



GLERL Radiation Transfer Through Freshwater Ice, Version 1

USER GUIDE

How to Cite These Data

As a condition of using these data, you must include a citation:

Bolsenga, S. J. 1995. GLERL Radiation Transfer Through Freshwater Ice, Version 1. [Indicate subset used]. Boulder, Colorado USA. NSIDC: National Snow and Ice Data Center.

<https://doi.org/10.7265/N5QN64N6>. [Date Accessed].

FOR QUESTIONS ABOUT THESE DATA, CONTACT NSIDC@NSIDC.ORG

FOR CURRENT INFORMATION, VISIT <https://nsidc.org/data/G00802>



National Snow and Ice Data Center

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1 DATA DESCRIPTION

1.1 Summary

Radiation transfer through clear ice, refrozen slush, and brash ice, from the ice surface to the ice-water interface in the 400-700 nanometer range was measured at two freshwater lake sites: Silver Lake (46 degrees, 46 minutes North, 83 degrees, 43 minutes West) and Lake Superior (Whitefish Point, 46 degrees, 46 minutes North, 84 degrees, 57 minutes West). Silicon photodiodes were used to measure transmittance. The data are relevant to studying the survival of plants and animals in freshwater lakes with ice or ice and snow cover. These data were collected by the NOAA Great Lakes Environmental Research Laboratory (GLERL), Ann Arbor, MI.

1.2 File Information

1.2.1 Format

The data are in ASCII format.

Total data set size: 86.8 KM.

Table 1. File Structure

| Field name | Position |
|-----------------------------------------------------------------------------------------------------------------|----------|
| Surface sensor reading (nanometers) | 1- 4 |
| Surface scale | 5- 8 |
| Under-ice sensor reading (nanometers) | 9-12 |
| Under-ice sensor scale | 13-16 |
| Hour | 17-18 |
| Minute | 19-20 |
| Month | 21-22 |
| Day | 23-24 |
| Year | 25-26 |
| Ice thickness (centimeters) | 27-40 |
| Water depth (centimeters) (99=depth not measured; -1 = very deep; other negative value = estimated depth) | 41-44 |
| Under-ice sensor depth (centimeters) | 45-48 |
| Site number | 49-50 |
| Site letter | 51-51 |
| Lake name | 61-72 |

1.2.2 File Contents

Sample data record

```
.3551000.315 300 930122276 24          64  0 1          SILVER LAKE
.3601000.970 100 934122276 24          64  0 1          SILVER LAKE
.3681000.330 300 935122276 24          64  0 1          SILVER LAKE
.3711000.750 100 937122276 24          64 -45 1         SILVER LAKE
.5601000.390 3001055122276 24          64  0 1          SILVER LAKE
```

2 VERSION HISTORY

Table 2. Version History Summary

| Version | Release Date | Description of Changes |
|---------|--------------|----------------------------------------------------------------|
| 1.0 | 1995 | Initial release |
| | 2006 | Document reformatted. F. Fetterer reviewed this document. |
| | 2017 | A. Windnagel fixed the broken links in the References section. |
| | 2020 | Converted to PDF |

3 RELATED DATA SETS

- [GLERL Great Lakes Air Temperature/Degree Day Climatology](#)
- [GLERL Great Lakes Ice Thickness Data Base, 1966-1979](#)
- [GLERL Great Lakes Ice Concentration Data Base, 1960-1979](#)
- [Great Lakes Surface Ice Reports from U.S. Coast Guard](#)

4 CONTACTS AND ACKNOWLEDGMENTS

Bolsenga, S.J.

Acknowledgments:

This data set is maintained at NSIDC with support from the NOAA National Geophysical Data Center.

5 REFERENCES

- Assel, R. A. 2005. Great Lakes weekly ice cover statistics. *NOAA Technical Memorandum GLERL-133*. NOAA, Great Lakes Environmental Research Laboratory, Ann Arbor, MI, 27 pp. https://www.glerl.noaa.gov/pubs/tech_reports/glerl-133/tm-133.pdf.
- Assel, R. A. 2004. Computerized National Weather Service *Great Lakes ice reports for winter seasons 1899-1970*. NOAA Technical Memorandum GLERL-130. NOAA, Great Lakes Environmental Research Laboratory, Ann Arbor, MI, 31 pp. https://www.glerl.noaa.gov/pubs/tech_reports/glerl-130/tm-130.pdf.
- Assel, R. A. 2004. A Laurentian Great Lakes ice cover climatology. *Proceedings of the 61st Annual Meeting of the Eastern Snow Conference*, Portland, Maine, June 9-11, 2004. 2 pp. <http://www.glerl.noaa.gov/pubs/fulltext/2004/20040027.pdf>.

Assel, R. A., F. H. Quinn, and C. E. Sellinger. 2004. Hydro-climatic factors of the recent drop in Laurentian Great Lakes water levels. *Bulletin of the American Meteorological Society* 85(8):1143-1151. <http://www.glerl.noaa.gov/pubs/fulltext/2004/20040017.pdf>.

Assel, R. A., S. Drobot, and T. E. Croley, II. 2004. Improving 30-day Great Lakes ice cover outlooks. *Journal of Hydrometeorology* 5(4): 713-717. <http://www.glerl.noaa.gov/pubs/fulltext/2004/20040016.pdf>.

Assel, R. A., S. Drobot, and T. E. CROLEY, II. 2004. Improving monthly Great Lakes ice cover outlooks. *NOAA Technical Memorandum GLERL-129*. NOAA, Great Lakes Environmental Research Laboratory, Ann Arbor, MI, 22 pp. https://www.glerl.noaa.gov/pubs/tech_reports/glerl-129/tm-129.pdf.

Assel, R. A. 2004. Lake Erie ice cover climatology -- basin averaged ice cover: winters 1898-2002. *NOAA Technical Memorandum GLERL-128*. NOAA, Great Lakes Environmental Research Laboratory, Ann Arbor, MI, 15 pp. https://www.glerl.noaa.gov/pubs/tech_reports/glerl-128/tm-128.pdf.

Bolsenga, S. J. 1978. Photosynthetically active radiation transfer through ice. *NOAA Technical Memorandum ERL GLERL-18*, 48 pages. NTIS order number PB299-463. https://www.glerl.noaa.gov/pubs/tech_reports/glerl-018/tm-018.pdf

6 DOCUMENT INFORMATION

6.1 Author

NSIDC Technical Writers

6.2 Publication Date

1995

6.3 Revision History

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