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

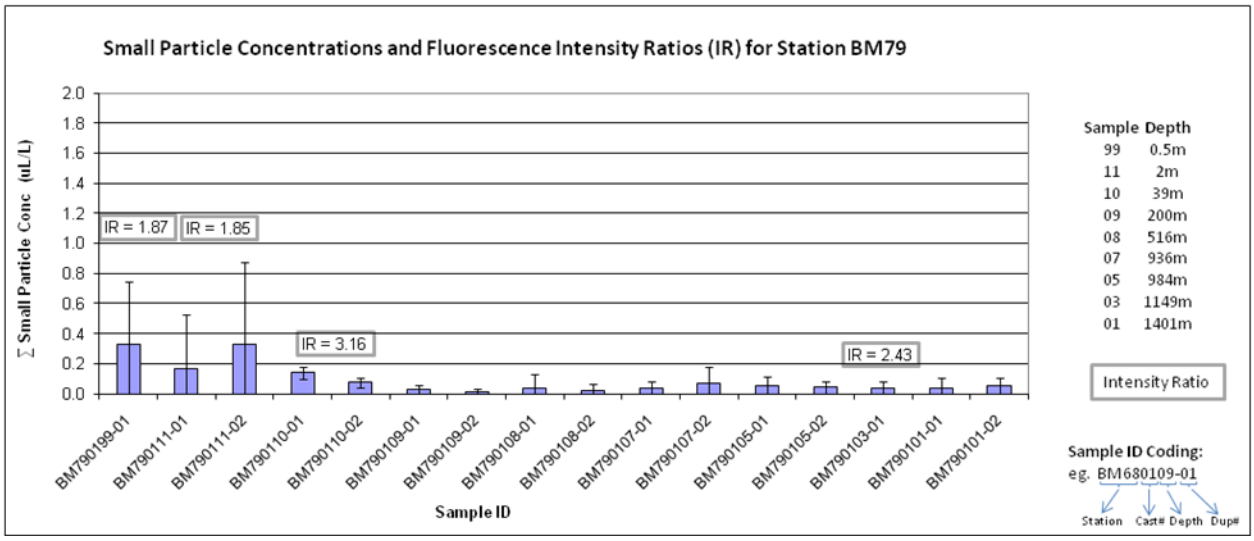
June 12, 2010

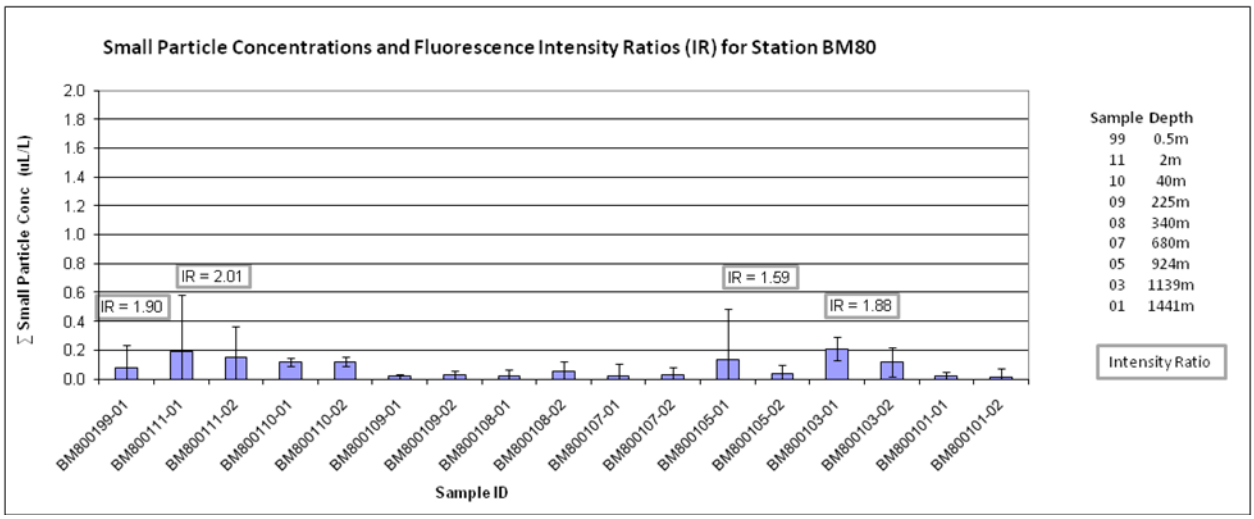
Water samples were collected at four stations for particle size distribution measurements using the LISST-100X particle counter. A total of 66 LISST samples were analyzed, including duplicates. Samples at depths of elevated fluorescence or other significance were selected from the CTD trace for fluorescence intensity ratio measurements and analyzed using a Quantech Life Sciences fixed wavelength fluorometer.

