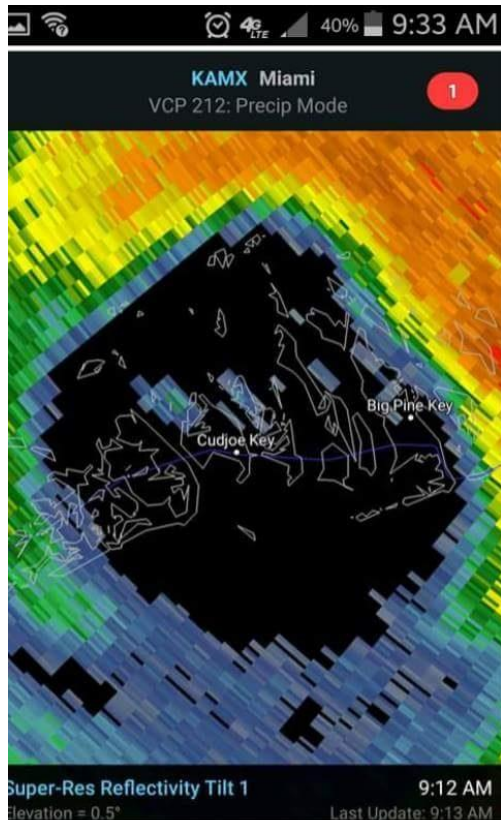


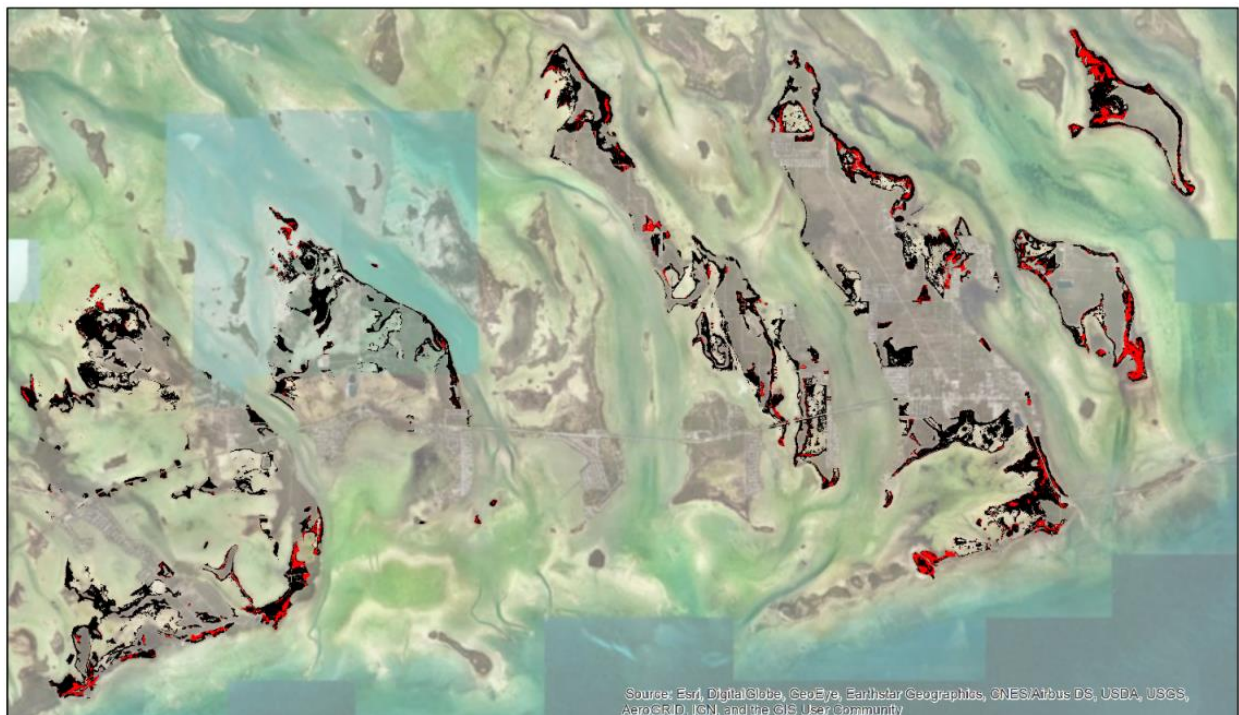
11/27/2018 - Ocean Imaging Completes Study of Vegetation Response to Hurricane Irma in the Florida Keys

Ocean Imaging utilized a series of 10m resolution Sentinel-satellite multispectral imagery to document the response of different vegetation types in the lower Florida Keys after the passage of hurricane Irma on 9/10/2017. The study, done in collaboration with researchers from Florida International University,



Portion of the Florida Keys study area within the eye of hurricane Irma at 9:12am on 9/10/2017.

revealed that almost immediately after the storm, the green buttonwood - *Conocarpus erectus* began vigorous regrowth in all areas, quickly followed by multiple species in the “hardwood hammock” uplands of the most affected Keys. This massive regrowth occurred within the first 2.5 months after the storm, causing a seasonally anomalous large positive Normalized Difference Vegetation Index (NDVI) change. This was followed by a steady state or slight NDVI decrease as the region entered its dry season, similar to what was observed in years prior to the hurricane. The study found that the hardest-hit species were mangroves, particularly on the islands facing the main storm surge from the southeast. The storm caused numerous areas of black mangrove (*Avicennia germinans*) and red mangrove (*Rizophora mangle*) to completely die, not necessarily due to the immediate storm forces but progressively through the several ensuing months. On some of the islands studied, areas of complete or near-complete mangrove die-off represent as much as 35% of the total pre-storm mangrove coverage. On the other hand, the study found dwarf mangrove areas that finally began to revive from near-complete leaf loss 4-5 months after the cataclysmic storm. The results of this project thus provide a spatially detailed map of the post-hurricane vegetation response, which can be used to plan and guide ongoing and long-term future monitoring studies and possible reseeded efforts.



The Florida Keys study area showing mangrove areas with <90% mortality (black) and areas with >90% hurricane Irma-related mangrove die-off (red).



Black mangrove forest with total die-off post-Irma.