

SHAPING THE FUTURE: AUTONOMOUS AND THE GLOBAL REACH OF CONNECTIVITY AND COMMUNICATION TODAY

Presented by Tim Osborn, NOAA Office of Coast Survey, Central Gulf of America

From 2000 to, Involved in Over 30 Tropical Storms and Hurricanes, As Well As Many Coastal, Nearshore and Offshore Events

- Coastal Gulf has the two to of the fastest growing States in the Nation
- The Gulf Ports from Florida Are Individually and Cumulatively the Largest and Busiest in the World
- As The Gulf States, as Well as the Other Coastal U.S. Grow (now encompassing 50% of the Nation's Population), the Importance of Response and Recovery is Growing Yearly
- Sincere Thanks and Appreciation to the Partnership with so Many Here Today and to MSET and it's Mission
- From Science to the Economy, the Technology of Today Is a Growing at Rates Beyond All Projections



Time and Effectiveness

of response, project implementation, real time connectivity, observation, collection and reporting is critical- and the digital transformation to acquisition of data from anywhere across the Globe is growing exponentially with each year- not incrementally

Time Valuation

Time or Value of A Port Complex to a State or Nation is One Important Metric

- Port Tampa Bay- About \$4 Million per Hour
 - Port South Alabama/Mobile- \$11 Million per Hour
 - Ports of the Lower Mississippi River- ~\$100 Million per Hour
 - Port Canaveral- sees over 8.6 Million Passengers Departing Annually on Cruises
- HOWEVER- Criticality of Restoring Supply Chain to a State
Makes Recovery Times Even More Important

EXAMPLE - COMPREHENDING THE IMPORTANCE OF RESPONDING TO STORM EVENTS- RECOVERING A HUGE COASTAL PORT COMPLEX AND SUPPLY LINE TO FLORIDA

