

US EPA ARCHIVE DOCUMENT

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

August 8, 2010

Water samples were collected at four stations for particle size distribution measurements using the LISST-100X particle counter. A total of 79 LISST samples were analyzed, including duplicates. Samples from the surface and 3m, plus those at depths of elevated fluorescence selected from the CTD trace, were analyzed for fluorescence intensity ratio measurements using a Quantech Life Sciences fixed wavelength fluorometer.

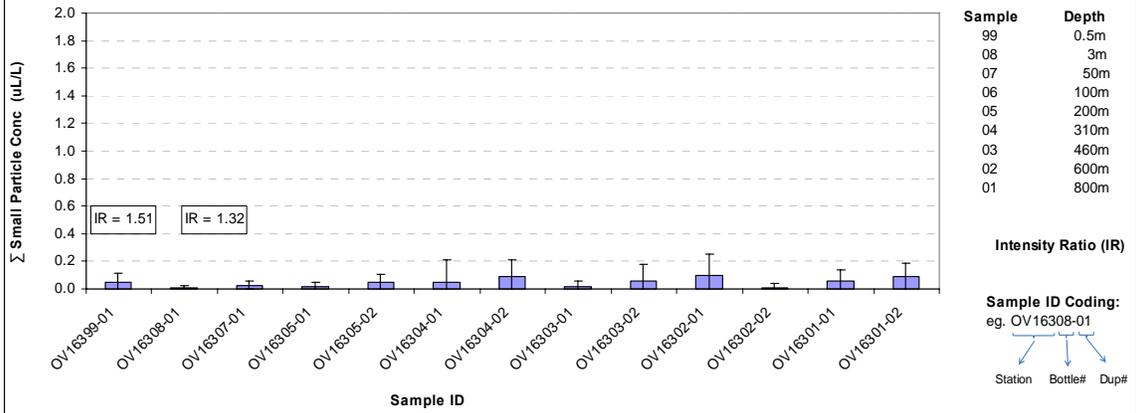
Figure 1 presents the small droplet (Σ 2.5 - 60 μ m) particle size data and fluorescence intensity ratios for stations OV163 through OV167. The station locations were:

OV163: Lat= 28.310531 Long= -89.174925
OV164: Lat= 28.293403 Long= -89.174945
OV165: Lat= 28.235176 Long= -89.175256
OV166: Lat= 28.115975 Long= -89.029607
OV167: Lat= 27.982238 Long= -88.862070

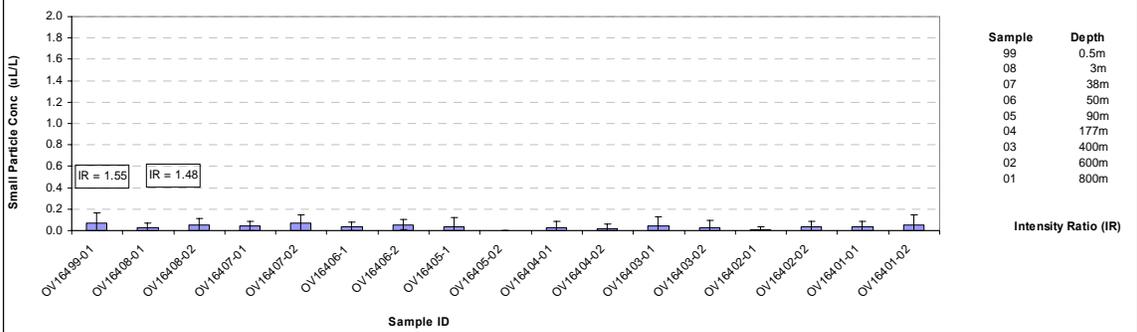
Small particle concentrations at all stations were low, similar to what has been observed on August 7, 2010. There was no evidence of a subsurface plume at any station sampled with the exception of stations OV166 and OV167. At OV166 a dip in the oxygen concentration was associated with a very small rise in the fluorescence intensity of the CTD fluorometer trace at about 1150-1200m, while OV167 had a smaller drop in oxygen concentration with no observable change in fluorescence intensity. At station OV166 there was no increase in small particle concentration at the depth of the decrease in oxygen over surrounding station samples, but small particle concentrations from samples associated with the oxygen decrease at station OV167 appeared to be slightly elevated over other samples at this station.

Fluorescence intensity ratios were very similar to those observed recently, falling between 1.06 and 1.70. The fluorescence intensity ratio taken from the depth of the plume at station OV166 was not any different from those taken from the surface or 3m samples at any station.

