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Daily Report: Tracking the Plume of Dispersed Oil using Particle Size Distribution Measurements and Fluorescence Intensity Ratios

June 6, 2010

Water samples were collected at four stations for particle size distribution measurements using the LISST-100X particle counter. A total of 72 LISST samples were analyzed, including duplicates. Samples at depths of elevated fluorescence were selected from the CTD trace for fluorescence intensity ratio measurements and analyzed using a Quantech Life Sciences fixed wavelength fluorometer.

Figure 1 presents the small droplet ($\sum$ 2.5 - 60μm) particle size data and fluorescence intensity ratios for stations BM68 through BM71. Station BM68 was 10km south of the wellhead; stations BM69 and BM70 were 10km from the wellhead in the southeast quadrant and station BM71 was 1.5km southeast from the wellhead.

There were no significant spikes in the trace from the *in situ* CTD fluorometer. Correspondingly, the analysis of small particles using the LISST indicated no significant increases above background concentrations in the deep water samples. Elevated concentrations of small particles were detected at all stations in the 0.5m and 2m samples.

The results of fluorescence intensity ratios showed that generally lower ratios were observed in the near surface waters (2m or less) than in samples taken from deeper water. The ratios were similar to those on June 5, with the difference between surface and deeper samples being not great as seen in some earlier stations.

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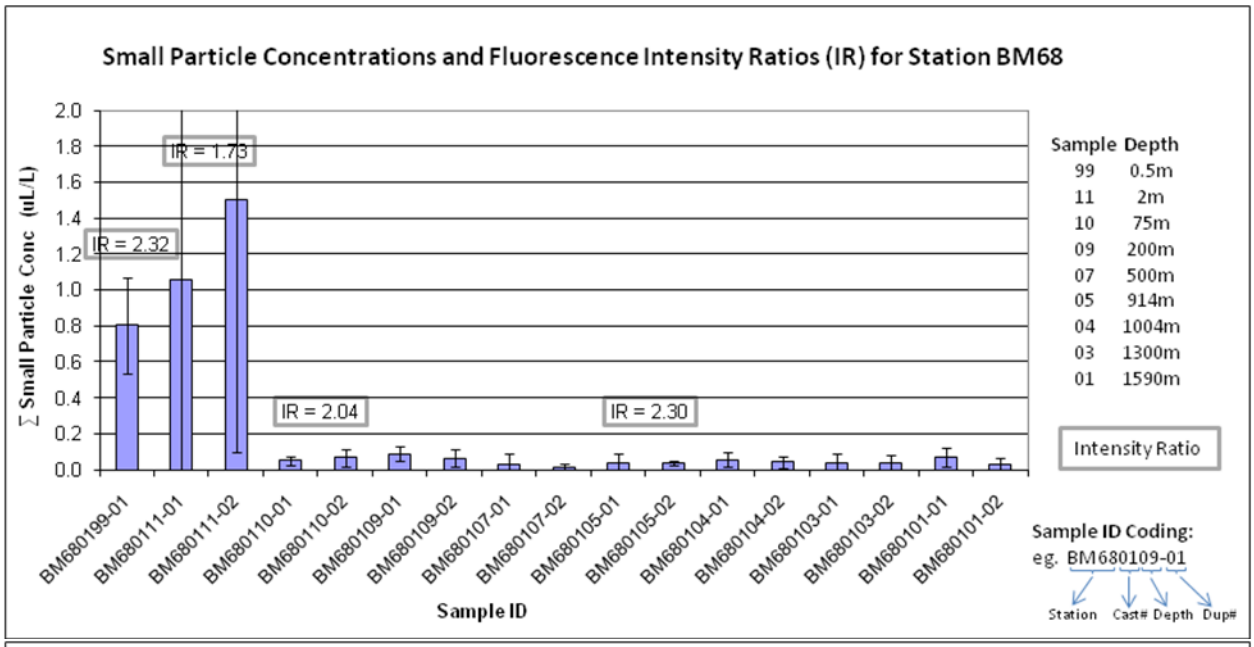
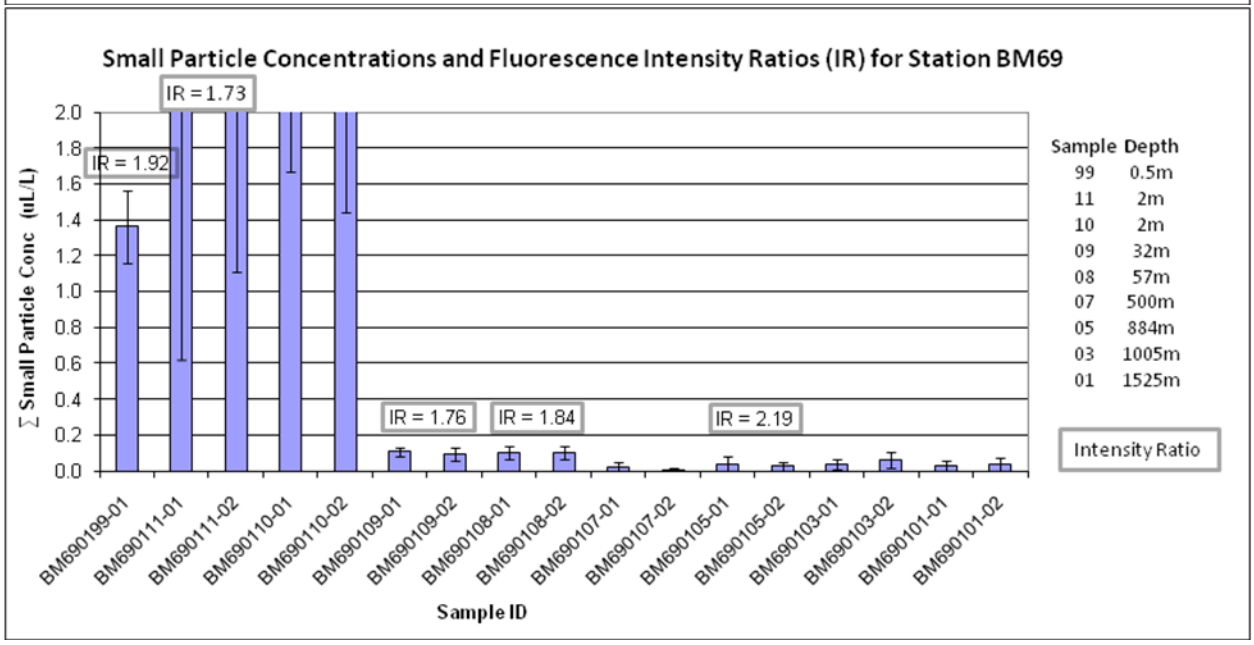