Hurricane Milton, 2024

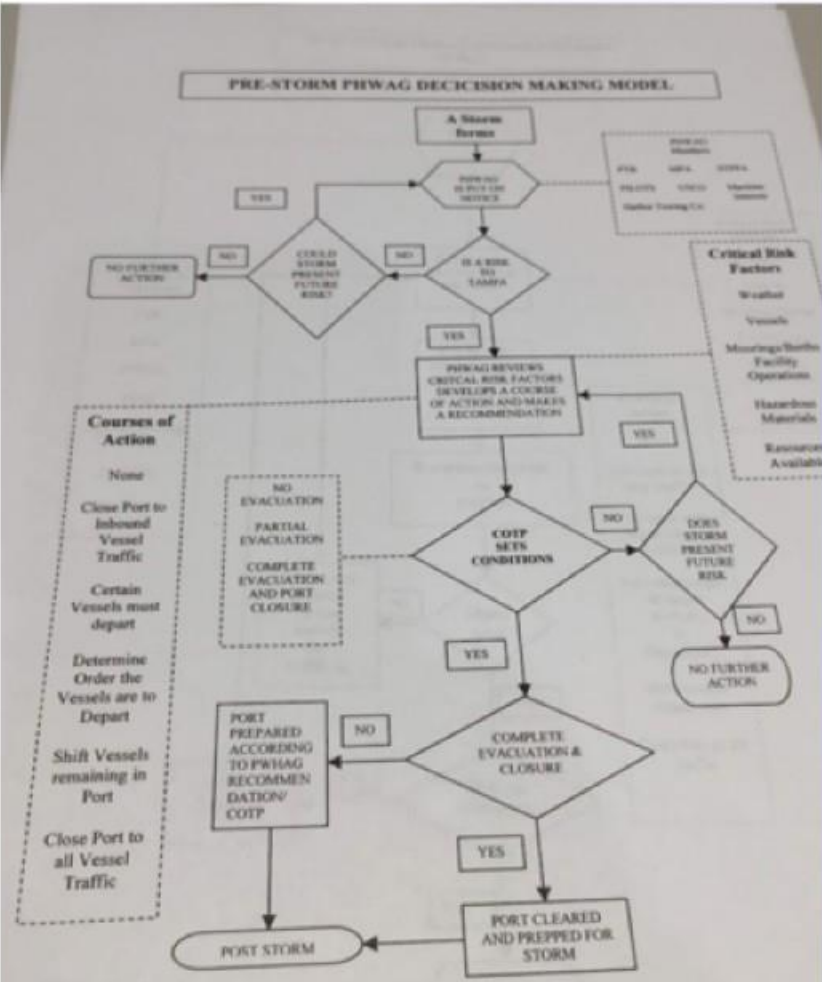
Florida's Population, >23 Million

Consumption Rate of About 25 Million or More of Fuel Consumed Daily

~93% of Fuel that Florida Relies on is Delivered by Ships and Shallow Draft Vessels/Barges

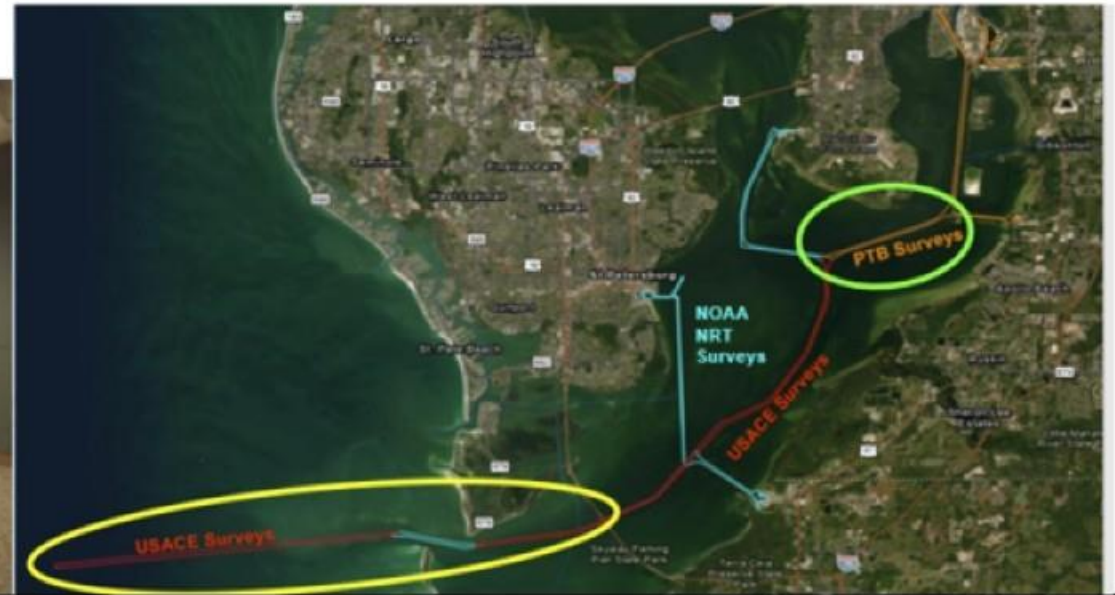
Tampa Bay (Tampa and Manatee) is the State's Largest

