HIGH-RESOLUTION SATELLITE IMAGERY TO ASSESS *SARGASSUM* INUNDATION IMPACTS TO COASTAL AREAS

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A change detection analysis utilizing Very High-resolution (VHR) satellite imagery was performed to evaluate the changes in benthic composition and coastal vegetation in La Parguera, southwestern Puerto Rico, attributable to the increased influx of pelagic *Sargassum spp.* and its accumulations in cays, bays, inlets and near-shore environments. Satellite imagery was co-registered, corrected for atmospheric effects, masked for water and land, and combined with drone observations. A Normalized Difference Vegetation Index (NDVI) and an unsupervised classification scheme was used. These products were used to calculate the differences from 2010 baseline imagery, to potential hurricane impacts (2018 image), and potential *Sargassum* impacts (2020 image). Results show a negative trend in NDVI from 2010 to 2020 for the total pixel area of 24%, or 546,446 m^2. These changes were also observed in true color images from 2010 to 2020. Changes in the NDVI negative values from 2018 to 2020 were higher, especially for the Isla Cueva site (97%) and were consistent with the field observations and drone surveys conducted since 2018 in the area. The major changes from 2018 and 2020 occurred mainly in unconsolidated sediments (*e.g.* sand, mud) and submerged aquatic vegetation (*e.g.* seagrass, algae), which can have similar spectra limiting the differentiation from multi-spectral imagery. This approach provides a quantifiable method to evaluate *Sargassum* impacts to the coastal vegetation and benthic composition using change detection of VHR images, and to separate these effects from other extreme events.