**Report Summary:**

**Internship at the "Leibniz Institute of Freshwater Ecology and Inland Fisheries" (IGB), Berlin**

Biodiversity, environmental change, and ecosystem services concerning urban freshwater ecology are among the main research topics of the IGB.

Changing natural processes and anthropogenic influence and actions affect aquatic ecosystems, such as local extreme weather events due to climate change, pollution impacts, (in-) sufficient sustainable water management, and nutrient cycling. This is primarily reflected in the reduction of habitat and indirectly in the lower variability of populations and biodiversity, and thus in their decreasing adaptability of the ecosystem to change.

Due to methods of analysis, including direct and in-suite measurements, satellite data, and bio-optical models, the IGB may predict responses to environmental change and develop measures for sustainable water management.

The internship aimed to gain insights and perspectives on how scientific work takes place in an institute, what specific directions the work in research can take, and what niches of research can be found under the broad aspect of physical geography and ecosystem analysis. Furthermore, it was a significant concern for me to complement my education with more practical elements and experience in a laboratory setting.

The internship focuses on analyzing and researching biogeochemical processes and their influence on nutrient cycling in lakes and rivers. Currently, specifically on the phosphorus (P) cycle and specific phosphorus species, such as vivianite, and their role in P-related processes at the sediment-water interface. Concrete objects of the investigation were P retention via P minerals in lake sediments under different conditions and, on the other hand, poly-P in lake sediments by PAOs and its impact on the dynamics and stability of P pools in the sediment.

The practical work included sampling and collecting multiple parameters in various lakes in the Berlin area and from the river Spree for the analysis of specific research projects or long-term development monitoring to document the impact of climate change, etc. Measurements of the longitudinal section of the Spree is for investigation on the development and current record of sulphate concentration. Furthermore, laboratory work uses methods like molybdenum blue method, method of 31P NMR pretreatment, P fractionation, or mineral P fraction analyses up to the evaluation of the obtained samples.

With the internship, I had the great opportunity to work and learn in exchange with scientists, different doctoral research students, and technicians. I have also developed a lot of experience in carrying out field work as well as laboratory work. The knowledge and practical application I have learned have given me a good insight, start, and idea of what work and research in the field of physical geography and ecosystem analysis can look like. This and the valuable exchanges with the colleagues at the IGB provided an overall picture of everything that belongs to general institutional work.