

Utilizing NASA Earth Observing System (EOS) data to determine ideal planting locations for wetland tree species in St. Bernard Parish, Louisiana

Habitat Management and Restoration

Oral Presentation

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St. Bernard Parish, in southeast Louisiana, is rapidly losing coastal forests and wetlands due to a combination of natural and anthropogenic disturbances (e.g. subsidence, saltwater intrusion, low sedimentation, nutrient deficiency, herbivory, canal dredging, levee construction, spread of invasive species, etc.). After Hurricane Katrina severely impacted the area in 2005, multiple Non-Governmental Organizations (NGOs) have worked not only on rebuilding destroyed dwellings, but on rebuilding the ecosystems that once protected the citizens of St. Bernard Parish. Volunteer groups, NGOs, and government entities often work separately and independently of each other and use different sets of information to choose the best planting sites for coastal forests. Using NASA EOS, NRCS soil surveys, and ancillary road and canal data in conjunction with ground truthing, the team created maps of optimal planting sites for several species of wetland trees to aid in unifying these organizations, who share a common goal, under one plan. The methodology for this project created a comprehensive Geographic Information System (GIS) to help identify suitable planting sites in St. Bernard Parish. This included supplementing existing elevation data using LIDAR data and classifying existing land cover in the study area from ASTER multispectral satellite data. Low altitude AVIRIS hyperspectral imagery was used to assess the health of vegetation over an area near the intersection of the Mississippi River Gulf Outlet Canal (MRGO) and Bayou la Loutre. Historic extent of coastal forests was mapped using aerial photos from USGS collected between 1952 and 1956. The final products demonstrated the utility of combining NASA EOS with other geospatial data in assessing, monitoring, and restoring of coastal ecosystems in Louisiana. This methodology also provides a useful template for other ecological forecasting and coastal restoration applications.