About 8 Billion Gallons of Fuel is Delivered Yearly Through This Port Complex

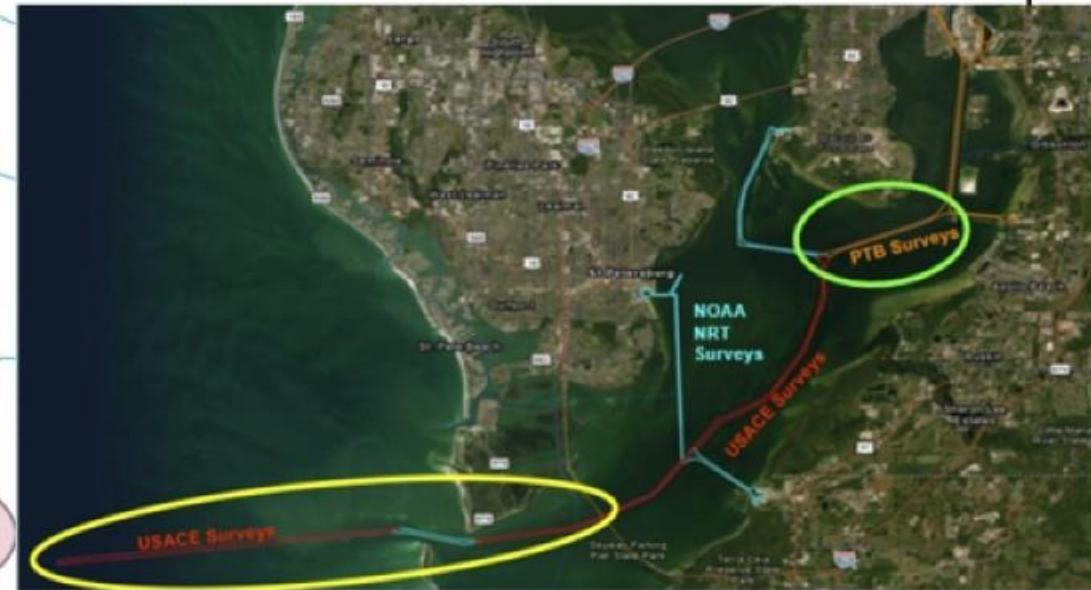
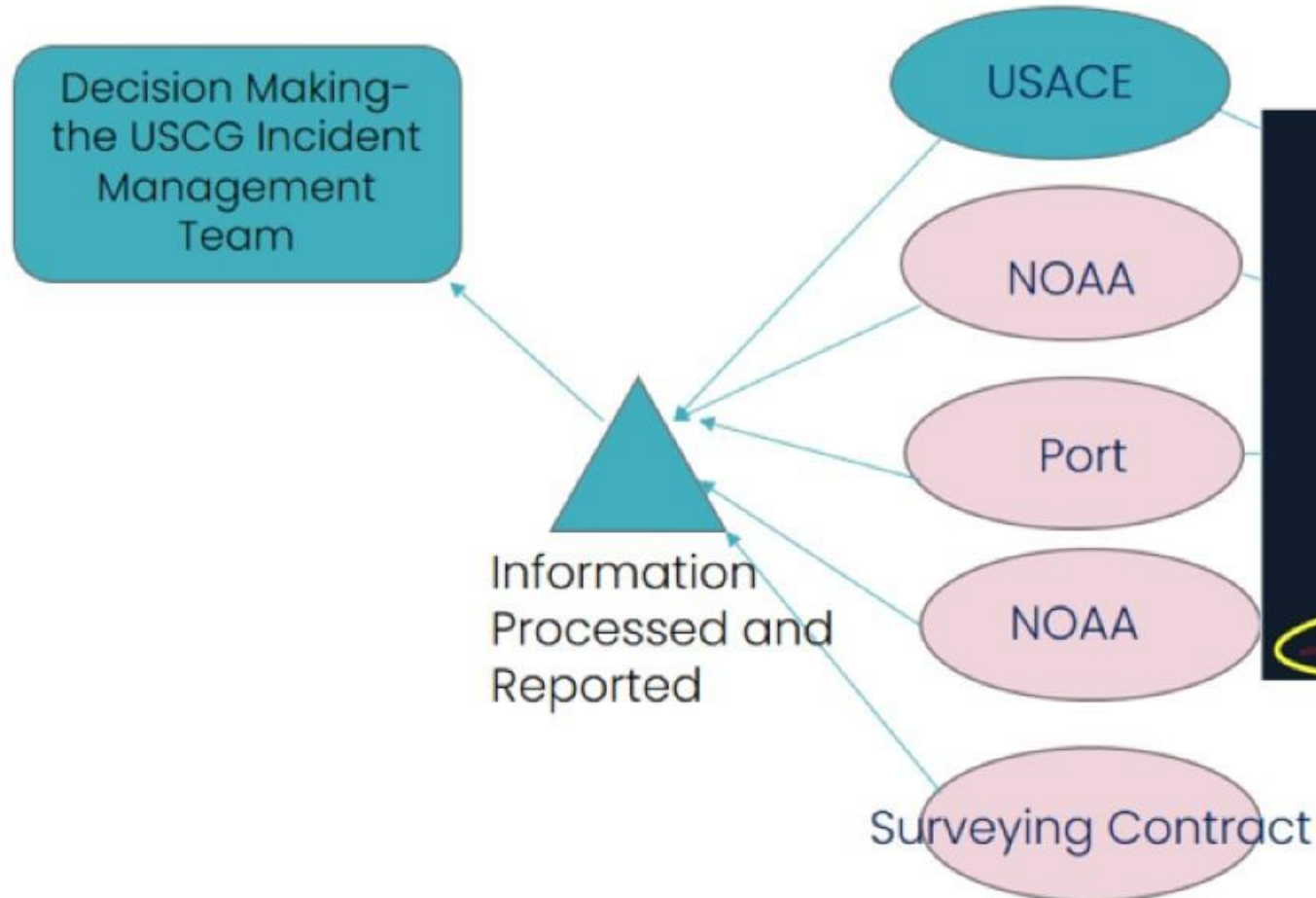


