

US EPA ARCHIVE DOCUMENT

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

July 15, 2010

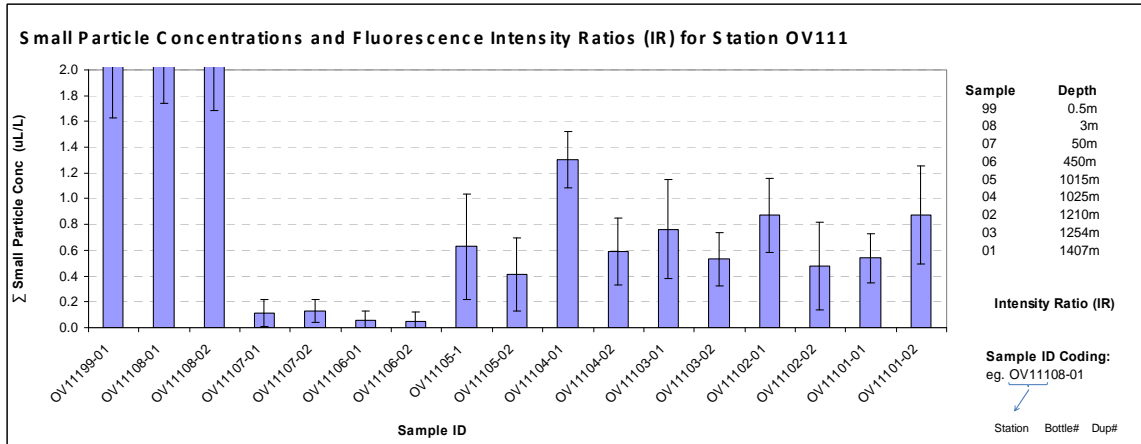
Water samples were collected at four stations for particle size distribution measurements using the LISST-100X particle counter. A total of 68 LISST samples were analyzed, including duplicates. No samples were collected at station OV112, several Niskin bottles were lost or destroyed during the cast. 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 OV111 through OV115. The station locations were:

- OV111: Lat= 28.744080 Long= -88.468196
- OV112: Lat= 28.734271 Long= -88.411528
- OV113: Lat= 28.725322 Long= -88.404076
- OV114: Lat= 28.698000 Long= -88.407000
- OV115: Lat= 28.699233 Long= -88.340284

Moderately elevated concentrations of small particles were detected at Stations OV111, OV113, and OV114, where the *in situ* CTD fluorometer detected a very weak subsurface plume and a change in dissolved oxygen levels. Elevated particles were also detected at station OV115, the *in situ* CTD fluorometer did not detect a subsurface plume; however, there was a change in dissolved oxygen levels at approx. 1150m. Extremely highly elevated concentrations of small particles were detected at the surface (0.5m) at stations OV111 and OV113. Highly elevated concentrations of small particles were detected at the surface (0.5m) at stations OV114 and OV115.

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 OV113 to OV115. Fluorescence data was not collected at station OV111.



