**Retrieval of macro –and micro-physical properties of oceanic hydrosols from polarimetric observations and polarized sky glint correction**

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Remote sensing relies mainly on measurements of scalar radiance to retrieve properties of aerosols and hydrosols. However, it is recognized that including the polarimetric characteristics of the light in measurements provides more intrinsic information about scattering particles. Relationships to retrieve the micro and macro- physical properties of the oceanic hydrosols were analytically developed based on vector radiative transfer (VRT) simulations. Specifically, we investigated the relationship between the observed degree of linear polarization (DoLP) and the ratio of attenuation-to-absorption coefficients (*c*/*a*) in the water, from which the scattering coefficient is readily computed for different bio-optical models of Case I and II waters. This relationship was parameterized for multiple sensor zenith angles, azimuth angles relative to the Sun’s principal plane, and solar zenith angles. The relationship was tested and validated against a dataset of *in-situ* measurements using a custom built underwater polarimeter and an in-water instrument package (WET Labs ac-s) that measures the absorption and attenuation coefficients. Also, the polarized light at the top of the atmosphere is analyzed to assess the impact of aerosol species and optical thickness on the relationship used in the developed retrieval algorithms. To validate relationships from above water observations, a sun-tracking HyperSAS-POL system was deployed during two research cruises (SABOR and VIIRS) in 2014. First results of a Monte-Carlo based glint (sky + Sun) correction scheme for the upwelling polarized signal through a windy ocean surface and comparison with HyperSAS-POL measurements is also presented.

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