



FRESHWATER RESEARCH AND ENVIRONMENTAL DATABASE

Scharmützelsee

SCHAR temperature and oxygen chain

FRED Package 854

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 Scharmützel (BB)

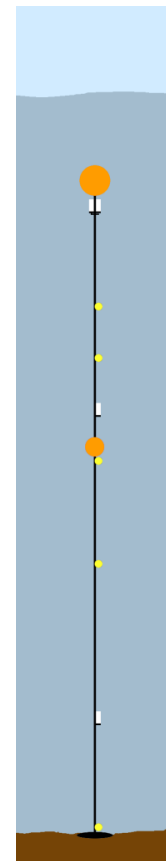
Lake Scharmützelsee is a glacial lake in Brandenburg, south-east of Berlin. With an area of 12.09 km², it is the second largest natural lake in Brandenburg after Lake Schwielochsee. Its maximum depth in the southern basin is 29.5 m, the average depth is 9 m and the volume is 108.2 x 10⁶ m³.

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

The logger depths given indicate the depth below the water surface. Due to the anchoring on the bottom, the distances of the loggers from the bottom are always the same, but not when viewed from the surface. This can cause problems when the water level fluctuates, because this changes the distance of the loggers from the water surface.




The measuring chain is located near the deepest point in the southern basin. The coordinates are 52°13'03.7 "N 14°01'21.4 "E. The water depth there is approx. 29 metres.



Autonomous datalogger

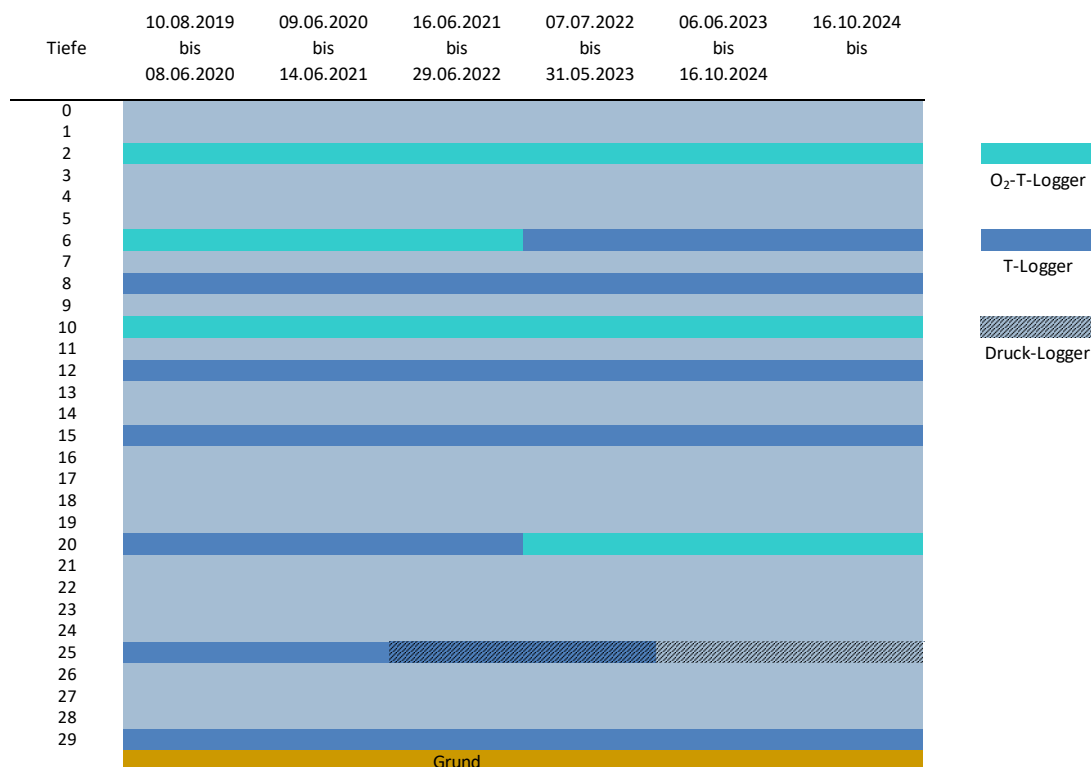
Tinytag Aquatic 2 TG-4100 underwater data loggers from Gemini Data Loggers, UK, are used for the temperature measurements. MiniDOT data loggers from PME (Precision Measurement Engineering, Inc.) are used for the oxygen measurements. To prevent mussel settlement, the 1 m O₂ logger is covered with copper tape and equipped with a miniWIPER, an autonomous anti-fouling system. Although the depth sensor records temperatures, the data cannot be used due to the low accuracy.

