



FRESHWATER RESEARCH AND ENVIRONMENTAL DATABASE

Tollensesee (MV)

Lake Tollense thermistor chain with oxygen

FRED Package 853

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.

The measurement series for Lake Tollense was completed in Dec. 2025.

Lake Tollense

Lake Tollense is a dimictic meso-eutrophic hardwater lake located in the south of the town of Neubrandenburg in the district of Mecklenburgische Seenplatte, Mecklenburg-Vorpommern, Germany (53°30'40 "N 13°12'50 "E). The lake has a maximum depth of 31 m, a mean depth of 17.7 m, a volume of 316×10^6 and a surface area of 17.7 km². This makes it the 15th largest lake in Germany.

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 1.5 m below the water surface. The loggers are attached to the rope at fixed intervals.

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.

The coordinates of the measuring chain are 53°30'09.1"N 13°12'23.4"E. This is not the deepest part of the lake but it is about 28.5 metres deep.

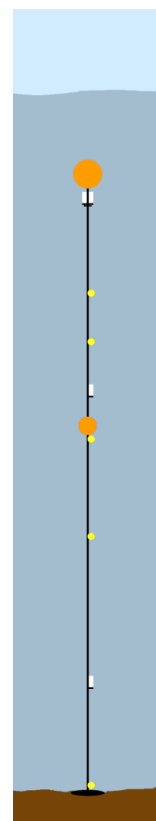


Abb. Scheme of a measurement chain with autonomous loggers

Autonomous datalogger

Between 2001 and 2008, loggers from Hotdog loggers from Elpro-Buchs, Switzerland, were used for the temperature measurements. Since 2020, Tinytag Aquatic 2 TG-4100 underwater data loggers from Gemini Data Loggers, UK, have been used.

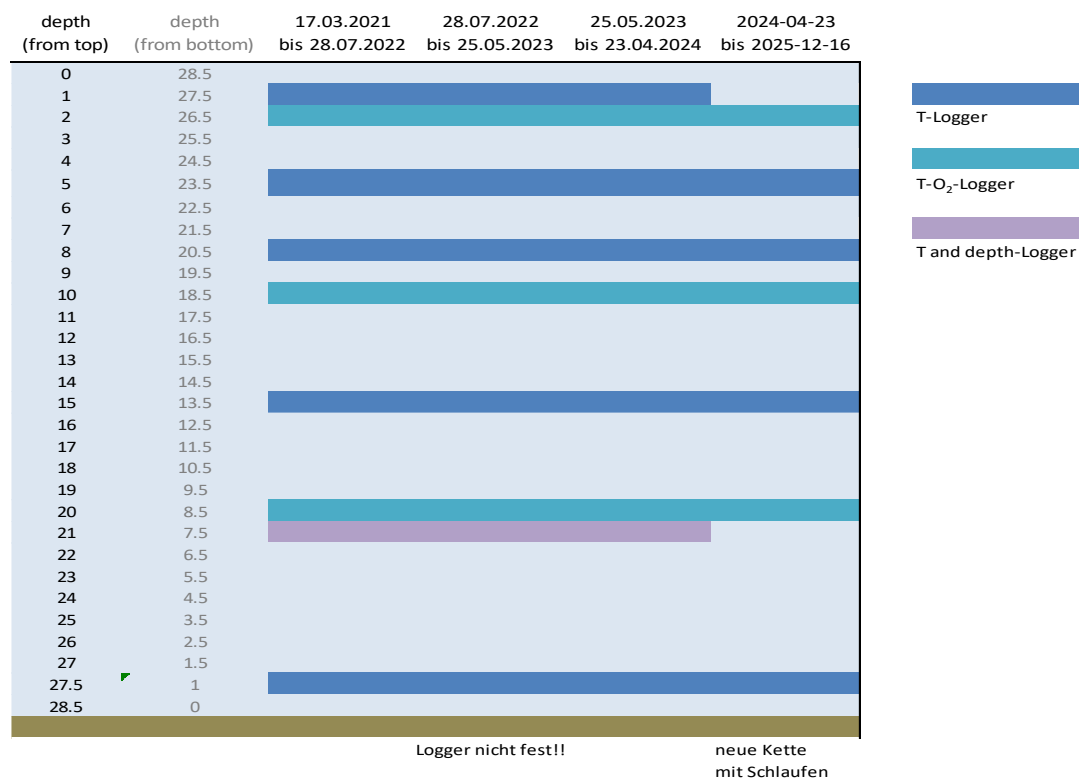
miniDOT data loggers from PME (Precision Measurement Engineering, Inc.) are used for the oxygen measurements. To prevent mussel settlement, the 1 m O₂ logger is covered with copper tape and equipped with a miniWIPER, an autonomous antifouling system, since 2019.

