

US EPA ARCHIVE DOCUMENT

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

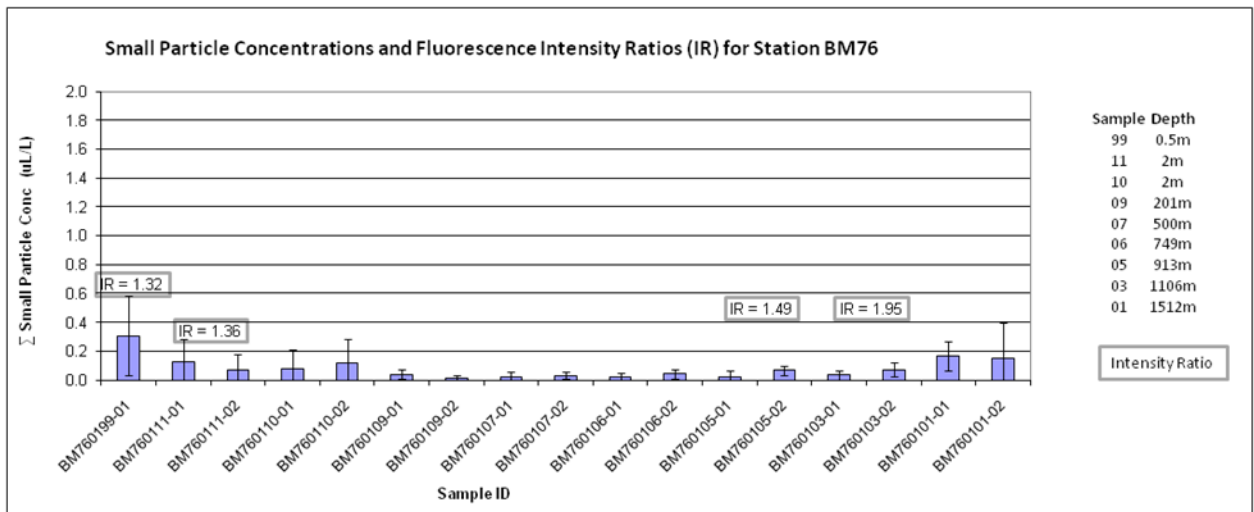
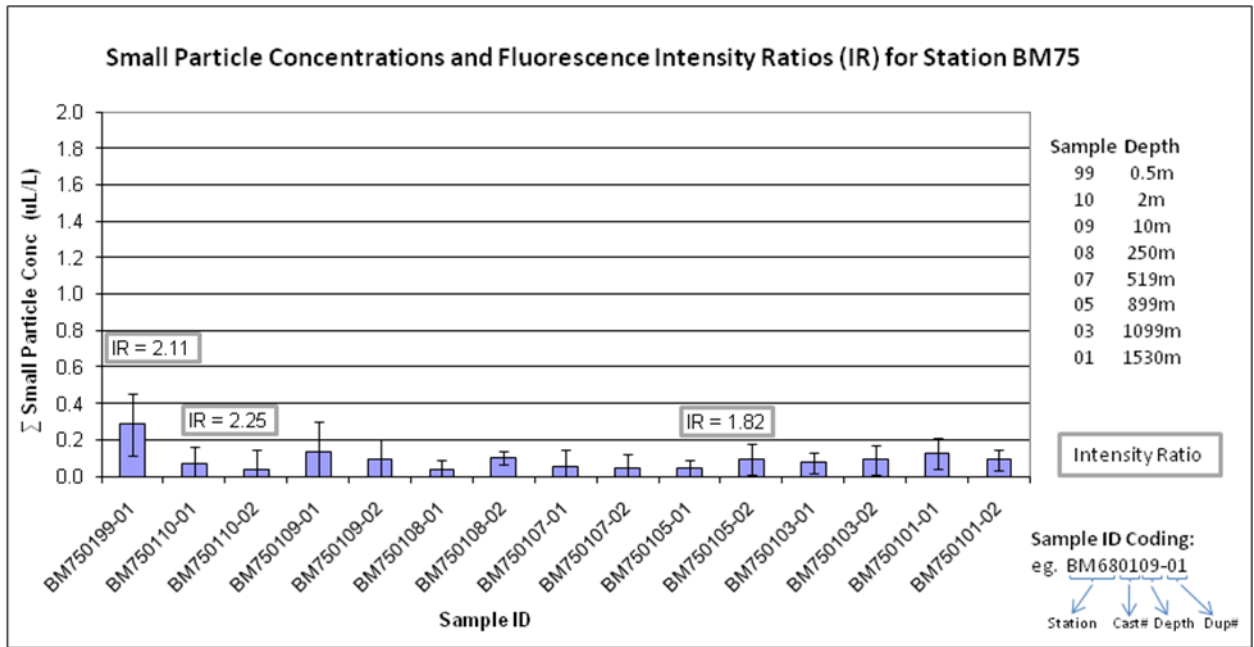
June 11, 2010