Time of Preparation Is Often the Limitation-Consensus Building On A Common Understanding of Capability and Technology

*The Issue- “A Drive to the Conventional and Operationally ‘Tried and True, It Has Worked
In The Past, We Should Rely On It Now”*



Resource Placement and Use



INNOVATION IN COMMUNICATIONS AND OPERATIONS



Stand Up and Operations of the
USCG IMT was 100 miles away, in
Orlando

Use of Sat Phones, Cell Networks
and High-Speed Internet
Connections were Employed

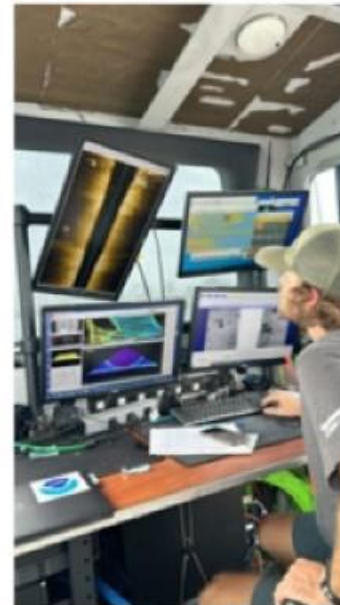
Protection of Personnel and
Families were Very High Priority





Deployment of Equipment and Necessary Team Members Into The Response Area

Utilization of RVs and Portable Generators and Starlink Systems for the Response Teams to Communicate and To Transmit Data Out



Data Collected Is Then Transmitted to Shore and Remote Processors That Report in Rapid Turnaround Times to the Survey Response Points of Contacts (USACE/USCG/Port/Pilots)



Being Limited to Daylight Only Operations is Not Acceptable Now

Being Limited to Survey Response by Vessels Not Able to Work in Nearshore/Offshore Conditions or High Wave State Has Forced A Move To Larger Vessels

THE DEPLOYMENT OF A 24 HOUR CAPABLE ALLOWED FOR THE OFFSHORE REACH -SEA BUOY TO SUNSHINE SKYWAY BRIDGE- TO BE COVERED IN AN OVERNIGHT SURVEY CAMPAIGN



Real Time Monitoring of Survey Progress and Coverage Has Become a Standard Practice

Understanding by the Response Team and Captain of the Port is Critical. Performing 24 Ops Reduced Time of Reopening by About 12 Hours

