

US EPA ARCHIVE DOCUMENT

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

July 22, 2010

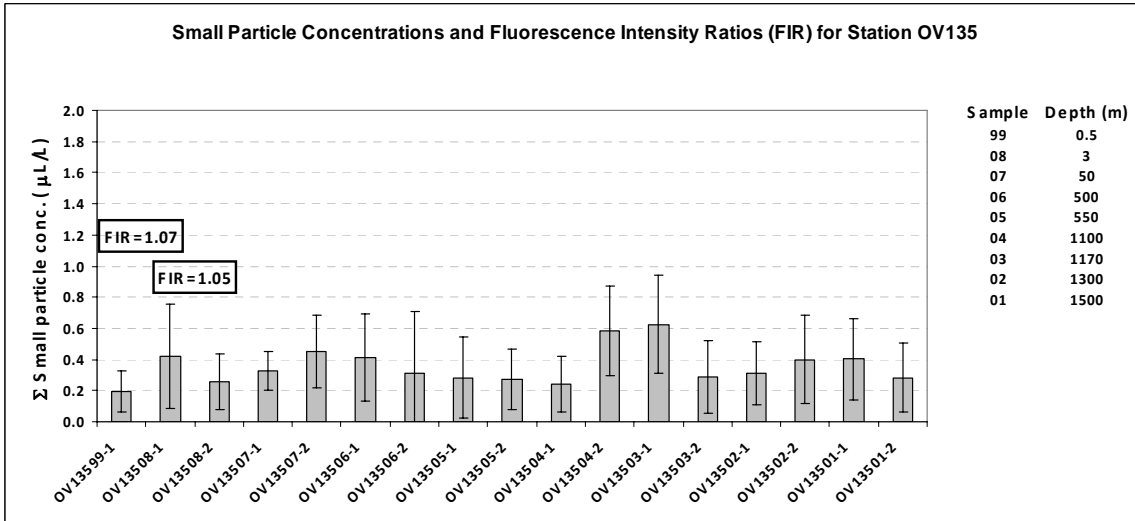
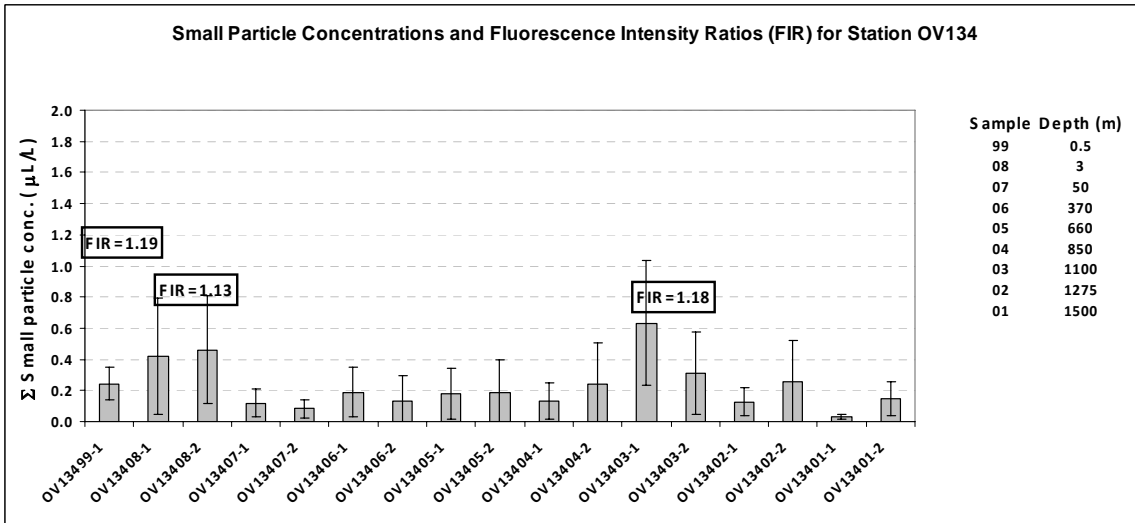
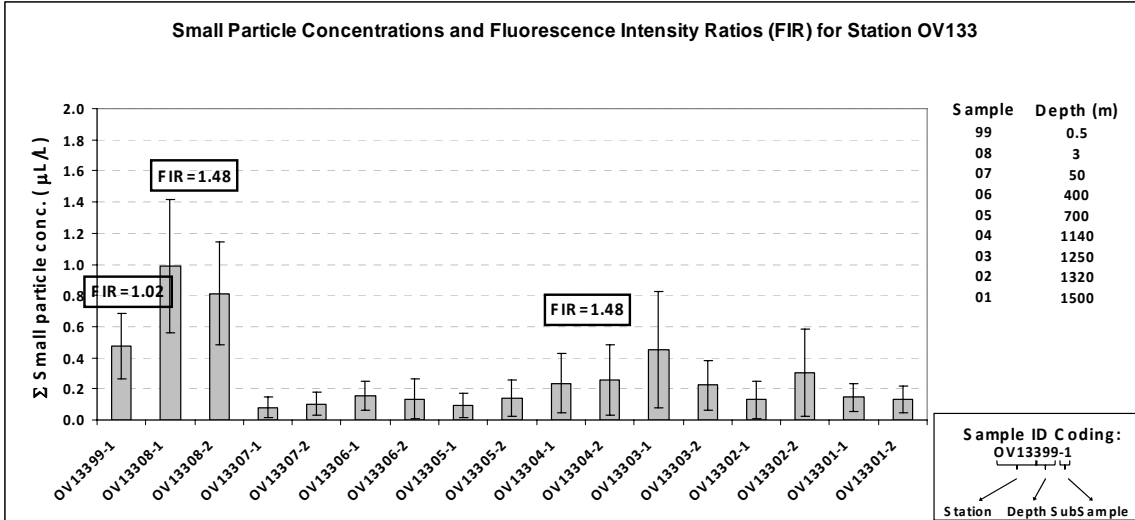
Water samples were collected at five stations for particle size distribution measurements using the LISST-100X particle counter. A total of 85 LISST samples were analyzed, including duplicates. Samples at depths of elevated fluorescence were selected from the CTD trace for fluorescence intensity ratio 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 OV133 through OV137. The station locations were:

