

TITLE: Moran Sed Trap TN249

AUTHOR(S):

S. B. Moran
Roger P. Kelly
Graduate School of Oceanography,
University of Rhode Island
Narragansett, RI, 02882
Tel : (401) 874-6530
Fax: (401) 874-6811
Email: moran@gso.uri.edu, rokelly@gso.uri.edu

FUNDING SOURCE AND GRANT NUMBER

NSF: ARC-0732680

DATA SET OVERVIEW:

The data in the accompanying file (Moran Sed Trap TN249.xls) includes data corresponding to samples collected by the Moran Geochemistry Lab on the spring leg of the BEST-BSIERP study from 11 May 2010 to 12 June 2010 aboard the R/V Thomas G. Thompson. Data are organized by station and sample depth, with station position (latitude and longitude) also included.

This dataset includes the following: ^{234}Th , Particulate Organic Carbon (POC) and Particulate Organic Nitrogen (PON) vertical fluxes. The thorium fluxes are in units of dpm (disintegrations per minute) $\text{m}^{-2} \text{d}^{-1}$. POC and PON fluxes are in units of $\text{mmol m}^{-2} \text{d}^{-1}$. In addition are the deployment and recovery times and positions.

INSTRUMENT DESCRIPTION:

These samples were collected using K/C-Denmark sediment trap stations (model: 28.200). Trap diameter was 72mm, and trap length 450 mm (L/D=6.25). Drifting sediment traps were deployed on a single line with 5 depths (25m, 40m, 50m, 60m, 100m) in waters deeper than 120 m for a period of 20-24 hours, and tracked using an ARGOS satellite beacon. Wave effects were dampened with the inclusion of a 20 m bungee cord in the trap line.

DATA COLLECTION and PROCESSING:

Thorium, particulate organic carbon, and particulate organic nitrogen samples were collected by deploying drifting sediment traps for a period of 20-24 hours. Prior to deployment, trap tubes were filled with filtered brine solution (0.45 μm filtered seawater

plus 50g L⁻¹ NaCl). Drifting sediment traps were always deployed in excess of 3 m from benthic sampling to avoid sampling resuspended sediment. Upon recovery, the traps were allowed to settle for ~1 hour, at which point the seawater – brine interface was observed and the seawater was siphoned off the sample. The salinity of the collected brine was measured for QA/QC.

The brine solution was filtered through a pre-combusted GF/F filter (25 mm diameter). In cases where particle loading was large, a second GF/F filter was used. Each tube was rinsed down with unused brine three times to recover any particles stuck to the trap tubes. Two tubes were processed for ²³⁴Th and CHN analysis, while the filters from the other two tubes were archived for future work by freezing at -80°C. After all of the trap tubes were filtered, the filters were sub-sampled for CHN analysis using a 10 mm punch. The samples were then dried at 60°C. Filters were then mounted for beta counting of ²³⁴Th, while CHN punches were stored frozen in the ship's freezer. The beta samples were analyzed for ²³⁴Th using a RISØ GM-25-5 beta counter at sea for the initial counts, and at URI-GSO for the subsequent counts (up to 180 days after collection). At the end of the cruise, samples were shipped to URI-GSO. The CHN punches were analyzed using an Exeter Analytical EA 440 CHN analyzer. Consult Buesseler et al 1992 and Charette and Moran 1999 for further information on sample processing.

Fluxes were calculated by simply dividing the amount of ²³⁴Th, POC, and PON accumulated in the trap by the trap area and deployment time. The reported values represent the average value of 2 tubes at each depth.

DATA FORMAT:

Data are presented as an excel file named Moran Sed Trap TN249.xls, as it includes the thorium and large particulate carbon and nitrogen data from the spring cruise of the Thompson in 2010.

Data are organized by cruise ID station, deployment time, deployment position (lat then long), recovery time, recovery position (lat then long), and sample depth. Each column header indicates what information is in each column.

The following parameters (units in brackets) are reported in this dataset: Date/Time of deployment (UTC), Latitude of deployment (Decimal Degrees N), Longitude of deployment (Decimal Degrees E), Date/Time of recovery (UTC), Latitude of recovery (Decimal Degrees N), Longitude of recovery (Decimal Degrees E), Sample Depth (m), ²³⁴Th flux (dpm m⁻² d⁻¹), ²³⁴Th flux error (dpm m⁻² d⁻¹), POC flux (mmol m⁻² d⁻¹), POC flux error (mmol m⁻² d⁻¹), PON flux (mmol m⁻² d⁻¹), and PON flux error (mmol m⁻² d⁻¹).

No data flags were used in the dataset.

This is data version 1 and was compiled on 16 May 2011, and is classified as FINAL.

DATA REMARKS:

None

---REFERENCES:

Buesseler et al. 1992. Determination of thorium isotopes in seawater by non-destructive and radiochemical procedures. *Deep Sea Research I*. 39 (7/8): 1103-1114.

Charette and Moran. 1999. Rates of particle scavenging and particulate organic carbon export estimated using ^{234}Th as a tracer in the subtropical and equatorial Atlantic Ocean. *Deep Sea Research II*. 46: 885-906.