Logger specifications

Parameter	name	accuracy	resolution	max. operating depth	
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	
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 2019 to 2025



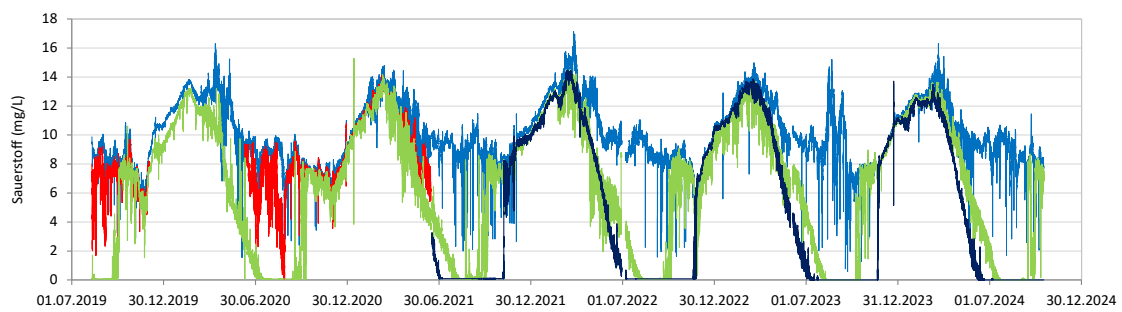
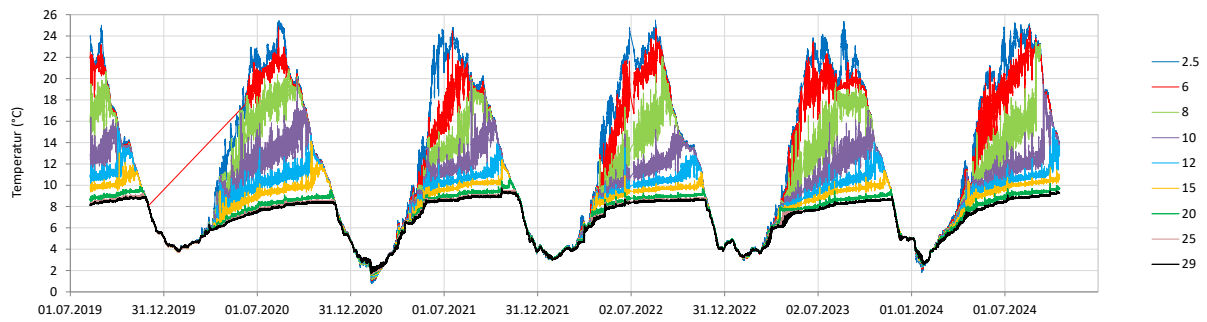
Data

Time span 10.08.2019 ongoing

Intervall 30 min. (at the beginning 60 min.)

