Tuesday, October 9
Poster Session 2
10:30–12:30

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Poster 58

PERFORMANCE OF OCEAN COLOR RETRIEVAL ALGORITHMS, VERIFIED AGAINST IN-SITU RADIOMETRIC AND SAMPLE MEASUREMENTS, SHOW ADVANTAGES, PRIMARILY IN COMPLEX WATERS, OF ALGORITHMS THAT AVOIDS DEEP BLUE BANDS

Water quality retrievals from ocean color measurements are recognized to be challenging in complex coastal waters. We compare retrievals using our recently developed neural network (NN) technique with retrievals obtained using other algorithms including OCx, GIOP and Semi-analytical algorithm for both complex and open ocean waters. Waters include Karenia brevis Harmful Algal blooms (KB HABs) in the West Florida Shelf (WFS) and open ocean waters on Atlantic coasts NOAA cruises. The NN technique was developed to make up for the lack of a 678 nm florescence band on VIIRS, important for KB HABs retrievals on MODIS. Instead, NN uses Remote Sensing Reflectance (Rrs) at 486, 551 and 671 nm for VIIRS retrievals. Retrieval accuracies using the different techniques were then compared against simultaneous in-situ radiometric and sample measurements, and, additionally, for HABs retrieval comparisons, against all available in-situ measurements that are nearly simultaneous with VIIRS overpasses over the 2012-2017 period. Analysis of retrieval statistics showed (i) the important impact of relatively short term (15-20 minutes) temporal variations in complex bloom waters on achievable satellite retrieval accuracies, placing limitations on their interpretation. They also showed that (ii) particularly for high chlorophyll bloom waters, better retrieval accuracies were obtained with the NN followed by OCx algorithms. Likely rationales are that the longer Rrs wavelengths used with the NN technique are less vulnerable to atmospheric correction inadequacies than the deeper blue wavelengths used with other algorithms, as well potential for less spectral interference with CDOM in more complex waters at the longer wavelengths.

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