



Międzynarodowa Środowiskowa Szkoła Doktorska
przy **Centrum Studiów Polarnych**
w Uniwersytecie Śląskim w Katowicach

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No. of PhD project: IEDS/2023/IO/A

Title of PhD project: Determination of the water column and sediment nitrogen removal pathways in the Baltic Sea

The leading unit: Institute of Oceanology Polish Academy of Sciences

Requirements:

1. MSc degree in geochemistry, chemistry or related disciplines.
2. Experience in laboratory work and chemical analyses
3. Very good written and spoken English.
4. High motivation for scientific work.
5. Experience in field research and research cruises, public presentation of research results and writing of scientific articles will be appreciated.

Tasks description:

1. Literature review
2. Analyses of water and sediments samples
3. Interpretation of data
4. Participation in the research cruises
5. Determination of the rates of nitrogen removal from water column of the Baltic sea
6. Determination of the rates of nitrogen removal from the sediments of the Baltic Sea
7. Determination of the main factors influencing the nitrogen removal process
8. Preparation of the scientific articles
9. Participation in the laboratory meetings, project meeting, scientific international conferences

Summary of a doctoral project:

Denitrification and anammox are the major nitrogen-removal pathways in the water column and sediments in the Baltic Sea, yet denitrification rates are usually higher than anammox rates. Both processes depend on the oxygen availability. Recently, it has been postulated that the nitrogen-removal via sedimentary denitrification is not high enough to balance all nitrogen inputs. The situation might become worse if the extension of the anoxic bottom areas continues. It is unknown whether the pronounced increase of water column denitrification will be high enough to compensate for the reduction of nitrogen-removal via sediments. As



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denitrification depends on the substrate availability, water column denitrification will change seasonally due to variable supply of e.g. organic matter, iron, sulphur compounds, etc. The main aim the doctoral project is to determine the rates of nitrogen removal from water column of the Baltic sea; determine the rates of nitrogen removal from the sediments of the Baltic Sea; determine the main factors influencing the nitrogen removal process

Other information:

The work will be carried out under supervision of: dr Beata Szymczycha, beat.sz@iopan.pl, Institute of Oceanology Polish Academy of Sciences

Secretary of the IEDS Recruitment Committee: +48 32 3689 380, e-mail: polarknow@us.edu.pl
Information on the IEDS admissions: https://www.mssd.us.edu.pl/en/admission_2023_2024-proj/