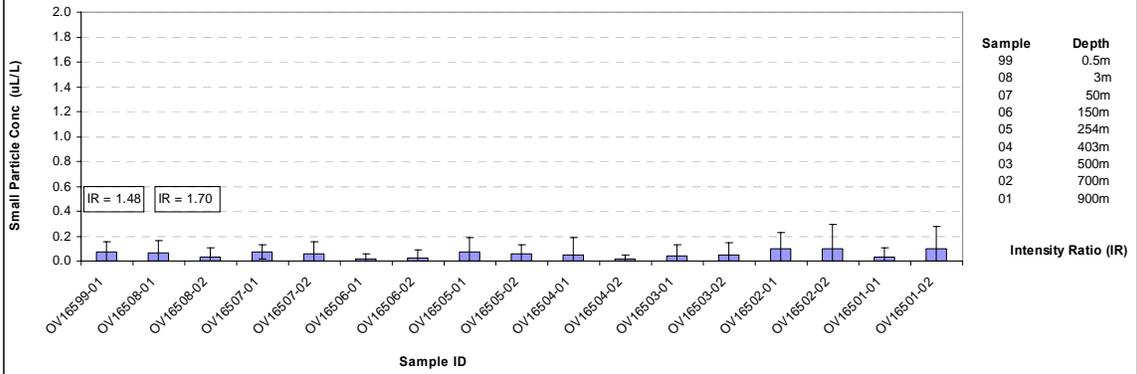
Small Particle Concentrations and Fluorescence Intensity Ratios (IR) for Station OV163



Small Particle Concentrations and Fluorescence Intensity Ratios (IR) for Station OV164



Small Particle Concentrations and Fluorescence Intensity Ratios (IR) for Station OV165



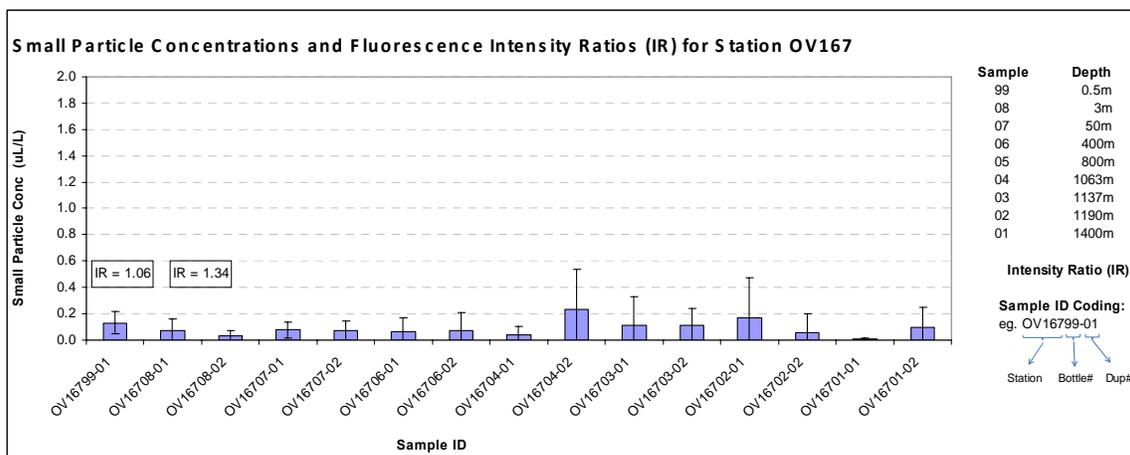
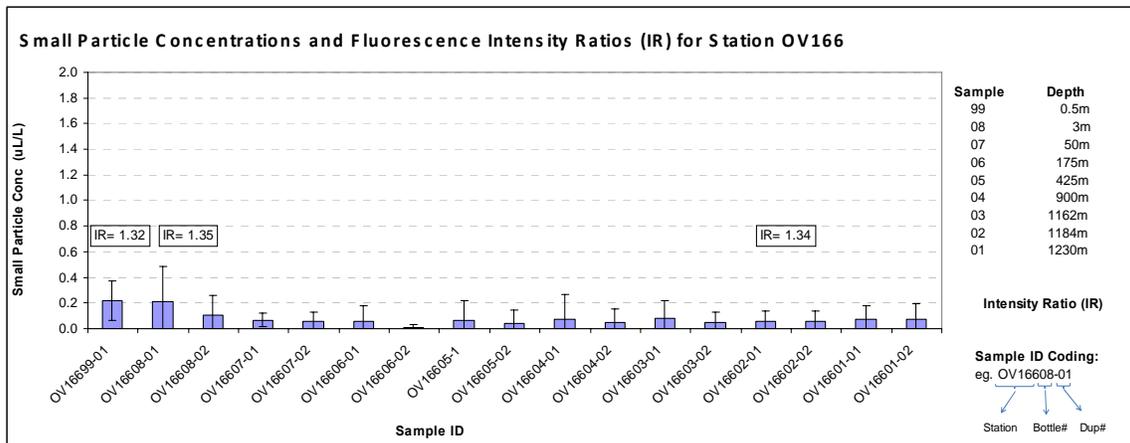


Figure 1: Average small particle concentrations and fluorescence intensity ratios as a function of depth for stations OV163 to OV167.