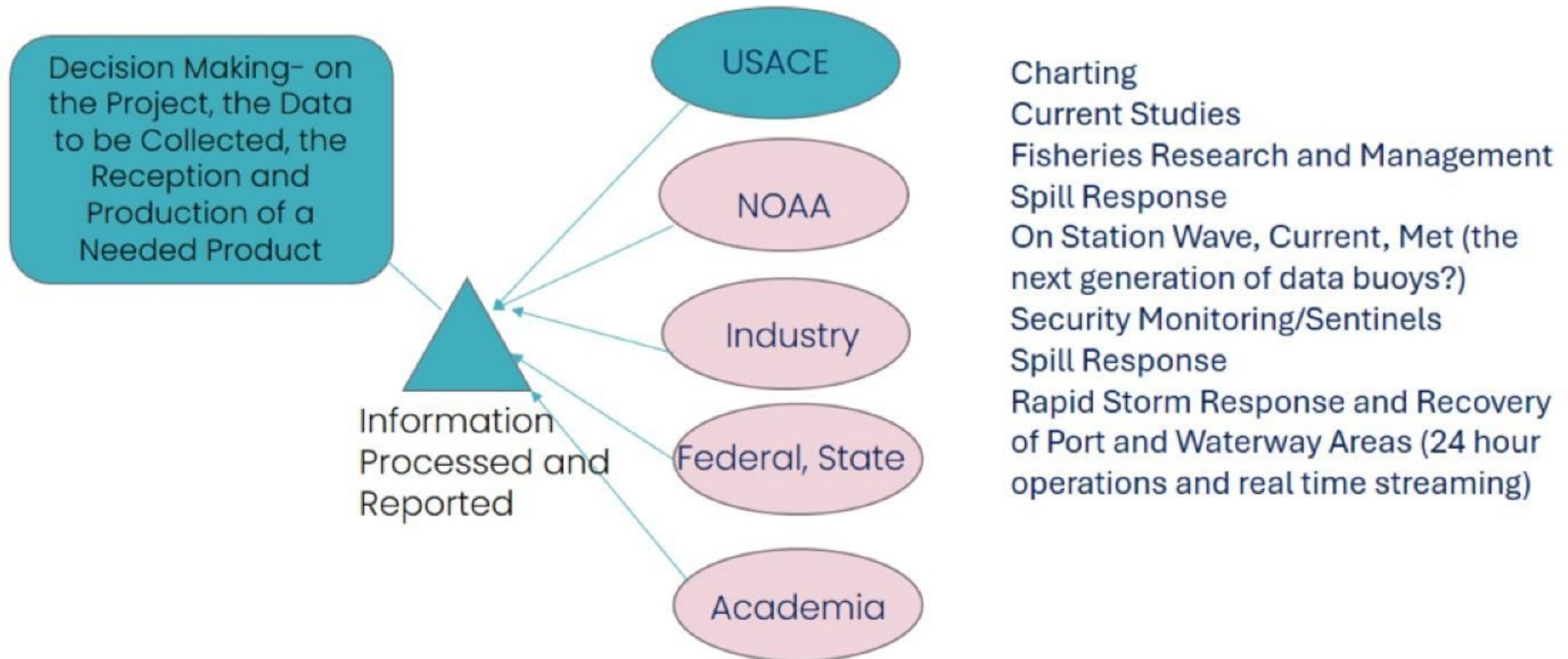
HURRICANE MILTON RESPONSE IS AN INCREMENTAL- BUT LARGE AND IMPORTANT- IMPROVEMENT FOR RESPONSE AND RECOVERY

- **Adapting to change**
 - Starlink and Remote Process and Production of Survey Findings Is Markedly Effective
- Employing 24 Hour Capable Survey Platforms Makes Use of the Full Window of Response Opportunity
- Being Able to See Remote Processing and Development of Survey Results From Offices with Full Processing Capabilities is Time Effective
- **Real-world impact**
 - Reduced Time in Completing Assigned Survey Coverage
 - Reduced Time in Delivering Products to USCG, USACE, Ports, Pilots and Others
 - Real Time Tracking and Reporting of Survey Operations. Reduced Overlap, Reduced 'Holidays,' Reporting of Found Dangers From Field Operators
 - Reduction of Down Time for Movement of Ships and Critical Cargo into Ports- Supply of Fuel to Central Florida and ~5 million population in a Reduced Timeframe