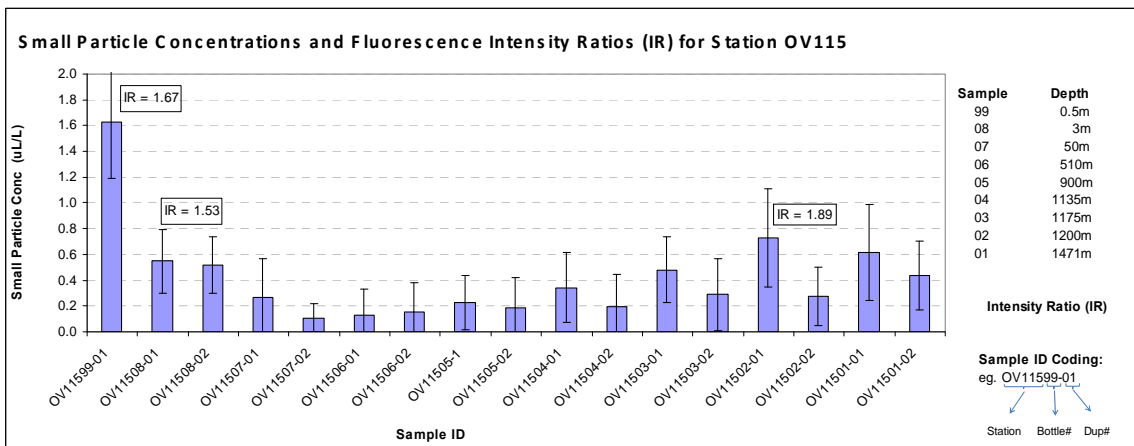
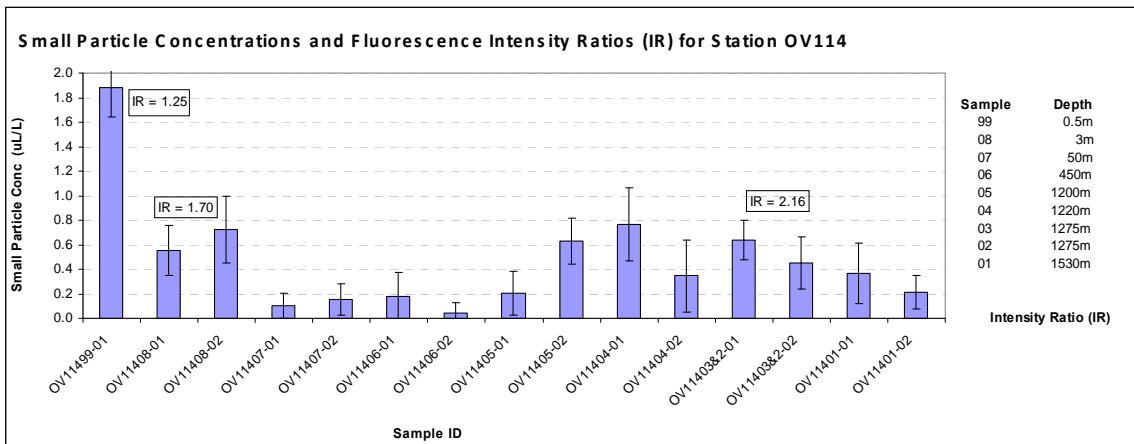
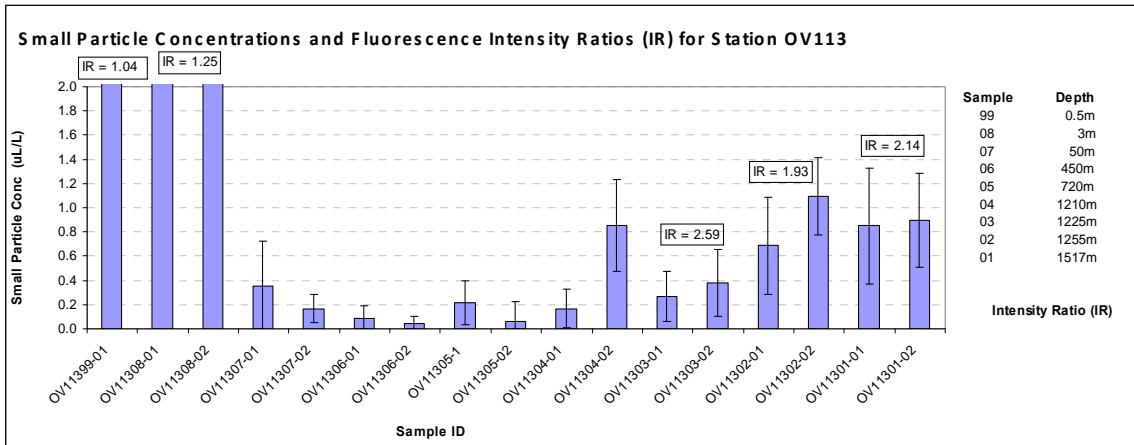


Figure 1: Average small particle concentrations and fluorescence intensity ratios as a function of depth for stations OV111, and OV113 to OV115.