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

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TOWARD AN ESTIMATE OF SHALLOW WATER CARBON BURIAL FROM SPACE: QUANTITATIVE REMOTE SENSING OF SEAGRASS DISTRIBUTION AND DENSITY USING HIGH SPATIAL RESOLUTION MULTISPECTRAL IMAGERY

Advances in understanding the optics of shallow water environments, combined with improved spatial resolution now enable seagrass ecosystems to be monitored from orbiting multispectral platforms such as WorldView-2, WorldView-3 and Landsat-8. These highly productive ecosystems contribute significantly to total ocean net primary production, blue carbon burial and export to adjacent ecosystems, even though they occupy only 0.4% of the vegetated coastal habitat. However, large uncertainty in global estimates results from poorly constrained knowledge of global seagrass coverage, retional disparities in data availability and significant differences in the nature of seagrass ecosystem function derived from differences among species. Although seagrasses from Virginia and the eastern Gulf of Mexico generate similar amounts of above-ground biomass in dense meadows, the Gulf populations allocate far more biomass to below-ground structures, further enhancing the potential of these populations to sequester organic carbon in shallow water. We are exploring methods to utilize archived images from high spatial resolution multispectral sensors to develop an inventory of seagrass abundance & distribution in the Chesapeake Bay and Eastern Gulf of Mexico. Maps of seagrass distribution and above-ground biomass are derived from the imagery using an optical algorithm that requires knowledge of bathymetry and water column transparency. These in turn are being used to train machine learning algorithms to extract similar information for scenes where ancillary data are unavailable, and to help more clearly identify the boundary between submerged vegetation and optically deep water in the imagery.

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