

# Multiparameter probe data at Lake Stechlin 1970-2020

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**Author and data management** Silke R. Schmidt

**Contact person** Sabine Wollrab (wollrab@igb-berlin.de)

**Data responsibility** Christine Kiel

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

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## Data

### Sampling site

Lake Stechlin is a deep, dimictic, formerly oligotrophic clear-water lake that has been undergoing eutrophication since at least the early 2000s and especially since 2010. The lake is located in a nature reserve approximately 80 km north of Berlin, Germany (53°9'5.6"N, 13°1'34.2"E) at 59 m altitude. The lake has a maximum depth of 69.5 m, a mean depth of 23.3 m, a surface area of 4.3 km<sup>2</sup> and a volume of 96.9 × 10<sup>6</sup> m<sup>3</sup>. The lake basin was formed during the last continental glaciation ca. 12,000 years ago and is today situated at the transition between temperate maritime and temperate continental climate (Fraedrich et al. 2001). The catchment has a size of 12.6 km<sup>2</sup> and is almost completely covered by managed forest (95%). The main species is Scots pine (*Pinus sylvestris*), although beech (*Fagus sylvatica*) is the dominant tree species along the shoreline. Non-forested areas are the site of a former nuclear power plant and a small village (Neuglobsow with about 300 residents but more during the summer tourist season), whose wastewater is diverted to a different catchment. The shoreline is largely undeveloped with no notable infrastructure except on the properties of a fisherman, the Federal German Environment Agency and the Leibniz Institute of Freshwater Ecology and Inland Fisheries. The seepage lake is mainly fed by precipitation and groundwater, resulting in a theoretical water retention time of more than 40 years (Koschel 1995, Holzbecher et al. 1999). There are no river inflows except for occasional discharge from a small stream channel that is dry in most years. The water level of Lake Stechlin is regulated. From 1966 to 1990, the lake received a total of about 300,000 m<sup>3</sup> d<sup>-1</sup> of cooling water from the nearby nuclear power plant. The cooling water was withdrawn from neighbouring Lake Nehmitz (North basin) and discharged into Lake Stechlin at an average temperature of approximately 10 °C above the ambient surface water temperature. This resulted in an average increase in water temperature

by 1-2 °C during the power plant operation (1966-1990). For more information, see Casper (1985), Koschel and Casper (1986), Casper and Koschel (1995), Koschel and Adams (2003) and Kirillin et al. (2013).

**Time span** 1970-2020

### **Sampling method**

Vertical profiles with probes were collected at the deepest site of the lake (69.5 m) in the main basin (53°9'19.5"N, 13°1'52.9"E), from 1982 onwards as well in the West basin (53°9'15.1"N, 13°0'30.5"E) and in the South basin (53°8'37.0"N, 13°1'14.9"E), between 1994 and 2009 as well at the inlet of Lake Dagow (Dagowsee), and in 2010 at an additional site. The temporal resolution varied over time. In the main basin, fortnightly measurements have usually been made from May to September. Outside this period monthly results are almost always available. The temporal resolution at the other sites is irregular. Measurements were performed at variable depths between 0 m and the deepest point at the respective site at a high spatial resolution (1-5 m).

- multi-parameter probes, YSI, Yellow Springs, OH, USA
- Secchi transparency: white disc 25-30 cm in diameter; readings were done on the shady side of the boat. To reduce the impact of reflection and glittering, a bathyscope was used.

### **Parameters**

- `date` – date of measurement [YYYY-MM-DD]
- `depth` – depth of measurement [m]
- `wtemp` – water temperature [°C]
- `o2` – dissolved oxygen [mg L<sup>-1</sup>]
- `so2` – oxygen saturation [%]
- `ph` – pH value [m]
- `conductivity` – electrical conductivity [μS cm<sup>-1</sup>]
- `turbidity` – turbidity [NTU]
- `chla` – chlorophyll a [μg L<sup>-1</sup>]
- `bgapc` – blue-green algae [cells L<sup>-1</sup>]
- `secchi` – secchi depth [m]
- `site` – measurement site
- `probe` – type of multiparameter probe
- `comment` – comments

## References

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## 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 or values beyond physical limits. Less flawed data are available in the raw data files.