

TITLE:

Dissolved organic matter concentrations and compositions in the eastern Beaufort Sea and Amundsen Gulf

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FUNDING SOURCE AND GRANT NUMBER:

National Science Foundation OPP/ARC Arctic Natural Sciences Program grant 0713915

DATA SET OVERVIEW:

The Circumpolar Flaw Lead (CFL) program utilized the Canadian icebreaker *Amundsen* to conduct research in the eastern Beaufort Sea during July 18 to August 6, 2008. The project investigated various aspects of the biology, chemistry and physics of the water column in the region from the Mackenzie River plume to the Amundsen Gulf. The complete scope of the project can be found at the following website:

<http://web.mac.com/barber1818/iWeb/IPY-CFL/CFL%20program.html>

INSTRUMENT DESCRIPTION:

A Shimadzu TOC-V was used for measurements of dissolved organic carbon (DOC) and total dissolved nitrogen (TDN) as described by Davis and Benner (2005). Reference standards were obtained from Dennis Hansell at the University of Miami and analyzed every tenth sample. Reference standards varied by less than 5% during the analysis of these samples. An Agilent 1100 HPLC system with fluorescence detector was used for measurements of amino acid concentrations as described by Davis and Benner (2005). Replicate analyses of samples varied by 5-10%, with greater variability in samples with the lowest concentrations. An Agilent 7890 GC with 5975C mass detector was used for measurements of lignin phenol concentrations (Kaiser and Benner 2012).

DATA COLLECTION AND PROCESSING:

Water samples were collected using a CTD/rosette with Niskin bottles. Samples were gravity-filtered directly from the Niskin bottles through 0.7 μ m pore-size GF/F filters. Concentrations of dissolved organic carbon (DOC) and total dissolved nitrogen (TDN) were measured by high temperature combustion using a Shimadzu TOC-V analyzer (Davis and Benner 2005). The concentrations of total hydrolyzable amino acids (THAA) were measured by HPLC (Davis and Benner 2005). The concentrations of total dissolved lignin phenols (sum of six vanillyl and syringyl phenols) were measured using GC-MS (Kaiser and Benner 2012).

DATA FORMAT:

Column headers include the station number and cast number established for all samples collected during the CFL program. The sample depth, temperature, and salinity values are taken from the CTD data that were processed and distributed to all project participants. Latitude is presented as positive values (N), and longitude is presented as negative values (W).

Dissolved organic carbon (DOC) is reported in micromoles per liter
Total dissolved nitrogen (TDN) is reported in micromoles per liter
Total hydrolysable amino acids (THAA) are reported in nanomoles per liter
Total dissolved lignin phenols (TDLP) are reported in nanomoles per liter

DATA REMARKS:

NaN is recorded whenever data are missing (e.g. sample not collected, sample not analyzed, equipment malfunction)

REFERENCES:

Davis, J. and R. Benner. 2005. Seasonal trends in the abundance, composition and bioavailability of particulate and dissolved organic matter in the Chukchi/Beaufort Seas and western Canada Basin. *Deep-Sea Res. II*, 52: 3396-3410.

Kaiser, K., and R. Benner. 2012. Characterization of lignin by gas chromatography and mass spectrometry using a simplified CuO oxidation method. *Anal. Chem.*, 84: 459-464.