

TITLE: Sediment pore-water dissolved oxygen

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SUMMARY:

These data were collected from several BEST/BSIERP cruises. Sediment pore-water dissolved oxygen concentrations were measured using a Clark-type oxygen microelectrode (Unisense, Denmark). Depth in the sediment was determined using a micromanipulator. Negative depth indicates the sensor was in the water column. Zero is the sediment-water interface. Positive depth is downward. The sensor was (two-point) calibrated using seawater equilibrated with atmospheric oxygen and pore water at the base of the pore-water dissolved oxygen profile (zero oxygen). The data in this collection were collected during the following cruises: HLY0701, HLY0802, HLY0803, HLY0902, KNR195-10, TN249, and TN250.

Time period covered by these data: 2007-04-10 through 2010-07-14.

Location: Bering Sea

Minimum Latitude: 55. Max Latitude: 63. Minimum Longitude: 164. Max Longitude: 180.

INSTRUMENT DESCRIPTION:

To measure profiles of dissolved oxygen in sediment pore water, we used a Unisense OX-100 oxygen microelectrode (Revsbech 1989) connected to a Unisense PA2000 picoammeter. The microelectrode was calibrated using a two-point calibration. One point was seawater in equilibrium with atmospheric dissolved oxygen. The dissolved oxygen concentration was calculated using data on oxygen solubility at the measured calibration solution salinity and temperature. The other point was zero oxygen, determined from the depth in the sediment where the detector signal reached a stable minimum (assumed to be zero). The microelectrode was lowered into the sediment at 0.5-mm intervals using a micromanipulator. The sediment-water

interface was determined visually (with a hand lens) and by observing the change in slope of the signal vs. depth profile.

#### DATA FORMAT:

Headers: Station Profile Depth (mm) Oxygen ( $\mu\text{M}$ ). Station lists the numerical station identifier. Profile (1 or 2) indicates whether the data are from the first or second replicate. Depth (positive downward) indicates the depth in the sediment where the measurement was taken. Zero is the sediment-water interface. Negative depth indicates a measurement taken above the sediment-water interface. Oxygen is the concentration of dissolved oxygen in micromoles per liter.

#### REFERENCE:

Revsbech, N.P. 1989. An Oxygen Microsensor with a Guard Cathode. *Limnology and Oceanography* 34, 474-478