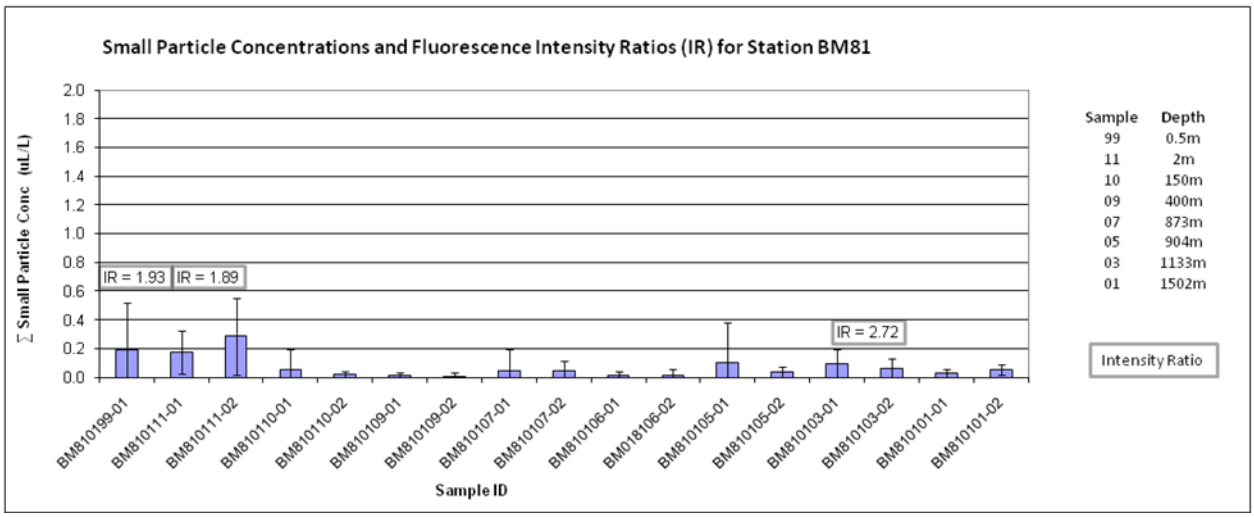
Figure 1 presents the small droplet (∑ 2.5 - 60µm) particle size data and fluorescence intensity ratios for stations BM79 through BM82. Station BM79 was 5km northwest of the wellhead, Station BM80 was 2.5km northwest of the wellhead, Station BM 81 was 2.5km west of the wellhead, and Station BM 82 was 1km west of the wellhead.

All 4 stations showed small particle concentrations which were higher at the surface (0-2m) relative to those at depth with high concentrations at Station BM82, and slightly elevated concentrations at Stations BM79, BM80, and BM81. Additionally, all stations showed signs of increased small particle concentrations between 900 and 950m depth. Evidence of the deepwater plume was observed at all stations on the CTD fluorometer between 1125-1150m, and an elevation in small particle concentrations for this depth was observed at Stations BM80, BM81, and BM82 (only slight increases at Stations BM81 and BM82).

The results of fluorescence intensity ratios at these sites showed that generally lower ratios were observed in the near surface waters (0-2m) at Stations BM79, BM81, and BM82; this trend was reversed at Station BM80. Station BM79 showed a relatively high fluorescence ratio (3.19) at 39m depth. Surface layer fluorescence ratios seem to be higher than were observed at Stations sampled on June 11.







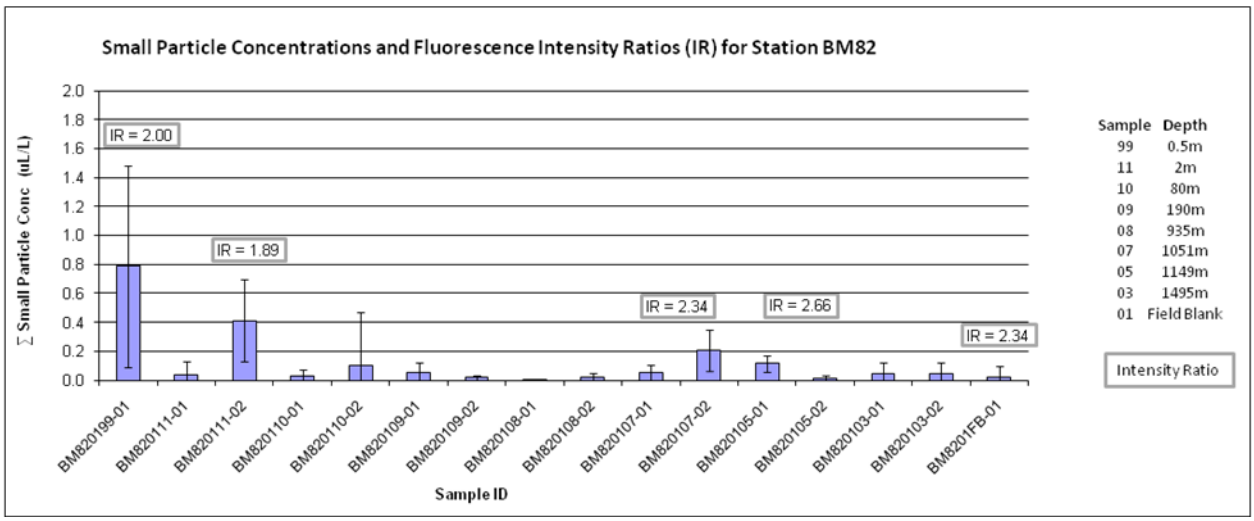


Figure 1: Average small particle concentrations and fluorescence intensity ratios as a function of depth for stations BM79 to BM82.