

OCEAN OPTICS XXIV

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<https://oceanopticsconference.org>

Thursday, October 11

Oral Session 9

08:30–10:30

10:10–10:30

LIDAR MEASUREMENTS OF OCEAN OPTICAL PROPERTIES MADE DURING THE NORTH ATLANTIC AEROSOL AND MARINE ECOSYSTEMS STUDY (NAAMES) USING NASA'S HIGH SPECTRAL RESOLUTION LIDAR

The NASA Langley Research Center's High Spectral Resolution Lidar (HSRL) was deployed from an aircraft on NAAMES missions in 2015, 2016, and 2017. This lidar is optimized for both ocean and atmospheric profiling and, in particular, has the ability to provide depth-resolved ocean optical properties that complement ocean color measurements. The HSRL calibrated measurements of ocean particulate backscatter, diffuse attenuation, and depolarization were measured simultaneously during NAAMES. We present correlations between this unique set of optical properties and provide comparisons with in situ measurements acquired on the NAAMES research vessel and Bio-Argo floats and remote sensing retrievals from the MODIS (Moderate Resolution Imaging Spectroradiometer) satellite instrument. Specifically, lidar depolarization profiles measured during the NAAMES campaigns provide a unique dataset to evaluate the dependence on particle shapes and the observed correlation to both the measured backscatter and attenuation. Moreover, the HSRL airborne depolarization data is used to assess the CALIOP (Cloud-aerosol Lidar with Orthogonal Polarization) depth integrated depolarization measurements which have been used to derive global distributions of ocean backscatter. Overall, the NAAMES results provide a means to assess current and future satellite observing strategies involving lidar as a natural complement to current ocean color retrievals.

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