Water samples were collected at four stations for particle size distribution measurements using the LISST-100X particle counter. A total of 58 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 (Σ 2.5 - 60 μ m) particle size data and fluorescence intensity ratios for stations BM75 through BM78. Station BM75 was 5km west-southwest of the wellhead, Station BM76 was 5km just south of west from the wellhead, and Station BM 77 was 5km just north of west from the wellhead, and Station BM 78 was 5km west-northwest of the wellhead.

All 4 stations showed elevated concentrations of small particles on the surface (0.5m) - moderate at Station BM75 and BM76, progressing to high at Stations BM77 and BM78. Additionally, Stations BM77 and BM78 showed moderate small particle concentrations in the near water layers (BM77, 10m; BM78, 10m and 37m). Station BM75 showed a consistent low concentration of small particles throughout the entire water column with some evidence of a very slight elevation below 500m. Station BM76 and BM78 showed a slight elevation in small particle concentrations near bottom (BM76 >900m and BM78 >1100m). Evidence of the deepwater plume was observed at 1127m at Station BM77.

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 at Stations BM76, BM77, and BM78 – the opposite trend is seen at Station BM75. Surface layer fluorescence ratios seem to be marginally higher than were observed at Stations sampled on June 7.



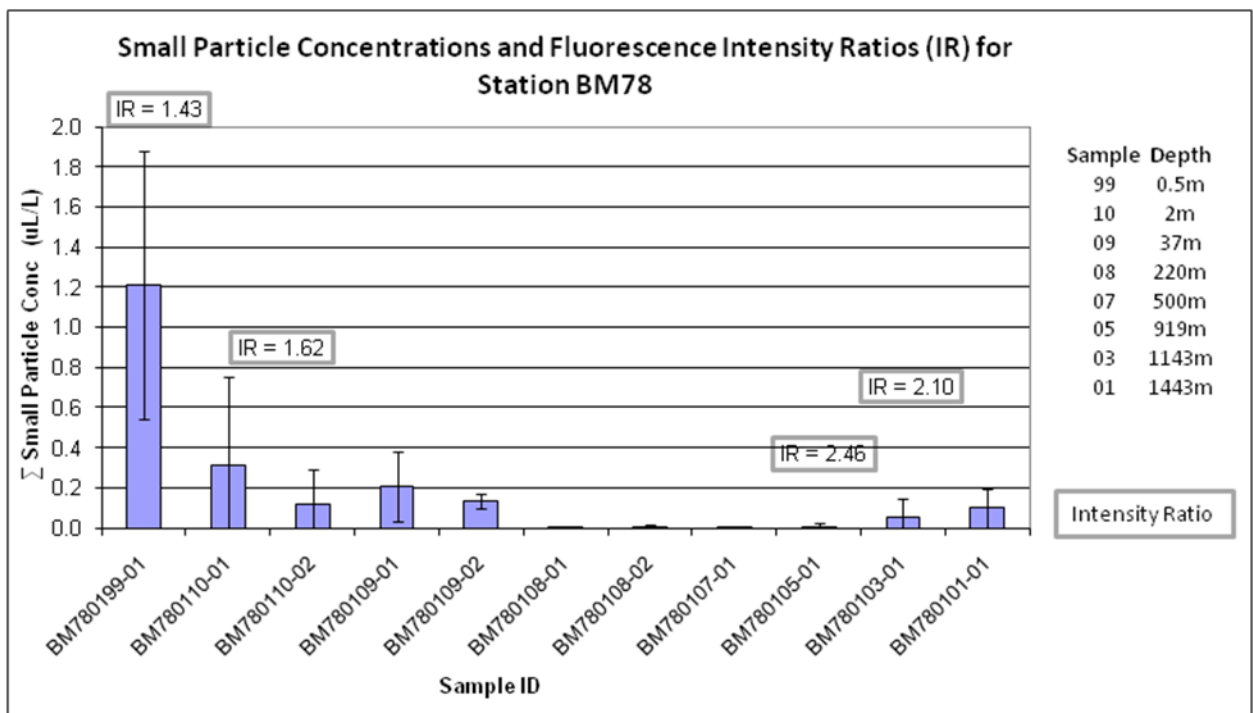
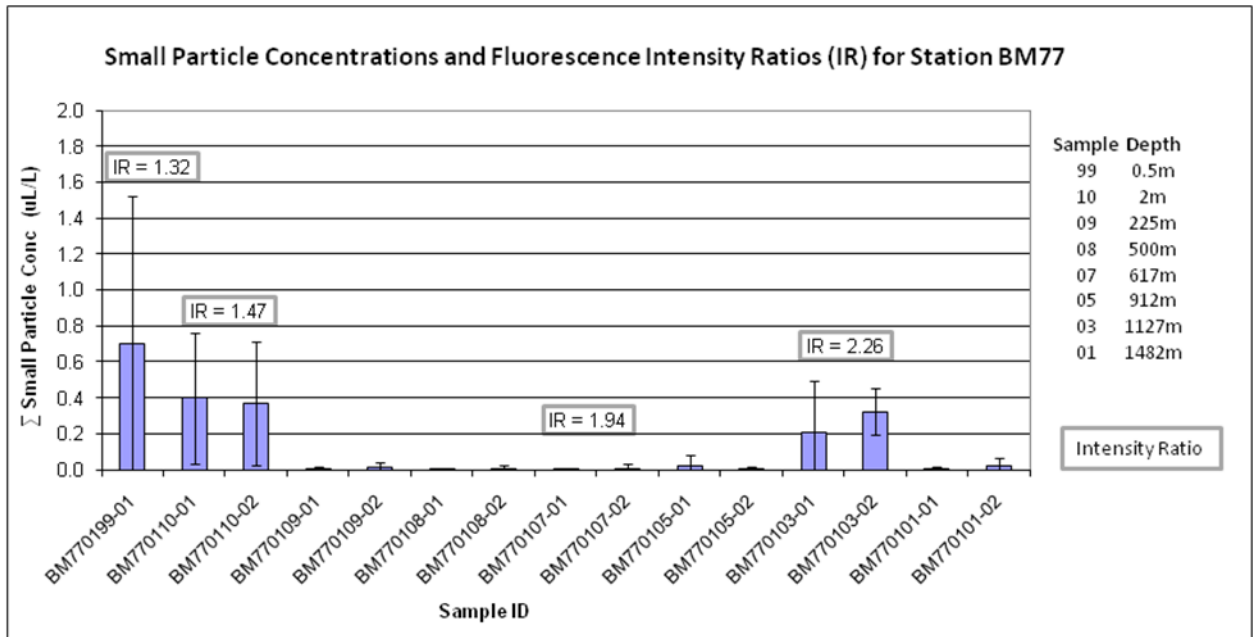


Figure 1: Average small particle concentrations and fluorescence intensity ratios as a function of depth for stations BM75 to BM78.