

# Ice observations at Upper Lake Nehmitz 2008-2020

Version 2021-11-23

**Authors and data management** Silke R. Schmidt, Gabriele Mohr

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

**Data responsibility** Sabine Wollrab

**Former data responsibility** Rainer Koschel, Peter Casper

**Data origin** Data were collected by IGB (Gabriele Mohr).

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

## Data

**Sampling site** Lake Nehmitz is a mesotrophic, dimictic lake located in a nature reserve approximately 80 km north of Berlin, Germany (53°8'5.4"N, 12°59'3.4"E). The lake has a maximum depth of 18.6 m, a mean depth of 6.8 m, a surface area of 1.61 km<sup>2</sup> and a volume of  $9.3 \times 10^6$  m<sup>3</sup> (Nixdorf et al. 2004). The lake is stratified in summer, exhibiting hypolimnetic oxygen depletion. The catchment area is nearly 6.2 km<sup>2</sup> and dominated by mixed forests. A shallow (mean water depth of 0.5 m) and narrow underwater sill divides the lake into a north basin (Upper Lake Nehmitz) with a water volume of  $5.34 \times 10^6$  m<sup>3</sup> and a south basin (Lower Lake Nehmitz) with a volume of  $3.96 \times 10^6$  m<sup>3</sup>. The north basin includes two small islands (Casper 1985).

**Time span** 2008-2020

### Sampling method

During periods of ice formation on the lake, the extent of ice cover on Upper Lake Nehmitz was determined at about weekly intervals. An observer walks around the lake along the shoreline to assess from several perspectives the areas and locations of ice and snow cover. These areas are marked in a paper copy of a schematic map of the lake (Figure 1). Ice thickness is occasionally measured and recorded as a comment. The thickness of the ice layer is measured with a meter stick inside a hole cut in the ice. The maps are evaluated using a stencil (Figure 2) placed over

the paper map of the lake. The points over the marked areas are counted. The sum of points yields the percentage of ice and snow cover of the whole lake area according to the table in Figure 3. The maps are available as scans. Some contain additional information such as further observations and comments.

### **Parameters**

- `date` – date of measurement [YYYY-MM-DD]
- `winter` – years of respective winter season [YYYY/YYYY]
- `ice cover` – percentage of the lake area covered with ice [%]
- `snow cover` – percentage of the lake area covered with snow on ice [%]
- `comment` – comments and observations

