**Supplementary information**

Location: geographical site of the study

Latitude and longitude (decimal degrees) refer to the spatial coordinates where the profile was made. When they were not available, the spatial coordinates of the center of the study site are indicated.

Date: YYYY-MM-DD

Ice thickness: Measured generally at mid-lake sites in ice auger holes (cm)

Snow thickness: Measured several meters around ice auger holes (cm)

Depth: distance below the piezometric water level (m). JAS : Just above surface. JBS : Just below surface

Pres: pressure (dbars: decibars)

Temp: temperature (degrees Celsius)

Cond: conductivity (mS/cm: miliSiemens per centimeter)

SpecCond: specific conductivity (miliSiemens per centimeter corrected to 25°C)

Sal: salinity (PSU: Practical Salinity Units) except for profiles prior to 2002 (ppt: parts per thousand)

TDS: total dissolved solids (g/L: grams per liter)

pH: units

ORP: oxidation reduction potential (mV: millivolts)

LDO %: liquid dissolved oxygen percentage saturation (%)

LDO: liquid dissolved oxygen (mg/L: milligrams per liter)

Light : µmol photons m-2 s-1

Instrument: instrument used for the sampling and recording of data

Cast presented for RBR: Upcasts were used preferentially but downcasts were used when they were more reliable.

Cast presented for Hydrolab and LI-COR: downcasts are presented.

NODATA: that data is not available.

>: data over detection limits

**Methodology**

The RBR profiler (RBR XR-420-CTD, XR-620-CTD, RBR Concerto; RBR Ltd., Ottawa, Canada) was slowly lowered through the water column beneath an ice auger hole to determine the conductivity and temperature with depth. Before lowering the profiler, the probe was left in the water to equilibrate for at least 1 min. XR-420-CTD measures at 1 Hz, while XR-620-CTD and RBR Concerto measure at 6 Hz.

The other profilers (Hydrolab Surveyor 3 or DS5X; Hydrolab Corporation, Loveland, U.S.), YSI 600 QS Quick Sample or LI-COR LI-192 were slowly lowered through the water column beneath an ice auger hole. Before lowering the profiler, the probe was left in the water to equilibrate for at least 1 min. Measurements were generally taken every 0.5,1 or 2 m below the piezometric water level.

Profiles for each lake or fiord are presented chronologically and for each instrument used: 1) RBR or historic profiling method (i.e., Knucken and Knudsen bottles, reversing thermometers,automatic salinity-depth recorder, Endeco refracting salinometer, 2-Hz Seacat SBE 19-03 profiler), 2) Hydrolab or YSI , 3) LI-COR. Profiles were not available for every year and for every instrument. Some profiles prior to 1998 were scanned off of graphs published in articles. Caution should be exercised there since the real values are not known. In some of the profiles of 1954, 1969, 1985, 1991, 1992 and 1993, two depths columns were presented when temperature and salinity or conductivity were scanned separately. The first Depth column (Depth for Temp data) corresponds to the temperature data and the second Depth column (Depth for Sal data /Depth for Cond data) correspond to the salinity or conductivity respectively. Both are expressed in meters. These profiles are presented in a separate file for each site (i.e., Lake\_A\_CTD\_**2D**\_20160323.txt).

All profiles are property of Warwick Vincent (Warwick.Vincent@bio.ulaval.ca) except the following CTD profiles:

- Disraeli Fiord in 1954 that is the property of Crary, A.P.

- Disraeli Fiord in 1960 that is the property of Lyons, J.B. and Leavitt, F.G.

- Disraeli Fiord in 1967 that is the property of Keys, J. et al.

- Profiles of 1969 that are the property of Hattersley-Smith, G.

- Profile of Lake A in 1982 that is the property of Jeffries, M.O.

- Profiles of Lake A and Lake B in 1985 that are property of M. Retelle

- Profiles of 1983, 1985 (lakes C1, C2 and C3) and 1986 are the property of Jeffries, M.O.

- Profiles of 1991,1992 and 1993 that are the property of Ludlam, S.D.

- Profiles of Ayles Fiord and Ayles Ice Island in 2007 that are the property of Copland L. and Mueller, D.R.

- Profiles of April 2008 are properties of Copland L., Mueller, D.R. and Hamilton, A.