

SPM gravimetry data series for cruises: Dana D1198, Challenger CH140, Pelagia PE136, Mitra MT0499 and Belgica BG9912

Co-Principal Investigators

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Content of data series:

Parameter	Unit	Parameter code	Number of samples	Comments
Total SPM concentration	mg l ⁻¹	TSEDGVP3	290	none

Originator's protocol

Direct measurement of suspended particulate matter (SPM) mass concentration was carried out during the NNS and SNS experiments for the purpose of calibrating the beam transmissometers for the estimation of SPM concentration throughout the water column, wherever beam attenuation measurements were made.

Near-surface, mid-water and near-bed water samples were obtained from the CTD Niskin bottles. The water sample was removed from the bottle by opening the bottom of the bottle into a bucket, ensuring that 'dregs' or rapidly settling particles that might have settled below the spigot were included in the sample. The sample was then poured into a clean container to await filtration.

Known sample volumes were filtered by gentle vacuum through pre-weighed 47 mm diameter Whatman GF/C glass microfibre filters with 1.2 µm retention capabilities. When the entire sample had passed through the filter, approximately 150 ml of distilled water was filtered through in order to dissolve and rinse through any salt crystals. Approximately every tenth sample had an additional GF/C filter inserted beneath (i.e. two filters were used, one on top of the other) with the lower filter acting as a blank, assuming all particles are retained on the upper filter. As much moisture as possible was removed from the filter before switching off the vacuum. The used filters were frozen until their return to the laboratory.

In the laboratory, the GF/Cs were oven dried overnight at 60°C, then brought to room temperature under ambient humidity before re-weighing. The nett weight of material on the filters is determined by subtraction of filter pre-weights and mean nett blank weight from the post filtration filter weights. The nett blank weight is the post-filtration blank weight minus the pre-filtration blank weight and is a measure of systematic error inherent in the method used. The nett weight of material was then converted into SPM mass concentrations using the filtered sample volumes.

The average blank values subtracted from the samples' weights were as follows:

CH140 and D1198: 4.47 mg (standard deviation: ±1.10 mg, n=10)
PE136, MT0499 and BG9912: 1.10 mg (standard deviation: ±0.78 mg, n=6)

BODC's data processing

The data were loaded into a database under the ORACLE Relational Database Management System without modification.

Comments on data quality

None to report.