Friday, October 12
Oral Session 10
09:00–10:00

09:40–10:00

## POLARIZED AND TOTAL REFLECTANCE OF SKYLIGHT FROM WIND-ROUGHENED OCEAN SURFACE

Significant uncertainties in the estimation of remote sensing reflectance are associated with the characterization of the ocean surface and removal of the sky component reflected from it, especially in windy conditions. It is primarily determined by the value and spectral dependence of the reflectance coefficient of skylight from wind-roughened ocean surface and affects shipborne, AERONET-Ocean Color and satellite observations. Using a vector radiative transfer code, spectra of the reflectance coefficient and corresponding polarized and total radiances near the ocean surface are simulated for a broad range of parameters, including wind speeds up to 15 m/s, aerosol optical thicknesses of 0-1, wavelengths of 400-900 nm, viewing zenith angles 10-60 deg and several Sun zenith angles. Significant impact on the reflectance coefficient spectra of all these parameters together with the small amount of Sun glint, which is often unavoidable, is demonstrated and results are compared with field measurements using a novel snapshot hyperspectral imager. The effect of such variability of the sea surface reflectance on the shipborne above water and AERONET-OC processing for the derivation of the water leaving radiance and remote sensing reflectance is evaluated in various water and atmospheric conditions. The possibility of using a vertical polarizer in front of above water sensors, which blocks most of the reflected sky radiance, is revisited based on a large in-situ dataset collected by CCNY; the limitations of such an approach are analyzed including residual Sun glint effects and the polarized component of the water leaving radiance.

**Alex Gilerson,** City College of New York, gilerson@ccny.cuny.edu
Carlos Carrizo, City College of New York, athelus2004@yahoo.com
Robert Foster, Naval Research Laboratory, robert.foster.ctr@nrl.navy.mil