

US EPA ARCHIVE DOCUMENT

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

July 9, 2010

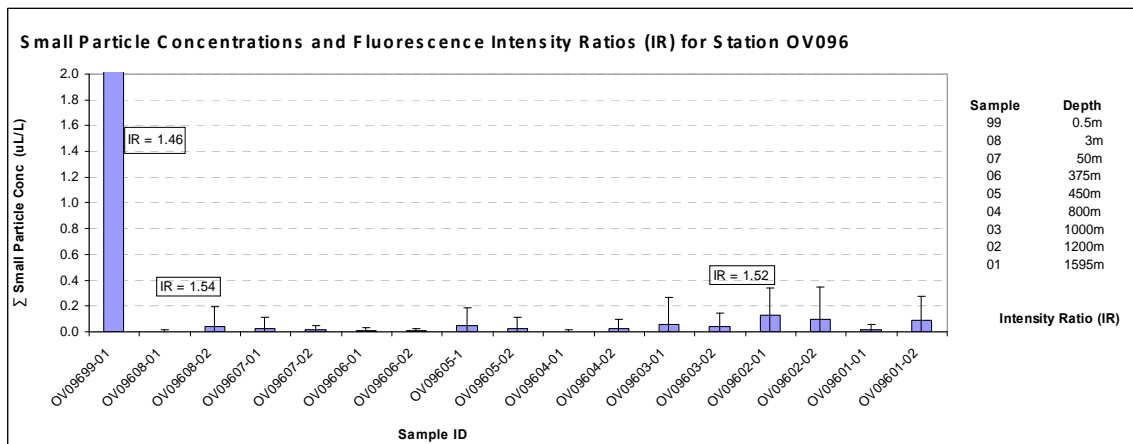
Water samples were collected at five stations for particle size distribution measurements using the LISST-100X particle counter. A total of 83 LISST samples were analyzed, including duplicates. Samples at depths of elevated fluorescence were selected from the CTD trace for fluorescence intensity ratio 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 OV096 through OV100. The station locations were:

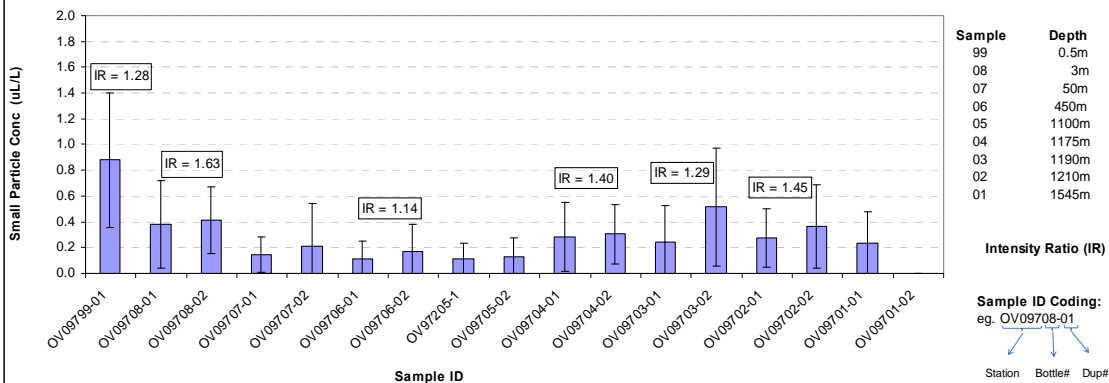
- OV096: Lat= 28.693076 Long= -88.368057 (4.66 km southwest of well head)
- OV097: Lat= 28.707723 Long= -88.403559 (4.97 km southwest of well head)
- OV098: Lat= 28.7695553 Long= -88.419376 (7.02 km southwest of well head)
- OV099: Lat= 28.7686359 Long= -88.440700 (9.26 km southwest of well head)
- OV100: Lat= 28.7689102 Long= -88.400276 (6.37 km southwest of well head)

Moderately elevated concentrations of small particles were detected in deep water (approx. 1150-1250m) at stations OV097 and OV098, where the *in situ* CTD fluorometer detected a moderate subsurface plume. Slightly elevated concentrations of small particles were detected at station OV099 (approx. 1200-1250m), where the *in situ* CTD fluorometer detected a weak subsurface plume. The deep water plume was not evident at Station OV096, in either the CTD trace or small particle concentrations. However, highly elevated concentrations of small particles were detected in the surface sample (0.5m) at Station OV096.