OV133: Lat= 28.512829 Long= -88.330309
OV134: Lat= 28.527014 Long= -88.271819
OV135: Lat= 28.487966 Long= -88.243903
OV136: Lat= 28.467708 Long= -88.372679
OV137: Lat= 28.418935 Long= -88.372093

For Station OV133, an elevation in small particles concentration was observed in the near surface samples (0.5 and 3m) and a slight elevation at 1250m. The *in situ* CTD fluorometer detected a small subsurface plume at 1140m. At Station OV134, an elevation in small particles concentrations was detected in the near surface samples (0.5 and 3 m) and at 1100m. The *in situ* CTD fluorometer detected a subsurface plume at 1100m at Station OV134. For Station OV135 small particles concentrations were relatively low at all depths; however samples at 1100 and 1170m each had one duplicate that was slightly elevated. The *in situ* CTD fluorometer did not detect a subsurface plume at Station OV135. Slightly elevated small particles concentrations were detected in the near surface samples (0.5 and 3m) as well as from 1000 to 1291m at Station OV136. There were three small subsurface plumes at 1120, 1210, and 1291m detected by the CTD fluorometer at Station OV136. At Station OV137 small particles concentrations were consistent at all depths. The *in situ* CTD fluorometer detected a slight subsurface plume at 1200m.

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 OV133 to OV137.



