

US EPA ARCHIVE DOCUMENT

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

July 20, 2010

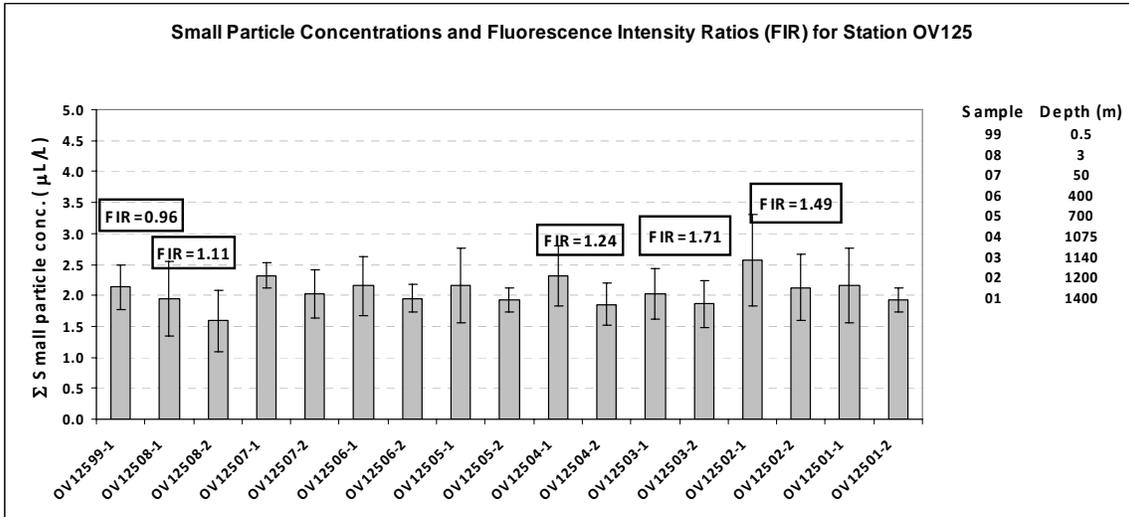
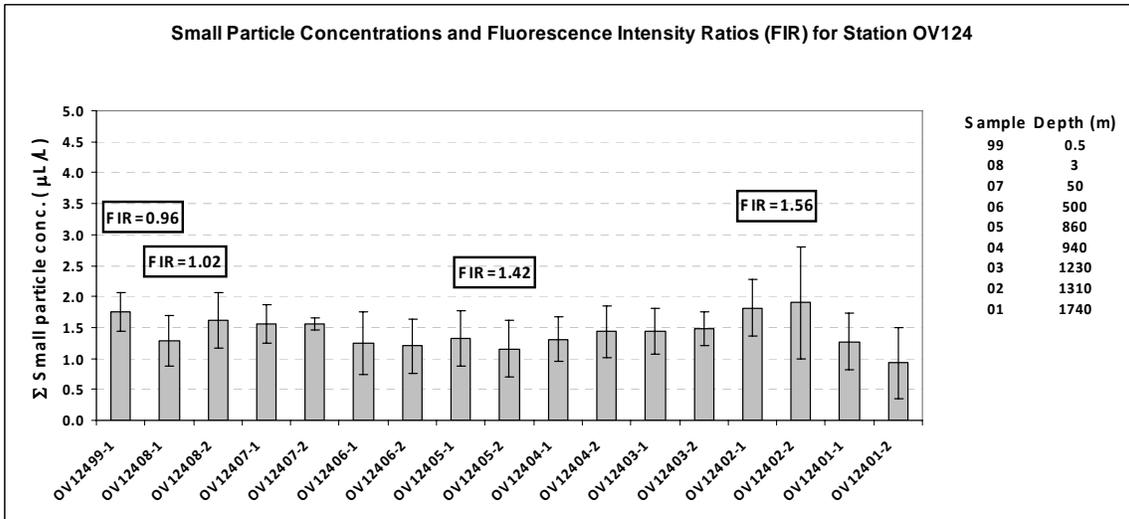
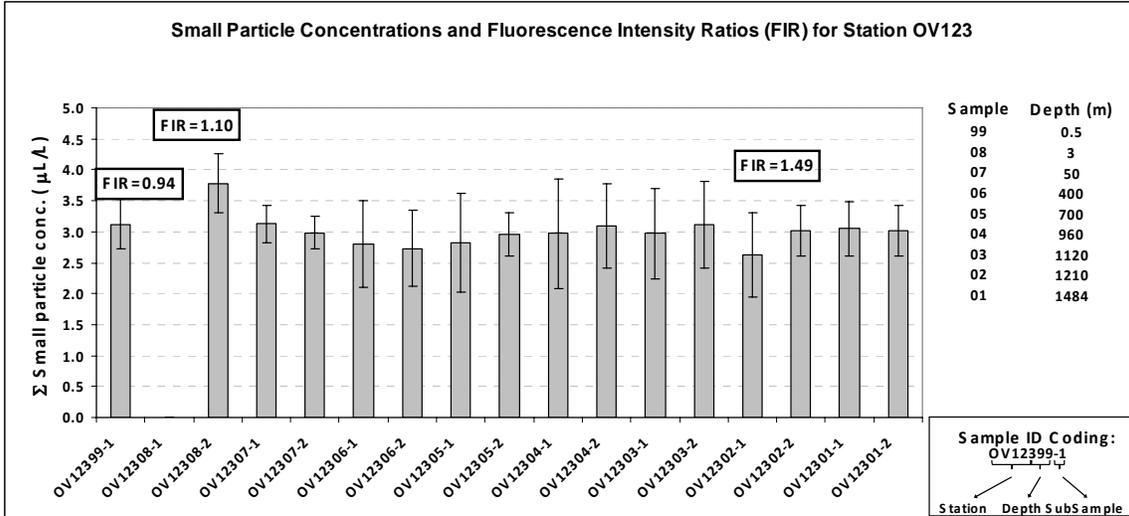
Water samples were collected at five stations for particle size distribution measurements using the LISST-100X particle counter. A total of 84 LISST samples were analyzed, including duplicates (one duplicate was removed). Samples at depths of elevated fluorescence were selected from the CTD trace for fluorescence intensity ratio measurements and analyzed using a Quantech Life Sciences fixed wavelength fluorometer.