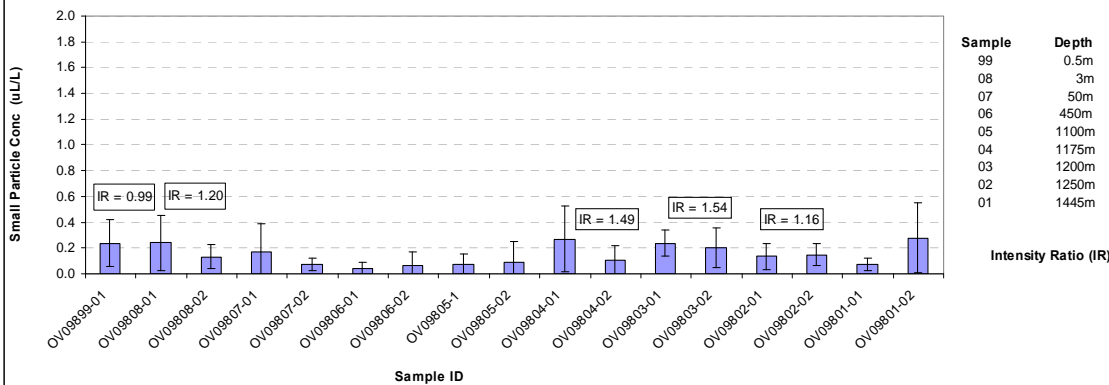
The results of fluorescence intensity ratios showed that low ratios were observed in both the near surface waters (3m or less) and in the deeper water samples. Intensity ratios below 1 were detected at stations OV098 & OV099 at the surface (0.5m).



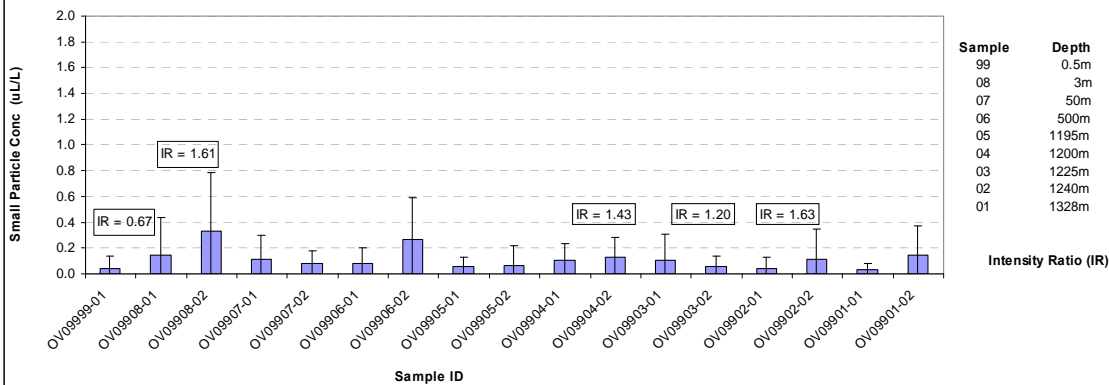
Small Particle Concentrations and Fluorescence Intensity Ratios (IR) for S station OV097



Small Particle Concentrations and Fluorescence Intensity Ratios (IR) for S station OV098



Small Particle Concentrations and Fluorescence Intensity Ratios (IR) for S station OV099



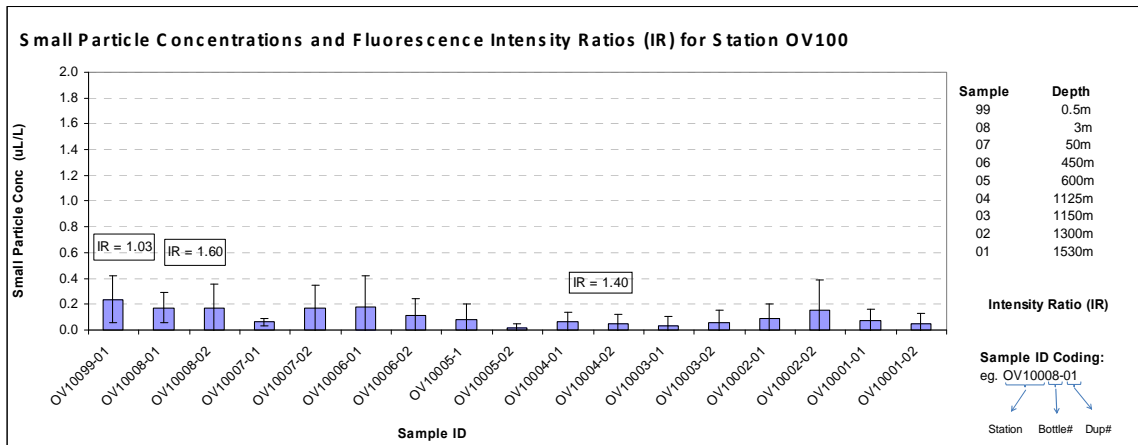


Figure 1: Average small particle concentrations and fluorescence intensity ratios as a function of depth for stations OV096 to OV100.