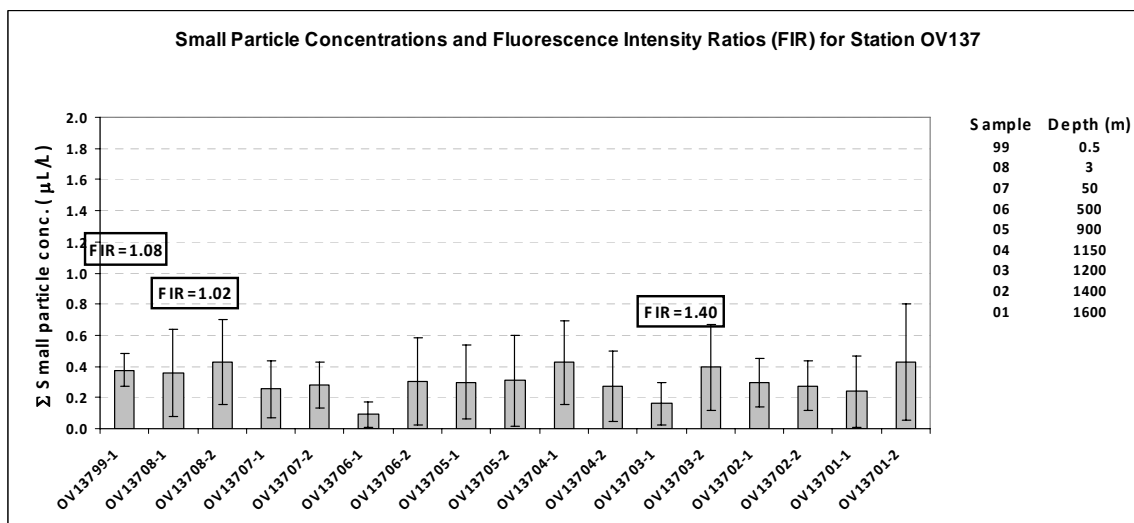
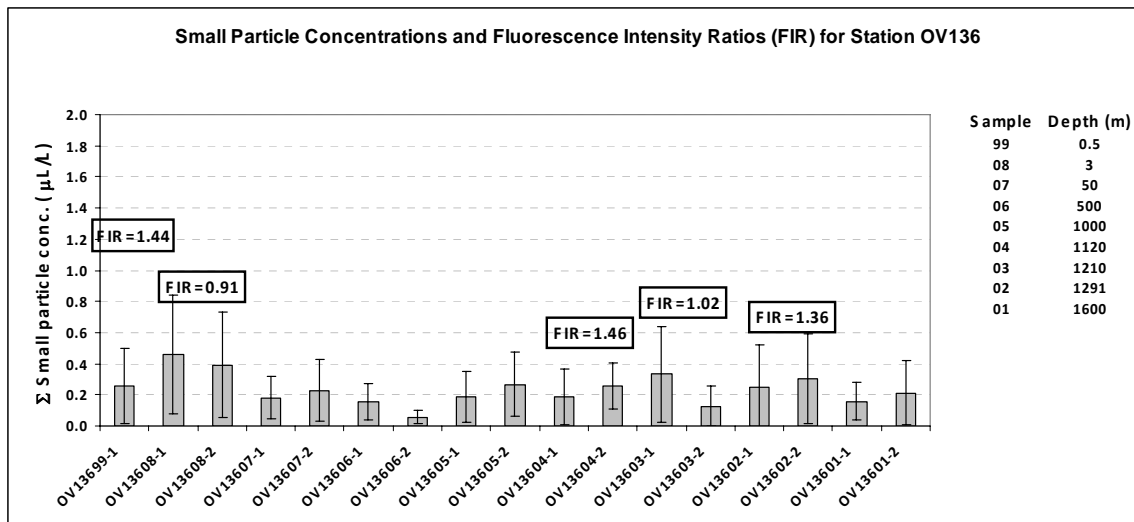


Figure 1: Average small particle concentrations and fluorescence intensity ratios as a function of depth for stations OV133 to OV137.