) and observed emissions (from field measurements) **by doing intermediate-scale, whole-soil-column laboratory experiments,** multiple transects with contrasting landscape factors, process-based modelling, and radiocarbon analysis;
- Quantify controls on C production and emission from permafrost thaw including **substrate quality and microbial community composition.**

Requirements

- Master's degree in geosciences or related topics
- Extensive knowledge in biogeochemistry, preferably in Arctic settings
- Experience conducting field work
- Background in carbon cycle and gas flux measurements
- Experience in data analysis
- Good skills in written and spoken English

Further Information

For further information, please contact **Dr. Claire Treat** (claire.treat@awi.de; +49(331)288-2136).

The position is limited to 3 years. 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 (66%)**. The place of employment will be **Potsdam.**

All doctoral candidates will be members of AWI's postgraduate program POLMAR or another graduate school and thus benefit from a comprehensive training program and extensive support measures.

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 submit your application, including (1) a letter of motivation, (2) a CV and copies of relevant certificates (master's degree; training) and (3) two letters of recommendation or the contact information of two references, by **February 21st, 2022**. Electronic applications only.

Interviews of selected candidates are planned between **April 25 and 29, 2022** (unless otherwise specified) **and expected to be online.**

Reference number 22/15/G/INSPIRES-b.

Apply here