

Data Title=

Trace metal concentrations from surface water collected near Toolik Lake, Alaska

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Data coverage= Data collected in 2010

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Dataset Overview= This includes trace metal concentrations measured from surface
water samples collected from Trevor Creek and Oksrukuyik Creek near Toolik Lake Field
Station Alaska.

Platform ID= N/A

Instrument Description= Inductively Coupled Plasma Mass Spectrometer

Location=

Oksrukuyik Creek: 200 meters upstream from where it crosses the Dalton Highway:

68.68623 North latitude, 149.09649 West longitude

UTM 414969N, 7620645W

Trevor Creek: 200 meters upstream from where it crosses the Dalton Highway:

68.28391 North latitude, 149.36390 West longitude

UTM 402406N, 7576207W

Data Remarks=

All values are presented in micrograms per Liter concentration

ND=not detected

Time stamp=

Times are in Alaska Standard time (AST) and UTC

Stamp is YYYY/MM/DD

Where YYYY=Year, MM= Month, DD=Day

Such that April 28, 2010 would be: 2010/04/28

Field procedures=

Samples were filtered through acid washed 0.45 µm polypropylene filters in the field. Samples were collected into 125 mL high density polyethylene bottles and were stored away from light until they were analyzed.

Analytical Procedures=

Water samples were filtered (Geotech High Capacity Filter, 0.45) and acidified , in the field, with 6N ultrapure HNO₃.

Trace elements (Al, As, Ba, Be, B, Cd, Cr, Co, Cu, Fe, Pb, Au, Mn, Mo, Ni, P, Se, Sc, Ag, Sr, Te, Tl, Sn, Ti, V, Zn and Rare Earth Elements) were measured using an inductively coupled plasma mass spectrometry (Agilent 7500ce ICP MS) following the general procedure outlined in Creed et al., 1994. To remove the polyatomic interferences during analysis of the elements, the ICP MS was operated in collision/reaction cell (CRC) mode using either He (As, Cr, Cu, Ni, V) or H₂ (Fe, Se) gases, following protocol outlined in Agilent 7500ce technical notes (Wilbur and Soffey, 2004).

Six calibration standards with 1-100 ppb of each analyte were made by diluting 1,000 µg/ml single element standard solutions (ULTRA Scientific), as a blank 2% ultrapure HNO₃ was used. Calibration was performed in the beginning of each analytical run. The resulting calibration curves had an R² value of 0.998 or better. A check standard was run repeatedly throughout the analysis (after every 10 samples), several samples were analyzed in triplicates in order to determine the analytical uncertainty.

References:

Creed, J., Brockhoff, C., Martin, T., 1994. EPA method 200.8, Revision 5.4 Determination of trace elements in waters and wastes by inductively coupled plasma - mass spectrometry. US Environmental Protection Agency.

Wilbur, S., Soffey, W., 2004. Performance Characteristics of the Agilent 7500ce - The ORS Advantage for High Matrix Analysis, Agilent.