Streamlining Monitoring for USACE Ecosystem Restoration Projects – Airborne and Field Survey Campaign.

Impact Statement: Researchers from the ERDC Environmental Laboratory (EL) and Coastal & Hydraulics Laboratory (CHL), in partnership with the New Orleans District and Unmanned Aircraft System (UAS) operators from the Mobile District, participated in coordinated airborne and field sampling surveys at two coastal restoration sites in Louisiana, 23-29 October 2022. The work is being conducted to evaluate and assess several monitoring methodologies side-by-side for USACE prioritized coastal metrics to streamline decision-making as part of an Ecosystem Management & Restoration Research Program (EMRRP) research work unit.

Molly Reif and Heather Theel led a coordinated airborne and field sampling survey campaign at the Spanish Pass Ridge and Marsh Restoration (BA-0191) and Bayou LaBranche Wetland Creation (PO-17) sites in coastal Louisiana as part of an on-going EMRRP research work unit, Figures 1-3. Data collected from multiple teams will be used to help evaluate and demonstrate current environmental monitoring methods and technologies to: 1) identify minimum/optimum monitoring metrics for consistent reporting, and 2) identify and evaluate tradeoffs between field and remote sensing technology methodologies for prioritized metrics. More specifically, a subset of coastal monitoring metrics that were previously prioritized in a workshop held with USACE environmental restoration practitioners in September 2021 were selected and will be used to characterize important geomorphological (e.g., shoreline type/position, elevation profiles) and vegetation (e.g., habitat type, species cover/abundance) characteristics utilizing field-based (e.g., plot/point samples) and remote sensing (e.g., UAS lidar/imagery and satellite imagery) methods. A field sample plan was developed by the field and UAS teams to provide guidance for all field work by defining in detail the sampling and data-gathering methods to be used during the project. The two sites were selected from a list of candidates submitted by District participants at the workshop, which largely included flagship USACE environmental restoration projects with long-standing monitoring plans and data, unique coastal opportunities or locations, new restorations sites that have yet to be monitored, and multi-purpose sites. The findings from this work unit will provide fundamental data, methods, and comparative results for proactive and efficient use of monitoring metrics and methodologies, and ultimately support decision making relevant to ecosystem restoration.

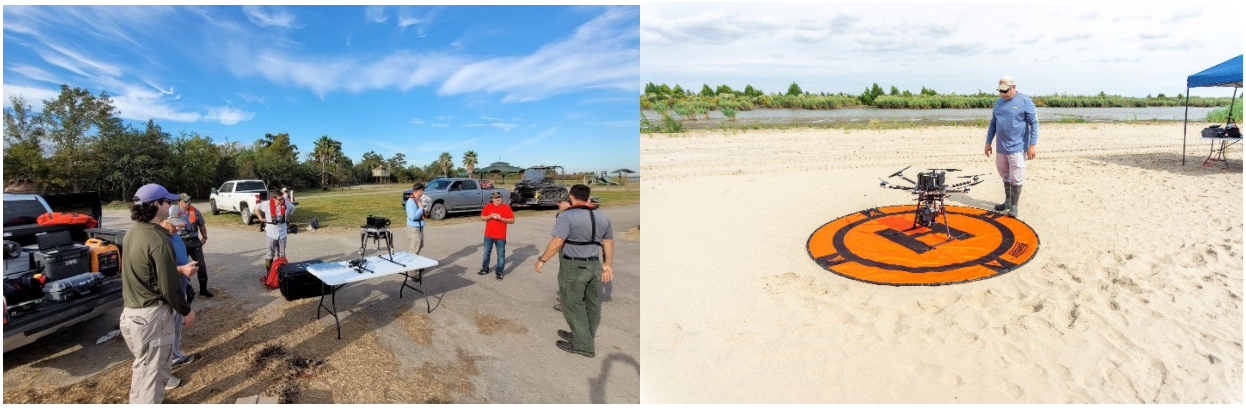

Figure 1. Logistics/safety meeting and UAS operations (Chris Macon and Heath Harwood, SAM).

Figure 2. Shoreline classification (Justin Shawler, CHL) and Argo mobilization (Justin Wilkens, EL).

Figure 3. Vegetation assessment (Lynde Dodd and Katie Vasquez, EL) and remote sensing ground validation (Molly Reif, EL).

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