Brandenburg University of Technology Cottbus - Senftenberg

Department of Aquatic Ecology

Responsible: Michael Hupfer

Long-term development of lakes in response to climate change
Oxygen in Lake Arendsee

Photo: Research catamaran, btu Cottbus - Senftenberg, Bad Saarow

Photo: Measurement station at Lake Arendsee

Master's thesis

Low oxygen concentrations in the deepwater zones is a major problem in many lakes. The reasons are usually high nutrient inputs from the surrounding area, which lead to phytoplankton growth at the surface of the lakes. When the dead organic material sinks down, it is decomposed and oxygen is consumed in the process. Since a very long time, Lake Arendsee (Saxony-Anhalt) suffers from high nutrient concentrations and very low oxygen concentrations in summer. Regular measurements have been carried out here since ~1976, and since 2014 the Leibniz Institute of Freshwater Ecology and Inland Fisheries (IGB) has been operating a measuring station that records temperatures, oxygen content, chlorophyll-a and many other parameters in high resolution.

This study is integrated into a Germany-wide research study on the long-term development of lakes in response to climate change. The aim of this work is to investigate how oxygen concentrations in the lake depend on meteorological conditions, especially in spring which are in turn expected to change due to climate warming. The dependence of oxygen consumption on both water temperature and nutrient concentrations will be investigated in detail. An interest in working with long time series and complex data sets is necessary. Basic knowledge of limnology and experience with Matlab or R are advantageous. The work will be carried out at IGB in Berlin, but can also be performed partially in home office.

Type:	Master's thesis, data analysis
Supervisor:	Michael Hupfer
Contact:	Michael.hupfer@igb-berlin.de, Robert.schwefel@igb-berlin.de
Start:	from November 2023
Students:	1
Prerequisites:	Interest in time series analysis and numerical modelling. Knowledge in Matlab or R.

BTU Cottbus-Senftenberg
Department of Aquatic Ecology
Faculty of Environment and Natural Sciences

Research Station Bad Saarow
Seestraße 45
15526 Bad Saarow