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

Ordner Scharmützelsee							
Ordner	01 10.08.2019 - 08.06.2020 SCHAR data						
Datei	Logger	Parameter	Logger-Nr.	Tiefe (m)	Messintervall (min)	Messzeitraum	Bemerkungen
Cat1325_2.5m.txt	miniDot RS232	O2 + T	6881-1325	2.5	60	10.08.2019 - 08.06.2020	mit Wischer
Cat1320_6m.txt	miniDot RS232	O2 + T	6881-1320	6	60	10.08.2019 - 01.12.2019	
Tinytag-656715_8m.txt	Tinytag TG-4100	T	656715	8	30	10.08.2019 - 08.06.2020	
Cat1327_10m.txt	miniDot RS232	O2 + T	6881-1326	10	60	10.08.2019 - 08.06.2020	
Tinytag-656720_12m.txt	Tinytag TG-4100	T	656720	12	30	10.08.2019 - 08.06.2020	
Tinytag-656723_14m.txt	Tinytag TG-4101	T	656723	15	30	10.08.2019 - 08.06.2020	
Tinytag-658049_20m.txt	Tinytag TG-4102	T	658049	20	30	10.08.2019 - 08.06.2020	
Tinytag-589394_25m.txt	Tinytag TG-4100	T	589394	25	30	10.08.2019 - 08.06.2020	
Tinytag-664477_29m.txt	Tinytag TG-4100	T	664477	29	30	10.08.2019 - 08.06.2020	
20200608_Schar_data	alle						
Ordner	02 09.06.2020 - 14.06.2021 SCHAR data						
Datei	Logger	Parameter	Logger-Nr.	Tiefe (m)	Messintervall (min)	Messzeitraum	Bemerkungen
Minidot_582476_SCHAR_2.5m.TXT	miniDot USB	O2 + T	7450-582476	2.5	30	09.06.2020 - 14.06.2021	mit Wischer, sehr viele Muscheln
Minidot_609525_SCHAR_6m.TXT	miniDot USB	O2 + T	7450-609525	6	30	09.06.2020 - 14.06.2021	
Tinytag_891338_SCHAR_8m.txt	Tinytag TG-4100	T	891338	8	30	09.06.2020 - 14.06.2021	
Minidot_542280_SCHAR_10m.TXT	miniDot USB	O2 + T	7450-542280	10	60	09.06.2020 - 14.06.2021	
Tinytag_891340_SCHAR_12m.txt	Tinytag TG-4100	T	891340	12	30	09.06.2020 - 14.06.2021	
Tinytag_897187_SCHAR_15m.txt	Tinytag TG-4101	T	897187	15	30	09.06.2020 - 14.06.2021	
Tinytag_632352_SCHAR_20m.txt	Tinytag TG-4102	T	632352	20	30	09.06.2020 - 14.06.2021	
Tinytag_891352_SCHAR_25m.txt	Tinytag TG-4100	T	891352	25	30	09.06.2020 - 14.06.2021	
Tinytag_891343_SCHAR_29m.txt	Tinytag TG-4100	T	891343	29	30	09.06.2020 - 14.06.2021	
20210614_Schar_data.xlsx	alle						
Ordner	03 16.06.2021 - 29.06.2022 SCHAR data						
Datei	Logger	Parameter	Logger-Nr.	Tiefe (m)	Messintervall (min)	Messzeitraum	Bemerkungen
minidot232574_SCHAR2021_2m.TXT	miniDot USB	O2 + T	7450-582476	2.5	30	16.06.2021 - 29.06.2022	mit Wischer, sehr viele Muscheln
Tinytag632352_SCHAR2021_6m.txt	miniDot USB	O2 + T	7450-609525	6	30	16.06.2021 - 29.06.2022	ungerade Zeiten
Tinytag891338_SCHAR2021_8m.txt	Tinytag TG-4100	T	891338	8	30	16.06.2021 - 29.06.2022	ungerade Zeiten
minidot214312_SCHAR2021_10m.TXT	miniDot USB	O2 + T	7450-542280	10	60	16.06.2021 - 29.06.2022	
Tinytag891340_SCHAR2021_12m.txt	Tinytag TG-4100	T	891340	12	30	16.06.2021 - 29.06.2022	ungerade Zeiten