Small Particle Concentrations and Fluorescence Intensity Ratios (IR) for Station BM68
Σ Small Particle Conc (uL/L)
IR = 2.32
IR = 1.73
IR = 2.04
IR = 2.30
BM680199-01
BM680111-01
BM680111-02
BM680110-01
BM680110-02
BM680109-01
BM680109-02
BM680107-01
BM680107-02
BM680105-01
BM680105-02
BM680104-01
BM680104-02
BM680103-01
BM680103-02
BM680101-01
BM680101-02
Sample ID
Sample Depth
99 0.5m
11 2m
10 75m
09 200m
07 500m
05 914m
04 1004m
03 1300m
01 1590m
Intensity Ratio
Sample ID Coding:
eg. BM680109-01
Station Cast# Depth Dup#


Small Particle Concentrations and Fluorescence Intensity Ratios (IR) for Station BM69
Σ Small Particle Conc (uL/L)
IR = 1.92
IR = 1.73
IR = 1.76
IR = 1.84
IR = 2.19
BM690199-01
BM690111-01
BM690111-02
BM690110-01
BM690110-02
BM690109-01
BM690109-02
BM690108-01
BM690108-02
BM690107-01
BM690107-02
BM690105-01
BM690105-02
BM690103-01
BM690103-02
BM690101-01
BM690101-02
Sample ID
Sample Depth
99 0.5m
11 2m
10 2m
09 32m
08 57m
07 500m
05 884m
03 1005m
01 1525m
Intensity Ratio

