Thursday, October 11
Poster Session 4
10:30–12:00

Poster 80

PHYSICAL/BIO-OPTICAL CHARACTERIZATION OF FRONTS AND LAYERS NEAR THE MISSISSIPPI RIVER DELTA

Surface ocean fronts and subsurface layers represent areas of strong property gradients, and often enhanced currents, mixing, and/or biological activity, with vertical and horizontal structure that can vary over short time and space scales. In March 2016, we conducted a 2-week field campaign on the shelf/slope in the northern Gulf of Mexico near the Mississippi River Delta. Our goal was to characterize fronts and layers across a variety of complex oceanic regimes spanning coastal to offshore waters using in situ hydrographic, optical, biological, and geological data sets, satellite imagery (MODIS, VIIRS, CALIPSO), and hydrodynamic modeling (Navy Coastal Ocean Model, NCOM). We deployed a line mooring at an offshore location along a CALIPSO track to assess the ability of the spaceborne LiDAR to resolve vertical bio-optical structure. The mooring operated for 5 days, with a coincident CALIPSO overpass at roughly the middle of the time-series. We collected hydrographic and bio-optical data along transects (using a towed, undulating vehicle; scanfish) and at CTD stations, and compare these to coincident vertical sections of temperature, salinity, and currents extracted from a hydrodynamic model. An underway above-water ship LiDAR system also provided information on subsurface particle distributions for comparison with the CALIPSO and scanfish data. HPLC pigments and total suspended solids (partitioned into organic and inorganic components) were determined at select stations. These data sets allow us to assess the hydrographic and bio-optical characteristics of the water masses in the area, and interpret the dynamic interactions of fresh river plume pulses with saltier offshore waters.

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