

**TITLE:**

Dissolved organic matter concentrations and compositions in the eastern Beaufort Sea

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**FUNDING SOURCE AND GRANT NUMBER:**

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

**DATA SET OVERVIEW:**

The French-led MALINA program utilized the Canadian icebreaker *Amundsen* to conduct research in the eastern Beaufort Sea during July 27 to August 27, 2009. 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 continental slope of the Canada Basin. The complete scope of the project can be found at the following website: <http://www.obs-vlfr.fr/Malina/>

**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  $\mu\text{m}$  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, cast number, and sample code (cast and bottle number separated by a period) established for all samples collected during the MALINA 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.