

## Autonomous Underwater Vehicle and Remotely Operated Vehicle Survey and Mapping at Canaveral Harbor

*Faster and better understanding of a turbidity plume near dredging and disposal operations.  
Facilitate better prediction and management of turbidity plumes in future dredging projects.  
Create a more adaptive, efficient, and data-rich future in dredging operations.*

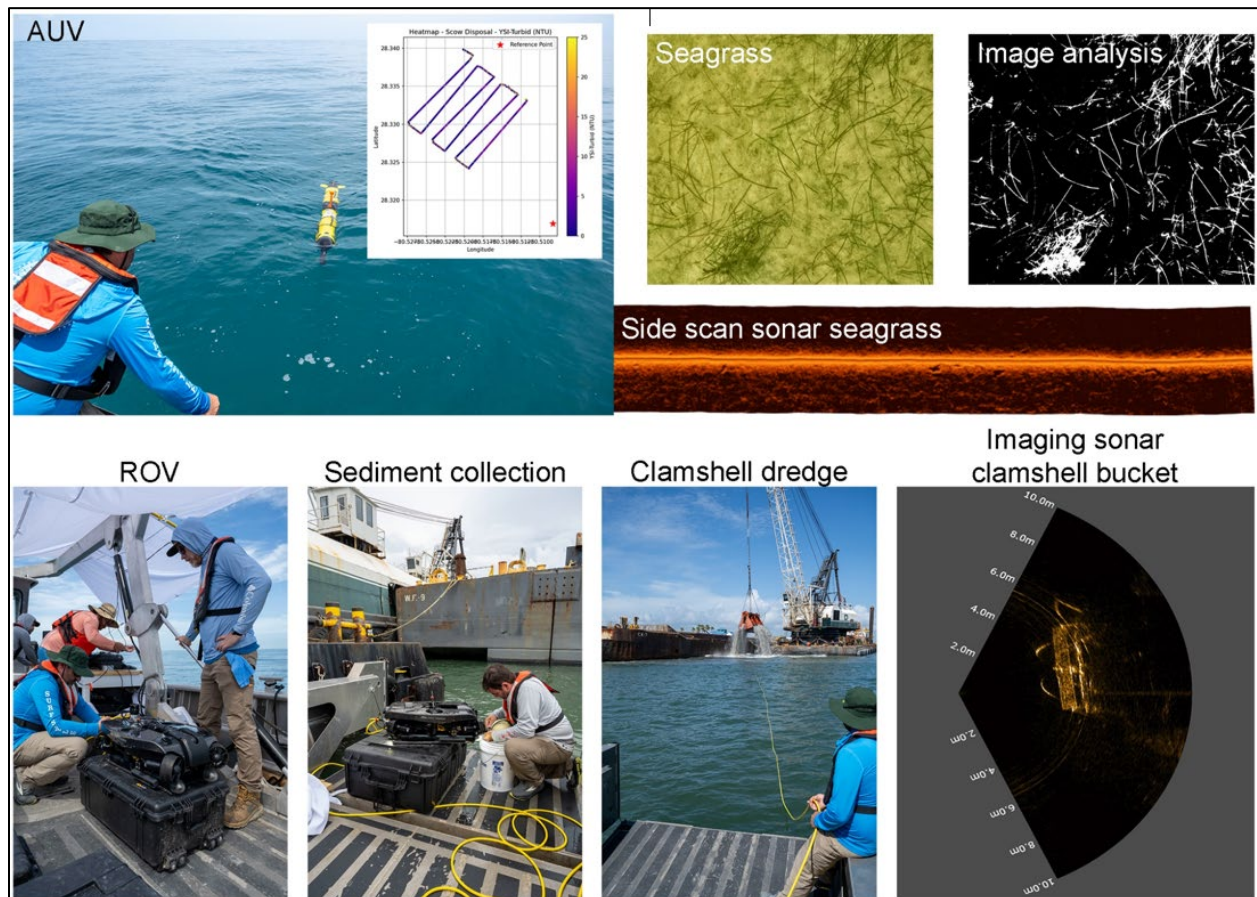


Figure 4. Photos and data from dredging operation.

At its core, the USACE dredging mission is about ensuring safe and efficient navigation. But dredging is far more than simply removing shoaled sediment. It's a complex process that includes pre-dredge surveys, environmental assessments, real-time monitoring, and post-dredge verification. Traditionally, these tasks have relied on manned vessels and labor-intensive operations. That's starting to change.

At Canaveral Harbor, ERDC fielded both an AUV and an ROV to demonstrate for the Jacksonville District how these systems can enhance and modernize the dredging workflow. The AUV was deployed near Kennedy Space Center to survey a designated borrow area. High-resolution side scan sonar imagery provided valuable seafloor detail, and the AUV's modular design allowed it to shift roles seamlessly—from mapping to environmental monitoring.

At the ocean disposal site, the AUV was deployed during active sediment placement to document and characterize the resulting turbidity plume. Simultaneous bathymetric mapping helped visualize the extent and behavior of disposed material on the seafloor. An ROV was launched to further investigate features of interest detected in sonar imagery and to collect both water and sediment samples near the operating dredge. The AUV was also tasked with photographing a known seagrass area. Over 4,000 images were later analyzed to estimate percent cover, contributing to habitat assessments often required during permitting and monitoring.

Taken together, these missions highlight the potential for integrating autonomous and remotely operated systems into USACE operations—from pre-dredge surveys through post-dredge verification. As these technologies continue to mature, ERDC's work at Canaveral Harbor is helping chart the course for a more adaptive, efficient, and data-rich future in dredging operations.

Funding: through Dredging Operations and Environmental Research (DOER) program, specifically an Innovative Sediment Management (ISM) work unit.

POC: Justin Wilkens, [Justin.L.Wilkens@usace.army.mil](mailto:Justin.L.Wilkens@usace.army.mil) and Shea Hammond, [Shea.L.Hammond@usace.army.mil](mailto:Shea.L.Hammond@usace.army.mil)