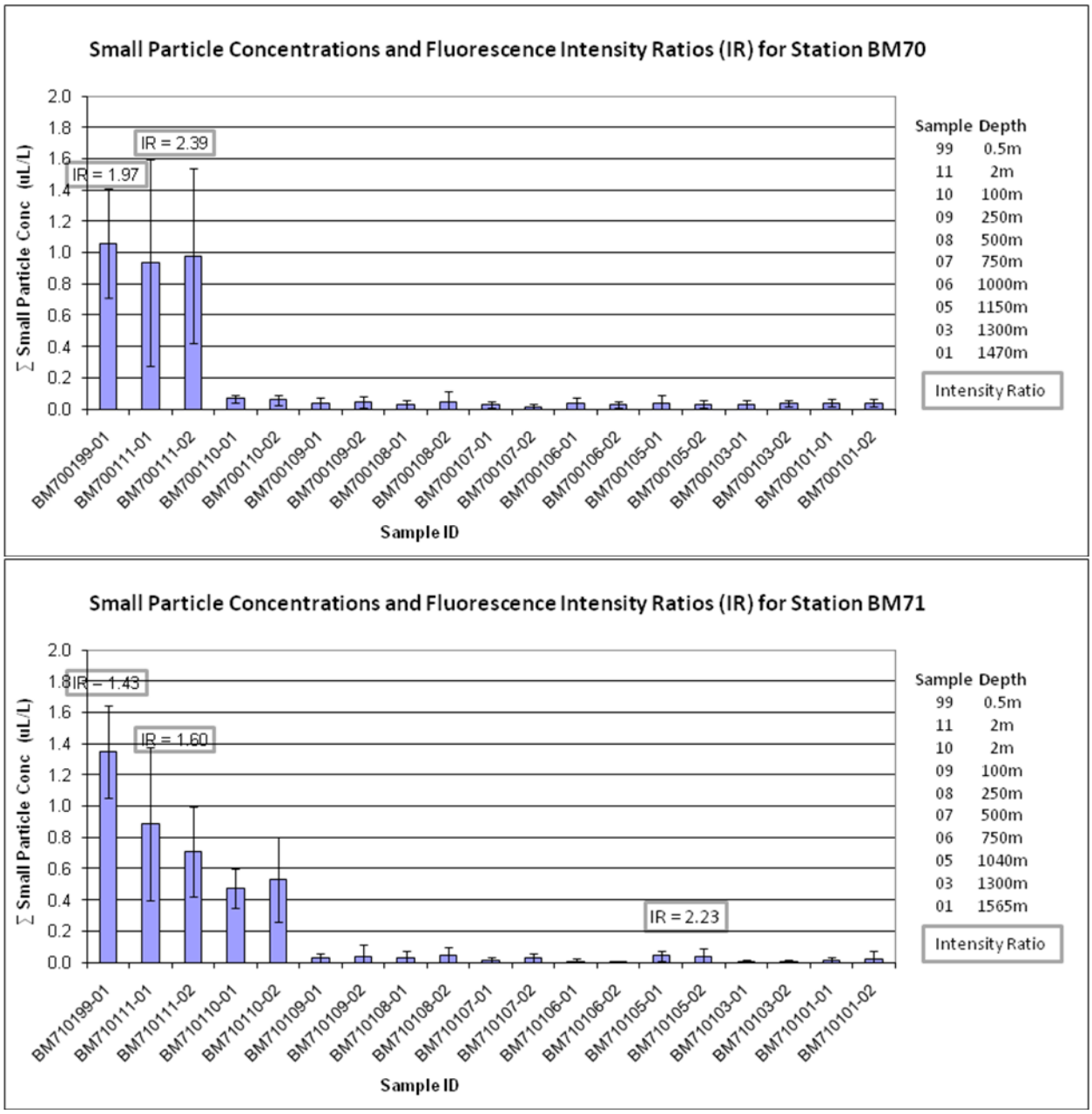


Figure 1: Average small particle concentrations and fluorescence intensity ratios as a function of depth for stations BM68 to BM71.

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