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TITLE: Inter-Satellite Comparison for Defining Optical Properties of the Coastal Zone

PRESENTATION TYPE: Assigned by Committee

SECTION: Biological Oceanography (BO) **SESSION:** Development, Validation and Uncertainty

Analysis of Optical Remote Sensing Algorithms for the Coastal Ocean (BO04)

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ABSTRACT BODY: Optical properties in coastal waters change rapidly on very fine temporal and spatial scales. The existence of multiple ocean color sensors provides a unique capability to monitor coastal waters and to define the spatial variability by providing multiple “looks” per day at different spatial resolutions. However, to take advantage of data from multiple sensors, the processing methods and derived optical products must be consistent and require sensor inter-calibration. We examined the statistics of the sub-pixel variability by re-sampling the finer scale imagery to the larger scales. We evaluated the consistency of the inherent optical properties (absorption and scattering) derived from multiple ocean color sensors at different spatial resolutions using a semi-analytical algorithm.

We examined optical variability over small spatial scales in different areas and statistically assessed differences in the satellite-derived optical products using property plots and histograms. Differences in the products from these sensors can be partially explained by the spatial resolution. Coastal optical properties derived from the 1 kilometer resolution MERIS sensor were compared with the 100 meter resolution HICO, 250 meter resolution MODIS Aqua and 300 meter MERIS sensors. We show examples of multi-sensor, blended products to demonstrate the benefit of multiple scenes per day to reduce the impact of cloud-covered pixels.

Our results show 1) combined ocean color sensors can be used to better characterize the optical properties in coastal areas, 2) small spatial scales can be re-sample to larger spatial scales for inter-satellite and product comparisons, 3) larger scale ocean color imagery does not adequately represent spatially complex coastal waters.

INDEX TERMS: [4264] OCEANOGRAPHY: GENERAL / Ocean optics, [4275] OCEANOGRAPHY: GENERAL / Remote sensing and electromagnetic processes. (No Table Selected) (No Image Selected)

Additional Details Scheduling Request: Previously Presented Material: