

## Employment of a researcher

### scientific position: assistant professor (PostDoc) at the Department of Polar and Marine Research

#### I. General information:

1. City: Warsaw (with fieldwork in Spitsbergen)
2. Position: Post-Doc
3. Full-time employment
4. Discipline: Earth and related environmental sciences
5. Number of vacancies: one for 12 months
6. Salary: PLN 10 000.00 gross / month (which is approximately PLN 5 900.00 net / month\*)
7. Posted: December 2<sup>st</sup>, 2022
8. Expires: December 18<sup>th</sup>, 2022
9. Keywords:  
polar research, oceanography, glaciology, geochemistry,  
biogeochemistry, ecology, climate change

\* According to the National Science Centre (NCN) of Poland a person hired at the post-doc position may not receive any other remuneration from the NCN funds, and may not be employed under another contract, including from an employer based outside Poland, during the employment period

#### II. Requirements for candidates:

Ph.D. in each of the scientific disciplines in the field of exact and natural sciences or in the field of engineering and technical sciences (e.g. oceanography, geophysics, physics, biology, chemistry, geography, engineering, technology)

\* A post-doc type post is a full-time post, scheduled by the project's principal investigator for a person who has been conferred a Ph.D. degree in the year of employment in the project or within 7 years before 1 January of the year of employment in the project. This period may be extended by a time of long-term (in excess of 90 days) documented sick leaves or rehabilitation leaves granted on account of being unfit to work. In addition, the period may be extended by the number of months of a child care leave granted pursuant to the Labour Code and in the case of women, by 18 months for every child born or adopted, whichever manner of accounting for career breaks is preferable.

#### III. Job description:

Person employed at the post-doc position will participate in research activities carried out by the Department of Polar and Marine Research of the Institute of Geophysics of the Polish Academy of Sciences under the research projects:

***"RAW - Retreat And Wither" - What is the influence of glaciers recession from tidewater to land-based on the marine biological production and the biogeochemistry in the Arctic?\**** contract no UMO-2019/34/H/ST10/00504 as part

**of the GRIEG program. Project financed under the EEA and Norway Grants for 2014-2021.**

***The scope of tasks provided for the employed person:***

- analysis and modeling of the fresh water, sediment and nutrient supply from land (glaciers, rivers) to fiord;
- participation in the preparation and implementation of the project fieldwork;
- participation in the preparation of scientific publications and conference talks/posters;
- presentation of the results of the project at national and international conferences;
- scientific development through participation in workshops and training;
- participation in the preparation of metadata and measurement data for the database of the Institute of Geophysics Data Portal and other data repositories;
- taking care of the research equipment, including planning and preparation for the purchase of new equipment and any constructions that extend the possibilities of its use;
- participation in the scientific life of the Institute (e.g. seminars, readings, lectures);
- participation in educational activities carried out by the Institute and dissemination of the project results in media outlets and social networks;

The work will be carried out under the supervision of researchers from the Institute of Geophysics Polish Academy of Sciences, Institute of Oceanology Polish Academy of Sciences, and Western Norway University of Applied Sciences.

