

Citation:

Smith, R. H., E. M. Johns, G. J. Goni, J. Trinanes, R. Lumpkin, A. M. Wood, C. R. Kelble, S. R. Cummings, J. T. Lamkin, and S. Privoznik, 2014: Oceanographic conditions in the Gulf of Mexico in July 2010, during the Deepwater Horizon oil spill. *Cont. Shelf Res.*, 77:118-131. doi:10.1016/j.csr.2013.12.009.

Justification Text:

This manuscript reports on the oceanographic conditions in the eastern Gulf of Mexico (GOM) in July 2010, during the Deepwater Horizon (DWH) oil spill. The work highlights the Physical Oceanography Division's ability to rapidly mount and lead a cross-line office response to an environmental disaster of immediate national concern, to obtain critical measurements, to distribute them to the operational and scientific community, and to publish them in the peer-reviewed literature.

While the GOM has been extensively studied and its oceanographic features are well known, this manuscript is one of a very few which document and analyze targeted in situ observations collected over the broader eastern GOM during the DWH spill.

Following the DWH explosion on April of 2010, it was widely speculated, based on numerical model output, that oil and contaminants from the spill could have been rapidly transported by the north Atlantic western boundary current system, from the northern GOM to remote downstream regions such as south Florida, the Atlantic seaboard, and even Europe. In response to this speculation and at the request of NOAA leadership, in July 2010 PhOD led an interdisciplinary survey aboard the NOAA Ship *Nancy Foster*, to search for oil across the eastern GOM and to evaluate the connectivity of the complex eddy field present across the region at that time.

In this manuscript we pair our collected shipboard measurements with satellite observations to assess GOM oceanographic connectivity. We show that by July 2010, no surface or subsurface oil was measurable in areas surveyed south of 28N, which included the Loop Current, a Loop Current Ring, and other GOM mesoscale circulation features. Additionally, we find that by July 2010 a direct transport pathway from the northern Gulf to downstream areas such as the sensitive south Florida coastline was no longer in place.

Already cited since publication, we expect this manuscript to continue to benefit the scientific and response community focused on oil spill related science and operations well into the future.