



FRESHWATER RESEARCH AND ENVIRONMENTAL DATABASE

Arendsee

AR temperature and oxygen chain

FRED Package 628

In recent years, numerous lakes throughout Germany have been included in a climate impact measurement programme. Long-term climate monitoring that provides continuous series of measurements with high temporal resolution over many years is an essential basis for better understanding the interrelationships in lakes, carrying out trend analyses and developing adaptation strategies from them. In addition to measuring changes, they provide a basis for model-based management scenarios.

Measuring chain

The measuring chain consists of a rope that is kept in tension by a weight on the bottom and a pressure-resistant buoy located 1 m below the water surface. The loggers are attached to the rope at fixed intervals.

Information about the depth values of the loggers

The logger depth given indicate the depth below the water surface. Due to the anchoring on the bottom, the distances of the logger from the bottom are always the same, but not when viewed from the surface. This can cause problems if the water level fluctuates, as it changes the real distance between the logger and the water surface. To record the fluctuations, a pressure sensor is attached to the measuring chain

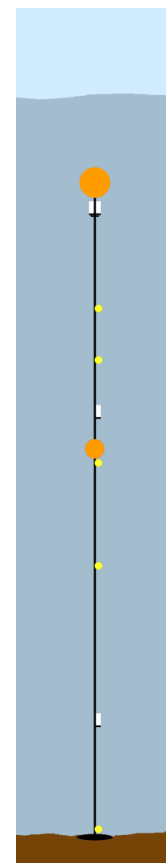




Abb. Scheme of a measurement chain with autonomous loggers

Autonomous datalogger

For the oxygen measurements d-opto loggers from zebra-Tech Ltd, NZ, are used. As protection against mussel settlement, the measuring field of the loggers is surrounded by a copper plate. Unfortunately, this does not help against biological growth. Especially the O₂ measurements in the epilimnion are strongly influenced by biofouling.

Logger specifications

parameter	name	accuracy	resolution	foto
oxygen and temperature	D-Opto Logger, Zebra-Tech, LTD, NZ	according to manufacturer ± 1% ± 0.02 mg/l ± 0.1°C	0.001 mg/L 0.01 °C	
pressure and temperature	TDR 2050, RBR, Canada			

position N 52.89069° E 11.45904°

depth 48m or 47m

Logger depth distribution

von 2012 bis 2023

2.5 m
5 m
7.5 m
10 m
12.5 m
15 m
17.5 m
20 m
22.5 m
25 m
30 m
35 m
40 m
45 m
47 m oder 48 m

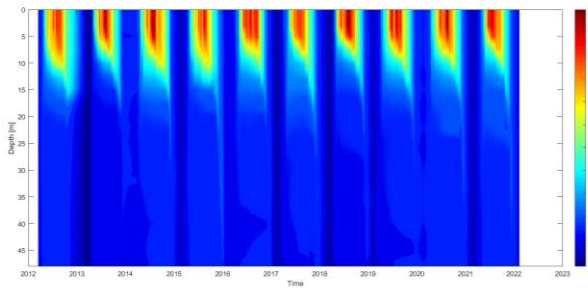
data

Intervall 60 min.
<1min. (RBR, 47m)

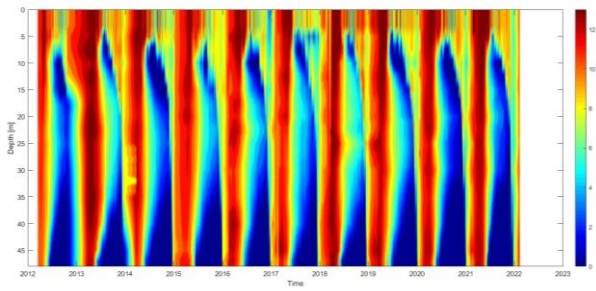
periods 15.03.2012 bis 22.10.2012
28.03.2013 bis 18.12.2013
26.03.2014 bis 06.01.2015
06.01.2015 bis 16.02.2016
16.02.2016 bis 20.01.2017
31.01.2017 bis 20.03.2018
06.04.2018 bis 20.03.2019
27.03.2019 bis 15.01.2020
04.02.2020 bis 21.02.2021
16.03.2021 bis 09.02.2022
23.02.2022 bis 22.02.2023
22.02.2023

The data are stored as individual dat files in the IGB Cloud Nimbus.

temperature 2012-2021



oxygen 2012-2021



Contact

Contact person: Dr. Michael Hupfer (IGB)

Data responsibility: Sylvia Jordan

Version 2023-03-03