

Indicators used to monitor subsurface oil during the Deepwater Horizon Event

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The Gulf of Mexico Deepwater Horizon oil spill was the largest accidental marine spill in the history of the petroleum industry. The spill was also unprecedented due to the extreme depth of the wellhead leak within the ocean, posing unique challenges to the monitoring efforts, where oil that remained in the subsurface plume (between 1000-1500m) could not be tracked via common methods such as aerial surveys. The emergency response effort employed various indicators to detect and track the plume such as dissolved oxygen, fluorescence, and laser in situ scattering and transmissometry (LISST) of suspended particle size. Assessment of these indicators was conducted by a collaborative team of scientists from federal, academic and industrial organizations (Joint Analysis Group – full membership at <http://ecowatch.ncddc.noaa.gov/jag/membership.html>), who were tasked with providing rapid response analysis of data. Discussed here will be a review of the indicators used during the response with specific focus on the benefits and limitations of the measurements, indicator validation with chemical analyses (PAHs, TPH, BTEX) and lessons learned from the response effort.