First Fuel Ship Into Tampa, Met by a NOAA NRT Response Vessel

Nigel Alvarado

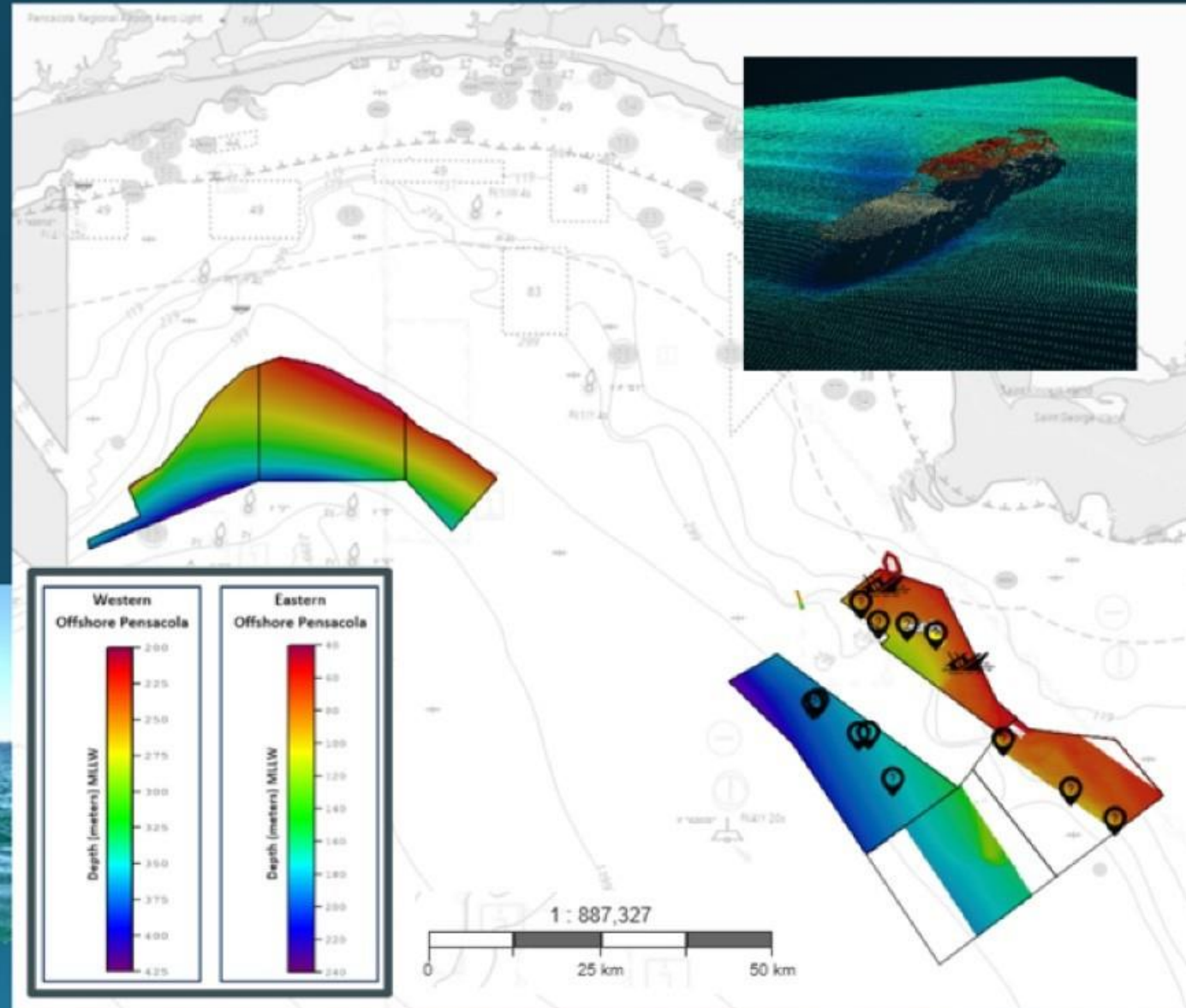
Resource and Technology Engagement: The Focus Now On The Data Acquisition and Streaming, Not On The Deployment



