

US EPA ARCHIVE DOCUMENT

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

July 14, 2010

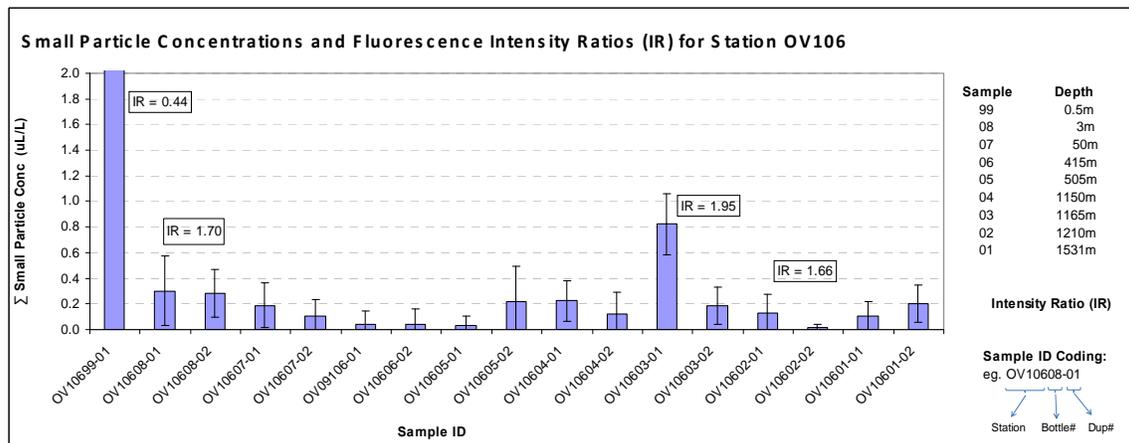
Water samples were collected at five stations for particle size distribution measurements using the LISST-100X particle counter. A total of 85 LISST samples were analyzed, including duplicates. Samples at depths of elevated fluorescence were selected from the CTD trace for fluorescence intensity ratio measurements and analyzed using a Quantech Life Sciences fixed wavelength fluorometer.

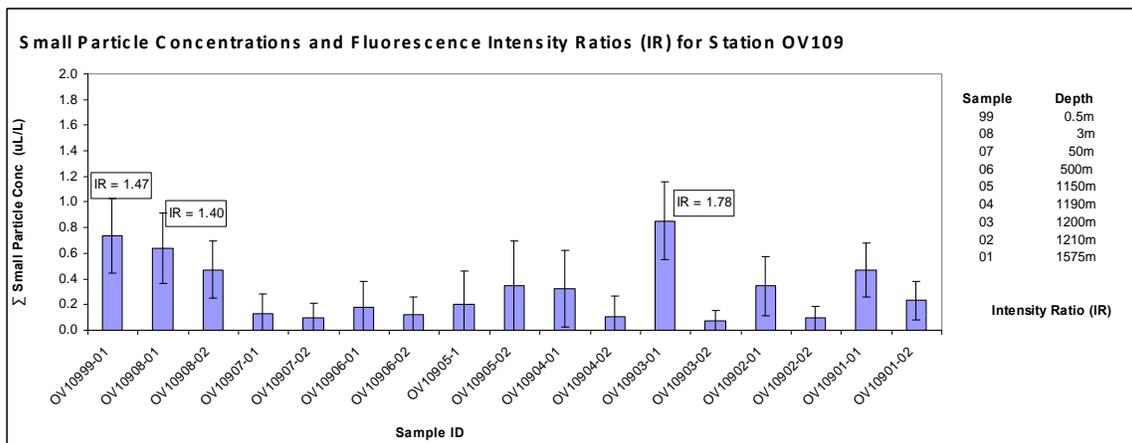
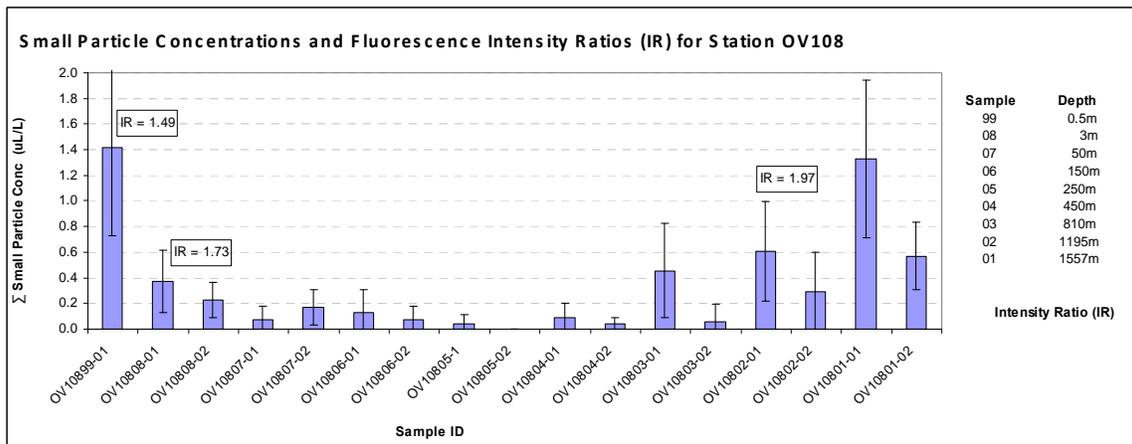
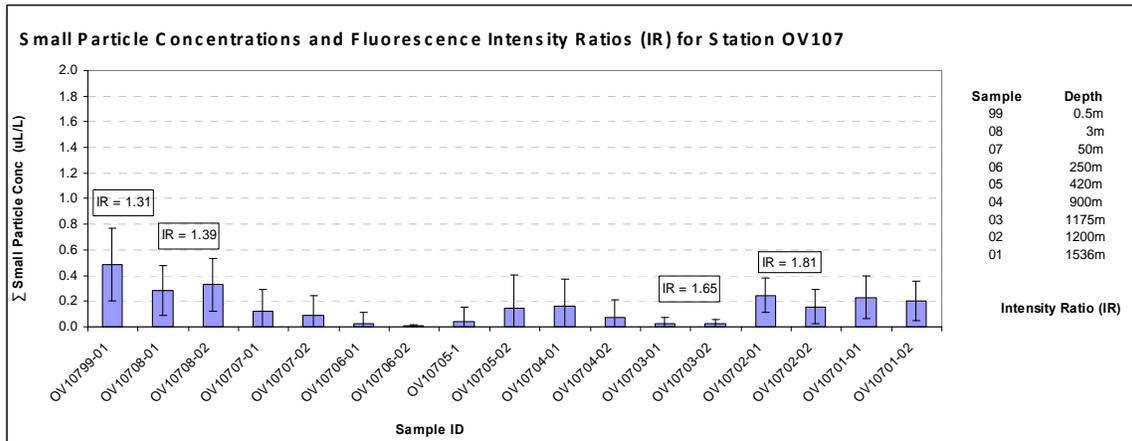
Figure 1 presents the small droplet (Σ 2.5 - 60 μ m) particle size data and fluorescence intensity ratios for stations OV106 through OV110. The station locations were:

OV106: Lat= 28.731247 Long= -88.379414
 OV107: Lat= 28.713035 Long= -88.403393
 OV108: Lat= 28.712916 Long= -88.384273
 OV109: Lat= 28.696338 Long= -88.385079
 OV110: Lat= 28.769229 Long= -88.354335

Slightly elevated concentrations of small particles were detected at station OV107, where the *in situ* CTD fluorometer detected a very weak subsurface plume. Slightly elevated concentrations of small particles were detected at station OV108 where the *in situ* CTD fluorometer did not detect a subsurface plume; however, there was a change in the dissolved oxygen levels at 1195m. The deep water plume was not evident at Stations OV106, and OV108 through OV110, in either the CTD trace or small particle concentrations. Highly elevated concentrations of small particles were detected at the surface (0.5m) at stations OV106 and OV108. Slightly elevated concentrations of small particles were detected at the surface (0.5m) at stations OV107, OV109 and OV110.

The results of fluorescence intensity ratios showed that low ratios were observed in both the near surface waters (3m or less) and in the deeper water samples. A highly elevated intensity ratio was observed in the surface water sample at Station OV106.





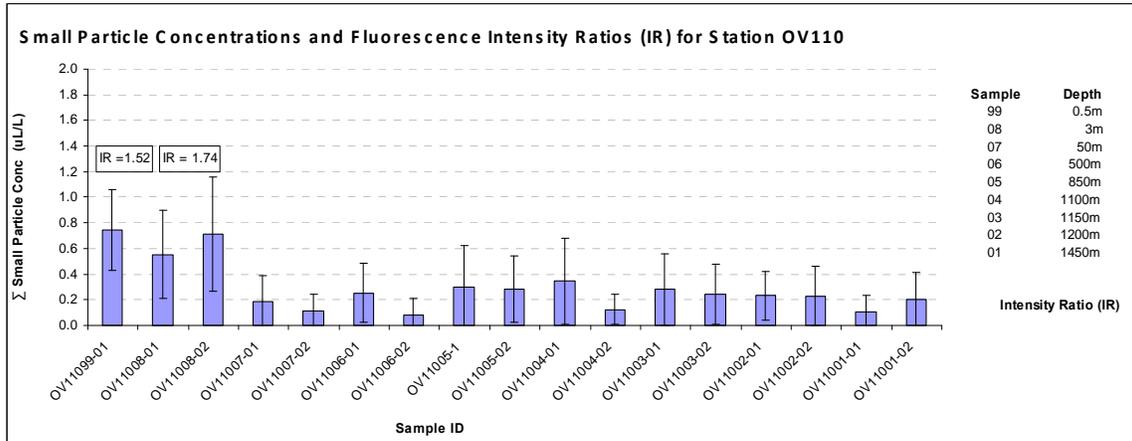


Figure 1: Average small particle concentrations and fluorescence intensity ratios as a function of depth for stations OV106 to OV110.