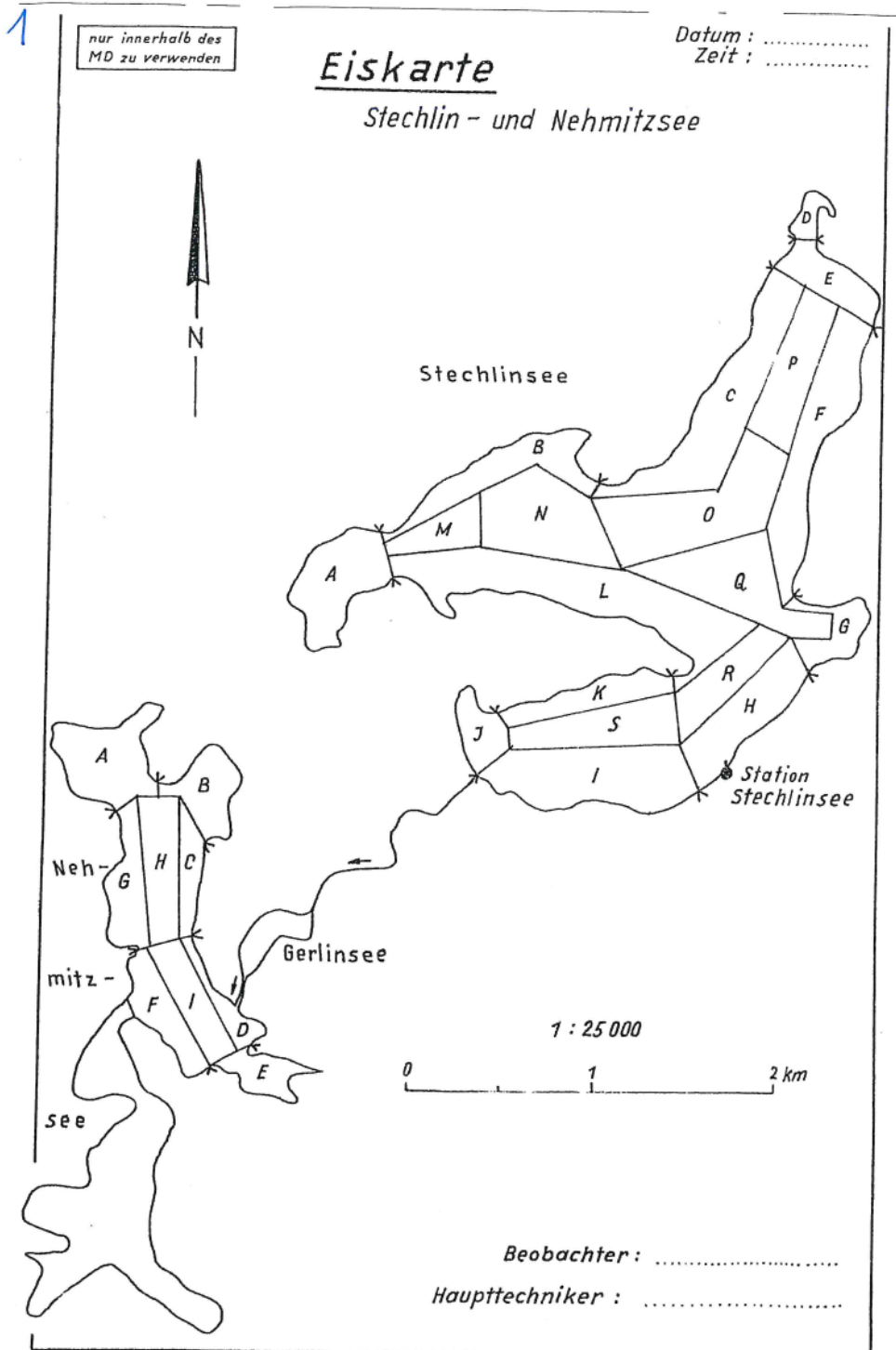


Figure 1: Schematic map of Lakes Stechlin and Nehmitz that served as template to mark areas of ice and snow cover