Tinytag897187_SCHAR2021_15m.txt	Tinytag TG-4101	T	897187	15	30	16.06.2021 - 29.06.2022	ungerade Zeiten
minidot186076_SCHAR2021_20m.TXT	Tinytag TG-4102	T	632352	20	30	16.06.2021 - 29.06.2022	
Tinytag891352_SCHAR2021_25m.txt	Tinytag TG-4100	T	891352	25	30	16.06.2021 - 29.06.2022	ungerade Zeiten
Tinytag891343_SCHAR2021_29m.txt	Tinytag TG-4100	T	891343	29	30	16.06.2021 - 29.06.2022	ungerade Zeiten
hobo20936105_SCHAR2021_25m.csv	Hobo U20L	Druck + T	20936105	25	60	16.06.2021 - 29.06.2022	
2021-2022_Schar_data.xlsx	alle						
Ordner	04 07.07.2022 - 31.05.2023 SCHAR data						
Datei	Logger	Parameter	Logger-Nr.	Tiefe (m)	Messintervall (min)	Messzeitraum	Bemerkungen
minidot118797_SCHAR2022_3m.TXT	miniDot USB	O2 + T	7450-118797	3	30	07.07.2022 - 31.05.2023	mit Wischer
Tinytag656726_SCHAR2022_6m.txt	Tinytag TG-4100	T	656726	6	30	07.07.2022 - 31.05.2023	
Tinytag589394_SCHAR2022_8m.txt	Tinytag TG-4100	T	589394	8	30	07.07.2022 - 31.05.2023	
minidot149656_SCHAR2022_10m.TXT	miniDot USB	O2 + T	7450-149656	10	60	07.07.2022 - 31.05.2023	
Tinytag891344_SCHAR2022_12m.txt	Tinytag TG-4100	T	891344	12	30	07.07.2022 - 31.05.2023	
Tinytag896295_SCHAR2022_15m.txt	Tinytag TG-410	T	896295	15	30	07.07.2022 - 31.05.2023	
minidot171292_SCHAR2022_20m.TXT	miniDot USB	T	7450-171292	20	30	07.07.2022 - 31.05.2023	
Tinytag896302_SCHAR2022_25m.txt	Tinytag TG-4100	T	896302	25	30	07.07.2022 - 31.05.2023	
Tinytag905142_SCHAR2022_29m.txt	Tinytag TG-4100	T	905142	29	30	07.07.2022 - 31.05.2023	
Hobo20936105_SCHAR2022_25m.csv	Hobo U20L	Druck + T	20936105	25	60	07.07.2022 - 31.05.2023	
2022-2023_Schar_data.xlsx	alle						
Ordner	05 05.06.2023 - 16.10.2024 SCHAR data						
Datei	Logger	Parameter	Logger-Nr.	Tiefe (m)	Messintervall (min)	Messzeitraum	Bemerkungen
minidot7450-507817_SCHAR2023_3m.TXT	miniDot USB	O2 + T	7450-507817	3	30	05.06.2023 - 16.10.2024	mit Wischer
Tinytag632361_SCHAR2023_6m.txt	Tinytag TG-4100	T	632361	6	30	05.06.2023 - 16.10.2024	
Tinytag589392_SCHAR2023_8m.txt	Tinytag TG-4100	T	589392	8	30	05.06.2023 - 08.09.2024	
minidot7450-833168_SCHAR2023_10m.TXT	miniDot USB	O2 + T	7450-833168	10	60	05.06.2023 - 16.10.2024	
Tinytag632360_SCHAR2023_12m.txt	Tinytag TG-4100	T	632360	12	30	05.06.2023 - 16.10.2024	
Tinytag590527_SCHAR2023_15m.txt	Tinytag TG-410	T	590527	15	30	05.06.2023 - 16.10.2024	
minidot7450-589506_SCHAR2023_20m.TXT	miniDot USB	O2 + T	7450-589506	20	30	05.06.2023 - 16.10.2024	
Tinytag897187_SCHAR2023_29m.txt	Tinytag TG-4100	T	897187	29	30	05.06.2023 - 16.10.2024	
Hobo20936111_SCHAR2023.csv	Hobo U20L	Druck + T	20936111	25	60	05.06.2023 - 16.10.2024	



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