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## Suspended particle characteristics from a glider integrated LISST sensor

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### Abstract (Oral Presentation)

Measurements of suspended particle size and concentrations are critical for understanding sediment resuspension and transport dynamics, export flux of carbon, phytoplankton speciation and primary productivity, and suspended pollutants throughout the world's oceans. A collaborative project to integrate a Laser In-Situ Scattering and Transmissometry (LISST) into a Slocum glider was recently completed. These integrated LISST-glider sensors provide the unique opportunity to measure suspended particle properties persistently at single locations or survey regional domains, and enable sampling during extreme events such as hurricanes or coastal storms from a single profiling sensor. In this study we detail the sensor integration as well as preliminary data from instrument field tests. The first LISST-glider deployment occurred in April 2017 onboard a Rutgers University Slocum glider tasked with monitoring water quality along the New Jersey coast. This deployment occurred prior to a late season extra-tropical cyclone and observed full water column sediment resuspension and transport associated with high waves and shortening periods as the storm passed. Significant Schlieren effects were observed for inner rings (100 – 500  $\mu\text{m}$ ) until the water column was de-stratified. First estimates of total volume concentration, mean particle size, and beam attenuation were calculated onboard and sent to shore in near real-time. Full datasets were downloaded post deployment and use standard inversion techniques to determine in situ particle size and concentration throughout the glider deployment. Additional field tests of the LISST-Glider system have been carried out across a range of environments and conditions. Two more glider deployments were performed in September and October of 2017 off the coast of New Jersey by Rutgers University that each captured storm driven sediment resuspension and transport under varying ocean stratification conditions. Two LISST-Glider science bays have also been loaned to the University of California Davis (UCDavis) and Virginia Institute of Marine Science (VIMS). UCDavis has carried out freshwater deployments in Lake Tahoe in February of 2018 investigating particle resuspension by internal waves.