Logger specifications

Parameter	name	accuracy	resolution	max. operating depth	
temperature	Tinytag Aquatic 2 TG-4100, Gemini Data Loggers	± 0.5°C according to manufacturer) ± 0.1°C (own experience)*	0.01 °C	500 m	
oxygen and temperature	miniDOT, Precision Measurement Engineering (PME)	according to manufacturer ± 5% ± 0.3 mg/l ± 0.1°C	0.01 mg/L 0.01 °C	100 m	
pressure	Hobo U20L-02, Onset Computer Corporation	max. 2.55 kPa	< 0,04 kPa	30 m	

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

Logger depth distribution 2021 to 2025



Data

Time span 2021-03-17 until mid-October 2025

Intervall 30 min. (60 min. for pressure)

The data are stored as individual txt files in the IGB cloud Nimbus and as a total file on FRED (TOL_20210317-20251216_data.csv).

The metadata file:

Tollensesee (TOL)							
Ordner	20210317 - 20220728 TOL data						
Datei	Logger	Parameter	Logger-Nr.	Tiefe (m)	Messintervall	Messzeitraum	Bemerkungen
TOL_02_20210317-20220728_miniDot7450-907758.TXT	miniDot USB	O2 + T	7450-907758	2		30 17.03.2021 - 28.07.2022	
TOL_10_20210317-20220728_miniDot7450-927283.TXT	miniDot USB	O2 + T	7450-927283	10		30 17.03.2021 - 28.07.2022	
TOL_20_20210317-20220728_miniDot7450-012657.TXT	miniDot USB	O2 + T	7450-012657	20		30 17.03.2021 - 28.07.2022	
TOL_01_20210317-20220728_Tinytag664476.txt	Tinytag	T	664476	1		30 17.03.2021 - 28.07.2022	
TOL_05_20210317-20220728_Tinytag664477.txt	Tinytag	T	664477	5		30 17.03.2021 - 28.07.2022	
TOL_08_20210317-20220728_Tinytag589398.txt	Tinytag	T	589398	8		30 17.03.2021 - 28.07.2022	
TOL_15_20210317-20220728_Tinytag918797.txt	Tinytag	T	918797	15		30 17.03.2021 - 28.07.2022	
TOL_27.5_20210317-20220611_Tinytag656712.txt	Tinytag	T	656712	27,5		30 17.03.2021 - 11.06.2022	nur bis 11.06.2021
TOL_15_20210317-20220728_hobo20936108.csv	hobo	Druck + T	20936108	15		30 17.03.2021 - 11.06.2022	
TOL_20210317-20220728_data.xlsx	alle						Zusammenstellung
Ordner	20220728 - 20230525 TOL data						
Datei	Logger	Parameter	Logger-Nr.	Tiefe (m)	Messintervall	Messzeitraum	Bemerkungen
TOL_02_20220728-20230525_miniDot7450-115918.TXT	miniDot USB	O2 + T	7450-115918	2		30 28.07.2022 - 25.05.2023	
TOL_10_20220728-20230525_miniDot7450-259867.TXT	miniDot USB	O2 + T	7450-259867	10		30 28.07.2022 - 25.05.2023	
TOL_20_20220728-20230525_miniDot7392-186076.TXT	miniDot USB	O2 + T	7392-186076	20		30 28.07.2022 - 25.05.2023	
TOL_05_20220728-20230525_Tinytag632361.txt	Tinytag	T	632361	5		30 28.07.2022 - 25.05.2023	
TOL_08_20220728-20230525_Tinytag589392.txt	Tinytag	T	589392	8		30 28.07.2022 - 25.05.2023	
