Multiparameter probe data at Lake Grosse Fuchskuhle 1976-2020

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Data origin Data were collected by IGB (Marén Lentz, Uta Mallok).

Rights of usage Access to the data can be requested from the contact person.

Data

Sampling site

Lake Große Fuchskuhle (Brandenburg, Germany) is a naturally acidic, residual bog lake, situated in dense pine forests south of the Lake Stechlin area (53°06‘20“N, 12°59‘05“E). The catchment area has a size of 0.25 km^2. With a size of 0.015 km^2, a mean depth of 3.5 m, a maximum depth of 5.5 m and a volume of 53 x 10^3 m^3, the lake belongs to the smaller ones of this area which were formed during the post-glacial period (Krey 1985). Lake Große Fuchskuhle is characterized by low pH and conductivity, high content of humic matter and low nutrient concentrations. There are no inflowing streams and no connection to the ground water (Ginzel and Handke 1995). Initially, the lake was subdivided into two basins (1986), and later (1990) into four experimental compartments of approximately the same size by means of large plastic curtains (Kasprzak et al. 1988; Kasprzak 1993). Because of the division, the interaction between lake and swamp is now mainly restricted to basins in the western part, causing differences in pH and the DOC pools. The water of the two basins adjacent to the bog body are brownish in color indicating input of allochthonous humic

matter. In the east-basins, the pH is usually higher (Šimek et al. 1998). The first perch (length of 10–13 cm) were introduced in spring 1993 but rapidly became extinct (Hehmann et al. 2001).

Time span 1976-2020

Sampling method

Before the lake was divided into experimental enclosures (1976-1986) samples were taken from the middle of the lake. Following separation into two basins (1986-1989, east and west) the samples were taken from the center of each basin. Finally, following the final division, samples were taken from a platform suspended over the center of the lake. The temporal resolution varied over time. Samples were taken at monthly intervals from all four basins from 1991 until 1998. Regular monthly sampling has been ongoing in the North-East and South-West basins since 1991, with some additional samples collected at higher frequency during summer periods. Occasionally, between 2001 and 2009 additional samples were taken from the South-East and North-West basins.

Field measurements

Before 1992, water temperature was measured using the mercury thermometer of the Ruttner sampler (48) and dissolved oxygen concentrations were determined by the Winkler method (48,49). From 1991 onwards, multi-parameter probes were used to obtain vertical profiles (0.5 m depth intervals) of temperature, dissolved oxygen, oxygen saturation, pH, and specific conductivity, and, from 2018 onwards, turbidity, chlorophyll *a* (chl *a*) and phycocyanin (PC). Hand-held WTW probes (OXI-197, LF-197 and pH-197 Weilheim, Germany) were used until 2018, and YSI multiprobes (YSI 6600, EXO2 Yellow Springs, OH, USA) since 2016. Sensors were regularly calibrated in the lab according to the user manuals. Due to low pH values in the lake hand-held WTW probes (pH-197 Weilheim, Germany) are still used for measurement of pH and are calibrated for lower pH values (pH, 3-8).

Water transparency was determined as Secchi depth (secchi) on each sampling occasion. A white disc 30 cm (1976–1991) or 20 cm (1992–2020) in diameter was lowered in the water column until it was no longer visible, then raised, and the depth recorded both when the disc disappeared and when it re-appeared. The mean of both values is reported as Secchi depth. Readings were taken with a bathyscope from the platform to reduce light effects.

Parameters

- lake – sampled lake
- site – measurement site
- date – date of measurement [YYYY-MM-DD]

- depth – depth of measurement [m]
- wtemp – water temperature [°C]
- o2 – dissolved oxygen [mg L-1]
- so2 – oxygen saturation [%]
- ph – pH value
- conductivity – electrical conductivity [µS cm-1]
- turbidity – turbidity [NTU]
- chla – chlorophyll a [µg L-1]
- bga_pc – blue-green algae [cells L-1]
- secchi – secchi depth [m]
- probe – type of multiparameter probe
- std_depth – standardized depth (rounded value for depth measurement reported by
- probe, rounded to the integers digit)
- comment – comments
- comment_eng – English translation of original German comments given in column
- “comment”

References

Ginzel G, Handke H. 1995. Hydrogeologische Studie zur Abgrenzung des unterirdischen Einzugsgebietes des Stechlin- und Nehmitzsees, IGB, Berlin.

Hehmann A, Krienitz L, Koschel R. 2001. Long-term phytoplankton changes in an artificially divided, top-down manipulated humic lake. Hydrobiologia 448:83-96.

Kasprzak P, Koschel R, Steiner U, Metzdorf K. 1988. “Enclosure” experiments in food-web manipulation: First step - Dividing the experimental lake. Limnologica 19:161-165.

Kasprzak P. 1993. The use of an artificially divided bog lake in food-web studies. SIL Proceedings, 1922-2010, 25:652-656.

Krey L. 1985. The lakes of the Lake Stechlin area: aspects of their morphometry. In Casper, SJ (ed.), Lake Stechlin. A temperate oligotrophic Lake. Dr W. Junk Publishers, Dordrecht, Boston, Lancaster: 29–40.

Šimek K, Babenzien D, Bittl T, Koschel R, Macek M, Nedoma J, Vrba J. 1998. Microbial food webs in an artificially divided acidic bog lake. International Review of Hydrobiology 83:3–18.

Change log

- 2020/2021 Silke R. Schmidt: These data are not yet quality-controlled. There are known issues in the data, such as values of 0 instead of NA are values beyond physical limits. Less flawed data are available in the raw data files.
- 2022 Sabine Wollrab/ Jason N. Woodhouse: Quality control, checking and correcting for data beyond physical limits. Additional column with rounded depth measurements was added (column “std_depth”) as from 2010 onwards the exact depth measurements, while in previous years the standard discrete depths were entered from which also water samples were taken (column “depth”).
- 2025/057 Jason Woodhouse: changed format of csv file from semi-colon to comma
- separated, added column with English translation of original (German) comments, also updated description of sondes used throughout.