2007-15

CCGS *JP Tully*

Dimethylsulfide (DMS) Report

August 14, 2007 to September 1, 2007

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1. Sample Collection

Samples were collected from all major stations (P4, P12, P16, P20, P26) for DMS. Fourteen water samples from various depths (300m, 200m, 175m, 100m, 75m, 50m, 40m, 30m, 25m, 20m, 15m, 10m, 5m, surface) were collected at each station in 250 ml ground glass stoppered bottles. Samples were stored in a dark environment and removed one at a time before analysis.

2. Analysis

Based on tests and information gained from the previous cruise (see 2007-13 DMS report for full details) the DMS samples were not pre-filtered on this cruise. Samples were loaded under vacuum into the 20 ml calibration vessel and from there transferred to the stripper and purged with UHP Nitrogen for 10 minutes at ~100ml/min. The DMS was extracted from the water and absorbed onto a Tenax TA trap kept at -80^{o}C. The trap was subsequently desorbed at 100^{o}C (with a dewar containing boiling water) onto a Chromasorb 330 column which eluted to a Flame Photometric Detector (FPD). All samples were run immediately after being collected, however it must be noted that a full profile takes approximately 5 hours to run.

3. Calibration

A four to five level calibration table was used for calculating the concentrations of DMS. The standards were prepared in water and run under the same conditions as described above, for the samples. Usually only one full calibration is run for the diurnal cast at P26 but a continuing calibration standard is run after each profile or every 12 hours, which ever comes first, to ensure the calibration curve is still within acceptable limits. If the continuing calibration standard were to fail a full calibration would subsequently need to be run.

4. Quality Control

System blanks and duplicates were run approximately every 13 samples to ensure the system remained free of contamination and had acceptable reproducibility. All blanks were non-detectable and duplicates did not differ by more than 6% (well within the acceptable limits of 20%). Stripping efficiency was evaluated at the beginning of the cruise and was proven to be acceptable at over 95%.

5. Data & Results

On this cruise great care was taken to ensure procedures were done in such a manner to eliminate all sources of cross-contamination. This was undertaken in response to the previous three cruises where there has been DMS detected at levels deeper than 100m. The end result is that no DMS was detected at the deeper depths and the confidence in the numbers is no longer in question. The result is timely in that this cruise yielded some of the highest DMS values in eight years.

6. Conclusions

The data for this cruise is exceptional in terms of quality control, blank levels, duplicate precision and continuing calibrations. Much credit must go to Wendy Richardson who was the analyst. Her attention to detail and careful consideration of cross contamination was exceptional and played a big role in the quality of the data.