TOL_15_20220728-20230525_Tinytag590527.txt	Tinytag	T	590527	15		30 28.07.2022 - 25.05.2023	
TOL_27.5_20220728-20230525_Tinytag897187.txt	Tinytag	T	897187	27,5		30 28.07.2022 - 25.05.2023	
TOL_15_20220728-20230525_Hobo20936106.csv	Hobo	Druck + T	20936106	15		60 28.07.2022 - 25.05.2023	
TOL_20220728-20230525_data.xlsx	alle						
Ordner	20230525 - 20240423 TOL data						
Datei	Logger	Parameter	Logger-Nr.	Tiefe (m)	Messintervall	Messzeitraum	Bemerkungen
TOL_02_20230525-20240423_miniDot7392-214312.TXT	miniDot USB	O2 + T	7392-214312	2		30 25.05.2023 - 23.04.2024	mit Wischer, viel zu viele Muscheln
TOL_10_20230525-20240423_miniDot7450-810860.TXT	miniDot USB	O2 + T	7450-810860	10		30 25.05.2023 - 23.04.2024	auch hier viele Muscheln
TOL_20_20230525-20240423_miniDot7450-247338.TXT	miniDot USB	O2 + T	7450-247338	20		30 25.05.2023 - 23.04.2024	
TOL_01_20230525-20231027_Tinytag590528_Zeitfehler.txt	Tinytag	T	590528	1		30 28.07.2023 - 27.10.2023	Zeitachse ab 27.10.2023 unklar
TOL_05_20230525-20240423_Tinytag632352.txt	Tinytag	T	632352	5		30 25.05.2023 - 23.04.2024	
TOL_08_20230525-20240423_Tinytag891342.txt	Tinytag	T	891342	8		30 25.05.2023 - 23.04.2024	
TOL_15_20230525-20240423_Tinytag898630.txt	Tinytag	T	898630	15		30 25.05.2023 - 23.04.2024	
TOL_27.5_20230525-20240423_Tinytag664489.txt	Tinytag	T	664489	27,5		60 25.05.2023 - 23.04.2024	
Ordner	20240423 - 20251216 TOL data						
Datei	Logger	Parameter	Logger-Nr.	Tiefe (m)	Messintervall	Messzeitraum	Bemerkungen
TOL_02_20240423-20251216_miniDot7392-216368.csv	miniDot USB	O2 + T	7392-216368	2		30 25.05.2023 - 23.04.2024 (17.10.2025)	mit Wischer, viel zu viele Muscheln
TOL_10_20240423-20251216_miniDot7392-726790.csv	miniDot USB	O2 + T	7392-726790	10		30 25.05.2023 - 23.04.2024 (17.10.2025)	auch hier viele Muscheln
TOL_20_20240423-20251216_miniDot7450-572641.csv	miniDot USB	O2 + T	7450-572641	20		30 25.05.2023 - 23.04.2024 (17.10.2025)	
TOL_05_20240423-20250321_Tinytag656711.csv	Tinytag	T	656711	5		30 25.05.2023 - 23.04.2024 (17.10.2025)	
TOL_08_20240423-20251216_Tinytag580520.csv	Tinytag	T	580520	8		30 25.05.2023 - 23.04.2024 (17.10.2025)	
TOL_15_20240423-20251216_Tinytag898634.csv	Tinytag	T	898634	15		30 25.05.2023 - 23.04.2024 (17.10.2025)	
TOL_27.5_20240423-20251216_Tinytag972624.csv	Tinytag	T	972624	27,5		60 25.05.2023 - 23.04.2024 (17.10.2025)	
TOL_20240423-20251216_data.xlsx	alle						Zusammenfassung

Contact

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Data origin: IGB Berlin

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