**\*Project summary**

Productivity of marine ecosystems is an important factor conditioning element and organic matter cycling on Earth. It also has the potential to influence the composition of the atmosphere and thus to shape our climate. The world's oceans are a great source of O<sub>2</sub> and sink for atmospheric CO<sub>2</sub> because they absorb about 22% of anthropogenic CO<sub>2</sub> emissions and therefore limit global warming and all its consequences. The CO<sub>2</sub> uptake and O<sub>2</sub> emission by the oceans are to large degree propelled by the so-called "biological pump". This typically causes surface seawater to be oversaturated with O<sub>2</sub> and undersaturated with CO<sub>2</sub> during productive periods, which in turn drives the gas exchange through the air-sea interface. The Arctic Ocean, due to its relatively high productivity and low water temperatures enhances CO<sub>2</sub> solubility, and is responsible for as much as 5-14% of the global CO<sub>2</sub> uptake by marine regions. This makes the Arctic marine ecosystems important components in the global carbon cycle. Recent findings show that Arctic fjords are especially effective in absorbing atmospheric CO<sub>2</sub>. The biogeochemistry of the fjord systems is, however, very complex and not yet fully understood. The great unknowns that remain include the effect of glacial retreat on the CO<sub>2</sub> budget of coastal waters. Climate change is disproportionately strong in the Arctic, which is the most rapidly warming region on Earth. One of the observable consequences of the transformation of the Arctic environment is the rapidly receding glaciers, which are leaving behind new bays. Due to glaciers calving, submarine melting and drainage of meltwater through glacial outflows, glaciers are recognised as the main source not only of freshwater supply into the fjord, but also mineral, organic matter and nutrients. It is worth mentioning that the exchange of this with the fjord main basin and open sea can be restricted by bay geometry and bottom morphology. In such situations, transport of nutrients to the open sea is limited. All nutrients have in the past been argued to affect marine primary productivity in the areas where there are tidewater glaciers.

However, there is a growing body of evidence suggesting that deep water upwelling at the terminus of tidewater glaciers causes the most important increases in primary production. These deep waters are usually rich in nutrients, including nitrogen, the most common productivity-limiting nutrient in the Arctic. As a result, marine primary (algal blooms) and secondary production (high fish catch) increase in front of tidewater glaciers. The increased primary productivity in coastal waters may also create an important and underappreciated negative feedback following CO<sub>2</sub> drawdown via photosynthesis. However, the opposite effect has been observed near the land-based glacier inputs, where low nitrogen availability in meltwater limits the productivity. Furthermore, sustained glacier recession will change the glacial regime from predominately tidewater to land-based. The current oceanographical, sedimentological, and biogeochemical conditions will, therefore, adopt more characteristics of land-based glaciers and non-glacial inputs. This, in turn, may alter the total nutrient flux supplied to euphotic zone (either directly via runoff or indirectly via reduced circulation driven by buoyant upwellings in front of tidewater glaciers). Therefore, it remains uncertain how the marine ecosystem productivity will respond to future changes in the Arctic.

**IV. Requirements for candidate:**

- authorship of publications in the field of Earth and related environmental sciences (e.g. oceanography, sedimentation, glaciology, hydrology, climate change, polar research);
- experience in using software for data analysis (e.g. Matlab, Python) and GIS (e.g. ArcGIS, Global Mapper);
- experience in field measurements in polar, glaciers and/or mountainous conditions;
- certificates or licenses confirming additional skills that are useful during fieldwork (e.g. boat handling, sailing, SCUBA diving, mountain/cave exploration, operating drones) will be considered as a plus;

**V. Required documents:**

1. document stating that you have obtained a master's degree (in Polish or English),
2. document stating that you have obtained a Ph.D. (in Polish or English)\*,
3. CV with special emphasis on scientific achievements\*
4. other documents relevant to the case (at the discretion of the candidate)

Application documents should be sent (date of receipt) to the email address: [kariera@igf.edu.pl](mailto:kariera@igf.edu.pl)

**\* Please include the clause in the CV**

I agree to the processing of personal data contained in my job offer for the needs necessary to carry out the recruitment process carried out by the Institute of Geophysics Polish Academy of Sciences with its registered office at 64 Księcia Janusza, 01-452 Warsaw, Poland, in accordance with art. 6 par. 1 lit. a Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC (general data protection regulation). At the same time, I consent to the processing of my personal data for the purposes of future recruitment.

**VI. Date of employment:**

Employment from February/March 2023 for a total period of 12 months.  
Please be aware that a 3-month trial period applies.

VII. **Working conditions:**

- work in a dynamically developing group of researchers;
- access to modern measuring equipment;
- implementation of fieldwork in polar areas;
- participation in interdisciplinary research conducted in broad national and international cooperation;
- the possibility of scientific development;
- social benefits in accordance with the regulations at the Institute of Geophysics Polish Academy of Sciences;