



FRESHWATER RESEARCH AND ENVIRONMENTAL DATABASE

Lake Breiter Luzin

Breiter Luzin thermistor chain with oxygen

FRED Package 852

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.

Lake Breiter Luzin

Lake Breiter Luzin is a mesotrophic hard-water lake located in the Feldberg Lake District Nature Park (Naturpark Feldberger Seenlandschaft), Mecklenburg-Vorpommern, Germany (53°21'19"N, 13°27'55"E). The lake has a maximum depth of 58.3 m, a mean depth of 22.8 m, a surface area of 3.37 km² and a volume of 76.89 x 10⁶ m³. The catchment area has a size of 22.6 km² (Morphometric and catchment size data from Umweltministerium M-V, calculation base 2015). Lake Breiter Luzin is divided into two basins. The Northwestern shore is relatively steep and mainly populated with beech, the opposite shore exhibits a well developed reed bed (Nixdorf et al. 2004).

Measuring Chain



One measuring chain each for temperature and oxygen loggers consists of a rope to which the loggers are attached at fixed intervals. In Lake Breiter Luzin, the measuring chains are fixed to a small floating platform and are not anchored to the bottom. This means that the distances between the loggers are always the same when viewed from the surface, but not when viewed from the bottom. This can lead to problems if the water level fluctuates, as this changes the distance between the loggers and the bottom.

Autonomous datalogger

Between 2001 and 2012, loggers from Hotdog were used for the temperature measurements. Since 2012, Tinytag Aquatic 2 TG-4100 underwater data loggers from Gemini Data Loggers, UK, have been used.

MiniDOT data loggers from PME (Precision Measurement Engineering, Inc.) are used for the oxygen measurements. To prevent mussel settlement, the 1 m O₂ logger is covered with copper tape and equipped with a miniWIPER, an autonomous antifouling system, since 2019.

Logger specifications

| Parameter | name | accuracy | resolution | max. operating depth | |
|-------------------------------|-----------------------------------------------------|-----------------------------------------------------------------|----------------------|----------------------|--------------------------------------------------------------------------------------|
| Hotdog | | | | | |
| temperature | Tinytag Aquatic 2 TG-4100 von Gemini Data Loggers | ± 0.5°C according to manufacturer) ± 0.1°C (own experience)* | 0.01 °C | 500 m |  |
| oxygen and temperature | miniDOT von Precision Measurement Engineering (PME) | according to manufacturer ± 5% ± 0.3 mg/l ± 0.1°C | 0.01 mg/L 0.01 °C | 100 m |  |