Figure 1 presents the small droplet ( $\Sigma$  2.5 - 60 $\mu$ m) particle size data and fluorescence intensity ratios for stations OV123 through OV127. The station locations were:

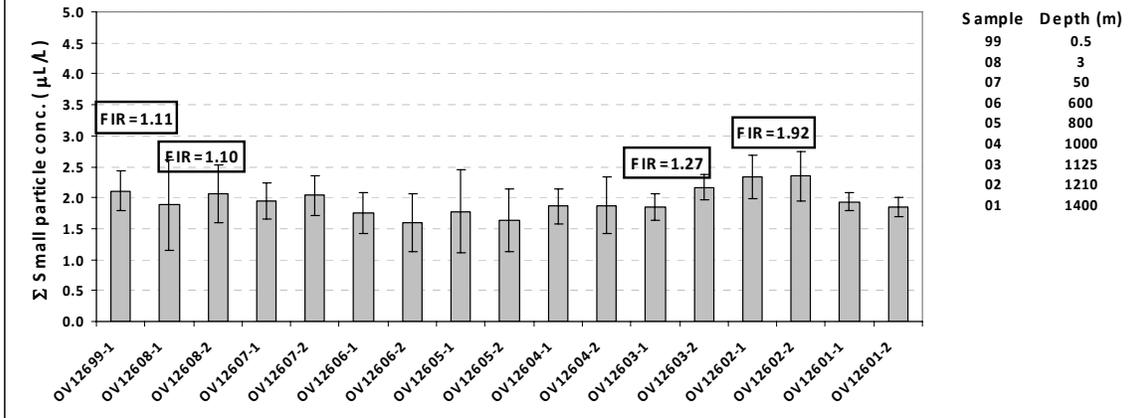
OV123: Lat= 28.649033 Long= -88.490761  
OV124: Lat= 28.605641 Long= -88.396858  
OV125: Lat= 28.550186 Long= -88.483499  
OV126: Lat= 28.526192 Long= -88.447950  
OV127: Lat= 28.483187 Long= -88.474006

Consistently high concentrations of small particles were detected at all depths for Station OV123, where the *in situ* CTD fluorometer detected a subsurface plume at approx. 1210m. At Station OV124 a slightly higher small particles concentration was detected at 1310m, compared to other depth concentrations, where the *in situ* CTD fluorometer detected a subsurface plume at the same depth. The *in situ* CTD fluorometer detected small subsurface plumes at 1075 to 1200m(s) for Station OV125. At Station OV125, the LISST produced similar small particles concentrations at all depths. At Station OV126 a slightly higher small particles concentration was detected at 1210m, where the *in situ* CTD fluorometer detected a subsurface plume at the same depth. For Station OV127, the *in situ* CTD fluorometer detected a slight subsurface plume at 1170m; however this was not evident from the LISST small particles concentration.

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 for stations OV123 to OV127.



Small Particle Concentrations and Fluorescence Intensity Ratios (FIR) for Station OV126



Small Particle Concentrations and Fluorescence Intensity Ratios (FIR) for Station OV127

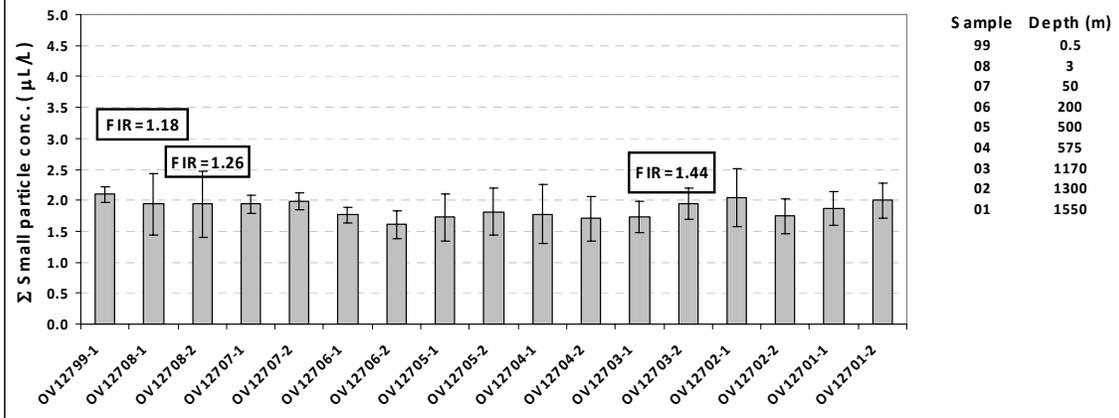


Figure 1: Average small particle concentrations and fluorescence intensity ratios as a function of depth for stations OV123 to OV127.