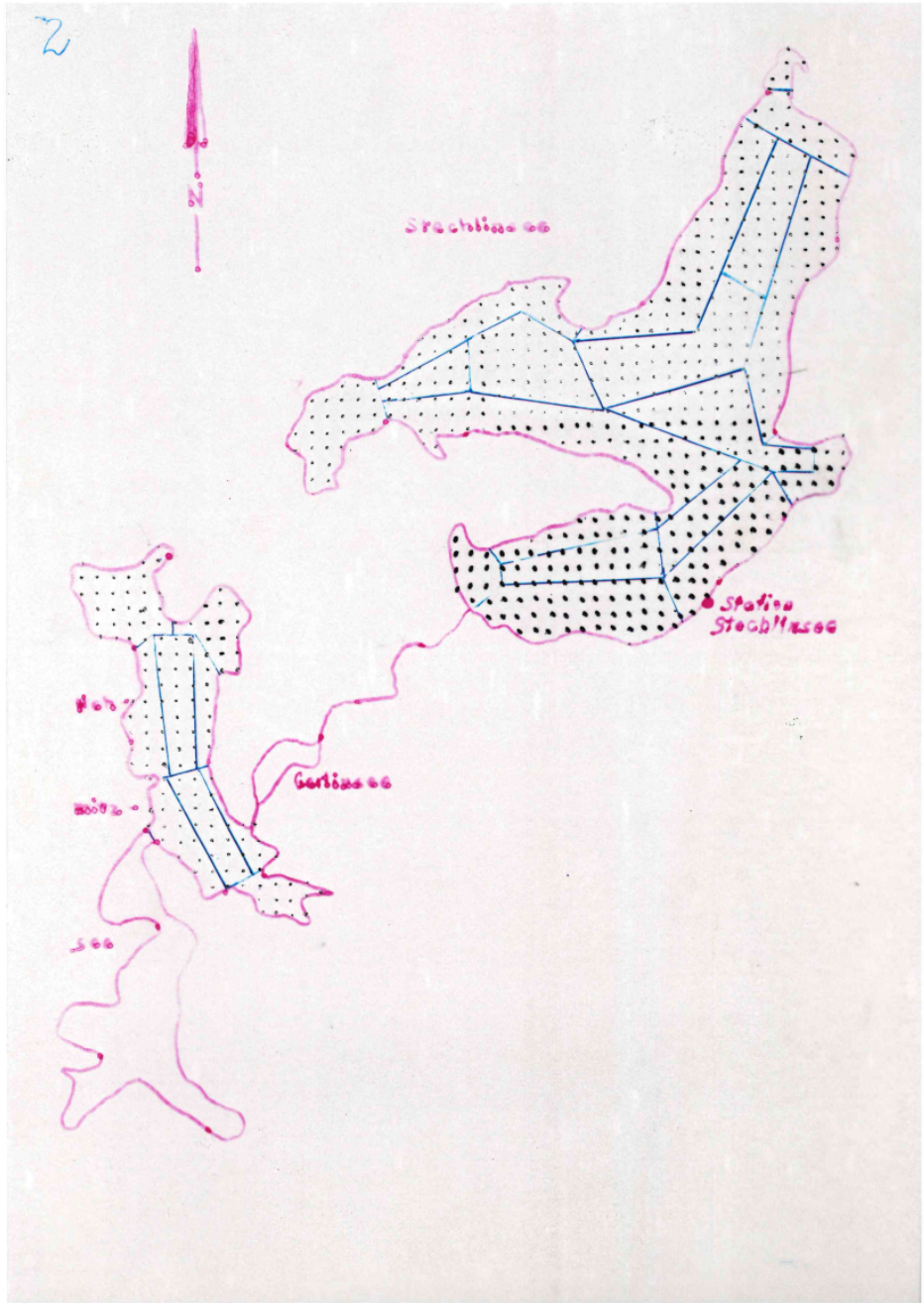


Figure 2: Stencil used to evaluate the number of points of ice-covered and snow-covered areas on Upper Lake Nehmitz and Lake Stechlin

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Eisbedeckung (in %)

Punktzählung

Stechlinsee			Nehmitzsee		
Quz. O. Punkte		%	Quz. O. Punkte		%
24	28	5	8		5
41,5	55	10	11,5	15	10
69	83	15	19	23	15
97	111	20	26,5	30	20
125	139	25	34	38	25
152,5	166	30	42	46	30
180	194	35	49,5	53	35
208	222	40	57	61	40
235,5	249	45	64,5	68	45
263	277	50	72	76	50
291	305	55	80	84	55
318,5	332	60	87,5	91	60
346	360	65	95	99	65
374	388	70	102,5	106	70
402	416	75	110	114	75
429,5	443	80	118	122	80
457	471	85	125,5	129	85
485	499	90	133	137	90
512,5	526	95	140,5	144	95
540	554	100	148	152	100

Punktzahl auf dem gesamten See ergibt die prozentuale Eisbedeckung!

Figure 3: Original table to evaluate the percentage of ice and snow cover corresponding to the number of points counted on marked areas in the map. Left: Lake Stechlin, right: Upper Lake Nehmitz

## References

Casper SJ. 1985: Lake Stechlin. A temperate oligotrophic lake. Dr. W. Junk Publishers, Dordrecht, Boston, Lancaster, 553 pp.

Nixdorf B, Hemm M, Hoffmann A, Richter P. 2004. "Nehmitzsee", Dokumentation von Zustand und Entwicklung der wichtigsten Seen Deutschlands. Teil 5 Brandenburg. Umweltbundesamt. UBA-Bericht Forschungsbericht 29924274, UBA-FB 000511, p. 79.

## Change log

- 2020/2021 Silke R. Schmidt: For records with comments “eisfrei” or “Beginn Eisbildung”, values of ice cover and snow cover were changed from NA to 0.