*only loggers with an accuracy of ± 0.03°C are used

Data

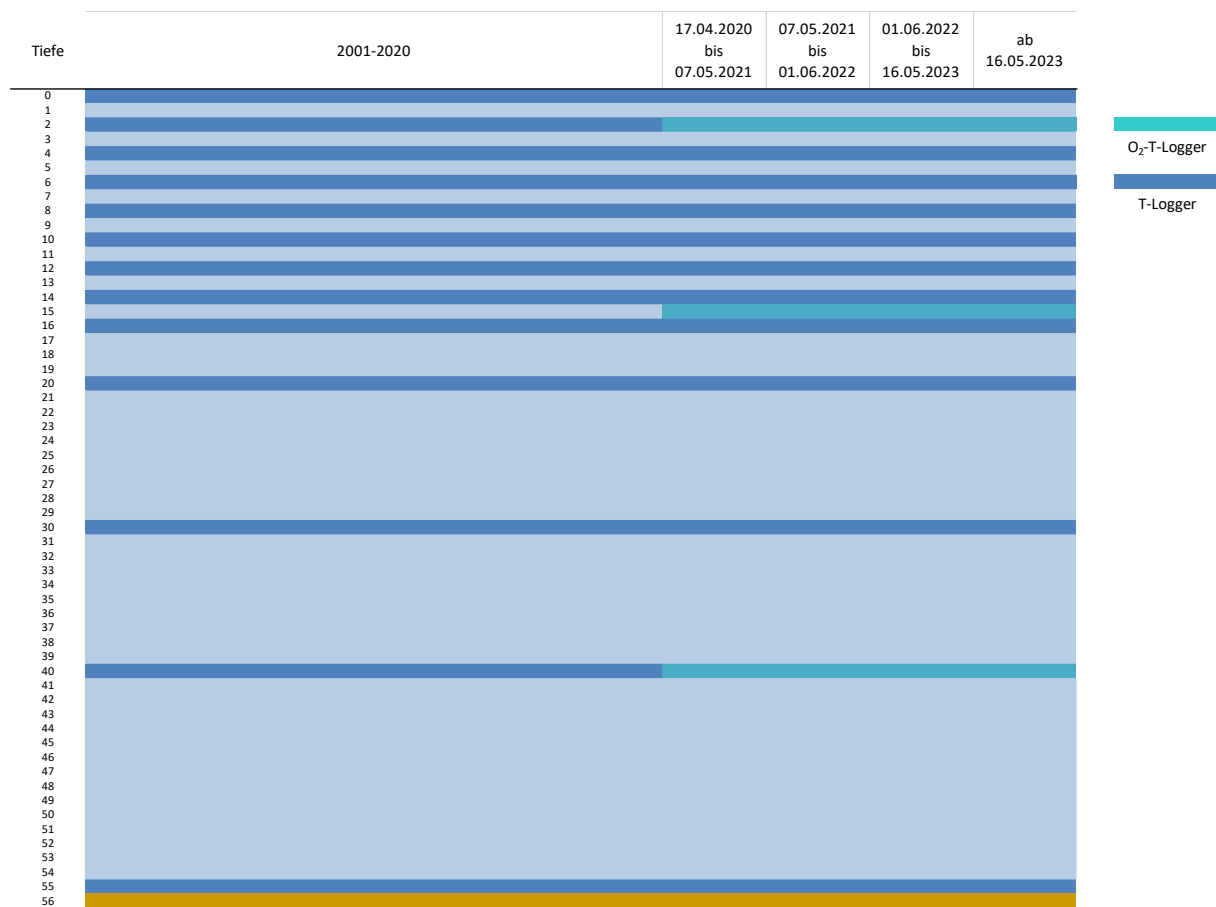
Time span 23.10.20001 ongoing

Intervall 15, 30 or 60 min.

The data are stored as individual .csv or .txt files in the IGB Cloud Nimbus.

| Breiter Luzin (BL) | | | | | | | |
|-----------------------------------|------------------|-----------|-------------|-----------|---------------|-------------------------|------------------|
| Ordner | 20210507 BL data | | | | | | |
| | Logger | Parameter | Logger-Nr. | Tiefe (m) | Messintervall | Messzeitraum | Bemerkungen |
| miniDot7450-118797_BL2020_2m.TXT | miniDot USB | O2 + T | 7450-118797 | 2 | 30 | 17.04.2020 - 07.05.2021 | |
| miniDot7450-149656_BL2020_15m.TXT | miniDot USB | O2 + T | 7450-149656 | 15 | 30 | 17.04.2020 - 07.05.2021 | |
| miniDot7450-171292_BL2020_40m.TXT | miniDot USB | O2 + T | 7450-171292 | 40 | 30 | 17.04.2020 - 07.05.2021 | |
| 2020-2021_BL_miniDot.xlsx | alle | | | | | | Zusammenstellung |
| Ordner | 20220607 BL data | | | | | | |
| | Logger | Parameter | Logger-Nr. | Tiefe (m) | Messintervall | Messzeitraum | Bemerkungen |
| miniDot6881-1326_BL2021_2m.TXT | miniDot RS232 | O2 + T | 6881-1326 | 2 | 30 | 07.05.2021 - 28.04.2022 | mit Wischer |
| miniDot6881-0741_BL2021_15mL.TXT | miniDot RS232 | O2 + T | 6881-0741 | 15 | 30 | 07.05.2021 - 07.06.2022 | |
| miniDot6881-1314_BL2021_40m.TXT | miniDot RS232 | O2 + T | 6881-1314 | 40 | 30 | 07.05.2021 - 07.06.2022 | |
| 2021-2022_BL_miniDot_data.xlsx | alle | | | | | | Zusammenstellung |
| Ordner | 20230516 BL data | | | | | | |
| | Logger | Parameter | Logger-Nr. | Tiefe (m) | Messintervall | Messzeitraum | Bemerkungen |
| miniDot7392-214312_SL2022_2m.TXT | miniDot USB | O2 + T | 7392-214312 | 2 | 30 | 07.06.2022 - 16.05.2023 | mit Wischer |
| miniDot7450-810860_SL2022_10m.TXT | miniDot USB | O2 + T | 7450-810860 | 15 | 30 | 07.06.2022 - 16.05.2023 | |
| miniDot7450-247338_SL2022_25m.TXT | miniDot USB | O2 + T | 7450-247338 | 40 | 30 | 07.06.2022 - 16.05.2023 | |
| 2021-2022_BL_miniDot_data.xlsx | alle | | | | | | Zusammenstellung |

Logger depth distribution 2001 to 2023



Contact

Contact person: Dr. Michael Hupfer (IGB)
 Data responsibility: Thomas Gonsiorczyk, Sylvia Jordan
 Data origin: IGB Neuglobsow und IGB Berlin
 Version 2023-11-06

References

Nixdorf B, Hemm M, Hoffmann A, Richter P. 2004. "Breiter Luzin", Dokumentation von Zustand und Entwicklung der wichtigsten Seen Deutschlands. Teil 2 Mecklenburg-Vorpommern. Umweltbundesamt. UBA-Bericht Forschungsbericht 29924274, UBA-FB 000511, p. 26.

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