

OCEAN OPTICS XXIV

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Tuesday, October 9

Poster Session 2

10:30–12:30

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Poster 38

CAN WE USE SATELLITES TO CALIBRATE AIRBORNE LIDAR?

The backscattering coefficient of seawater, defined as the coefficient of scattering at angles > 90 degrees, includes contributions from water and from any particles in the water. The water contribution has a relatively narrow range of values in the ocean, but the particulate contribution depends on the number of particles in the water and their type. Measurements of the particulate backscattering coefficient generally take advantage of the relatively small variability in scattering with angle at angles > 90 degrees to obtain an estimate of the backscattering coefficient from scattering at a single angle. Lidar has been used to infer the backscattering coefficient from scattering at 180 degrees, but this depends on knowledge of the relationship between scattering at this angle and the backscattering coefficient. It also depends on an absolute radiometric calibration, although this can be avoided using high-spectral-resolution lidar. Here, we consider a technique to obtain the backscattering coefficient directly from lidar data by calibration against passive ocean color measurements. The technique does not depend on retrieval of either the lidar calibration coefficient or the relationship between the volume scattering function at 180 degrees and the backscattering coefficient, but can be used to infer both quantities. The only requirement is that the relationship between the scattering parameters not change significantly over the area, depth range, or duration of the measurements. Once the relationship is found, it can be used where the satellite measurements are affected by clouds or vertical structure in the scattering.

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