NOAA Coast Survey 2026



- Supporting Woolpert for their first 100% uncrewed survey
- Targeting 11,150 lnm this summer
- Completed over 8,000 lnm to date
- Average 50nm-70nm offshore
- +450 CTD casts, 40-420m depth



Remote Operations Center

CHANCE
MARITIME TECHNOLOGIES

- USV and Payload operable from anywhere in world
- Available for 24/7 piloting
- Chance Maritime Gar Autonomy Software
 - 360 Visual/IR Cameras, PTZ, Radar, AIS, Internal PTZ and IR
 - Remote VHF Radio, Loud hailer, microphones
 - Full vessel diagnostics and control – engine, aux, and emergency systems



Control Software

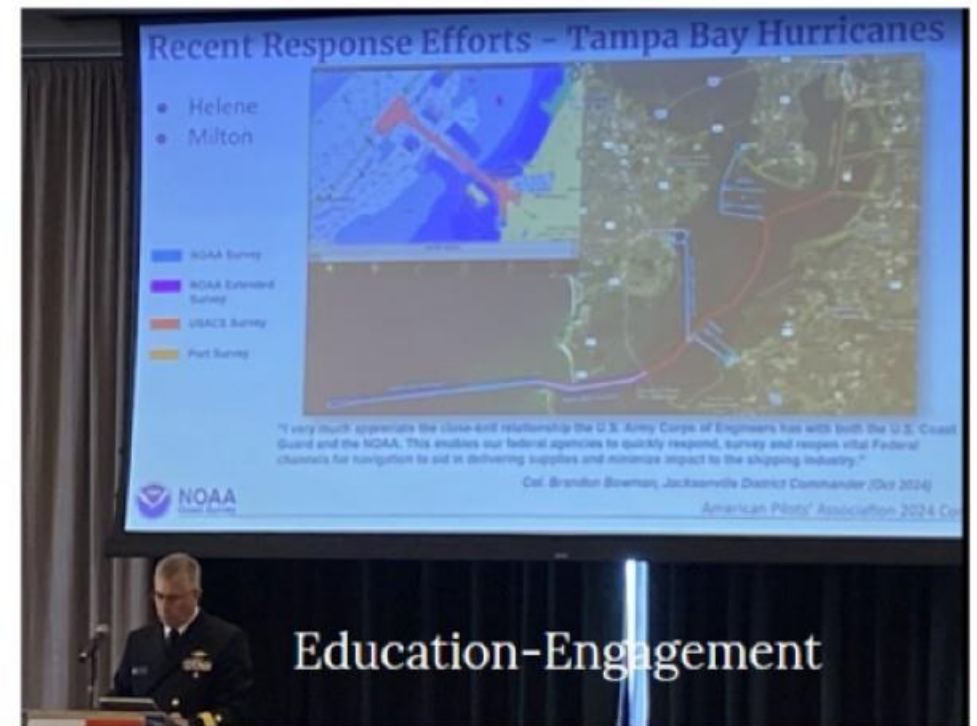


Remote Operations Center

WHERE DO WE GO FROM HERE?

- Standardize Collection, Transmittal, Processing and Delivery of Surveying Work
- Deployment and Use of Autonomous
- Greater Portability- 'Road to Ramp to Water' 24 Operations Capable Vessels or Vehicles
- Continued Outreach and Education of a Constantly Changing USCG, Port, USACE and Pilot Community, State and National Leadership in Advanced Capabilities and Resources

Employ Flexible or Dynamic Surveying Operations



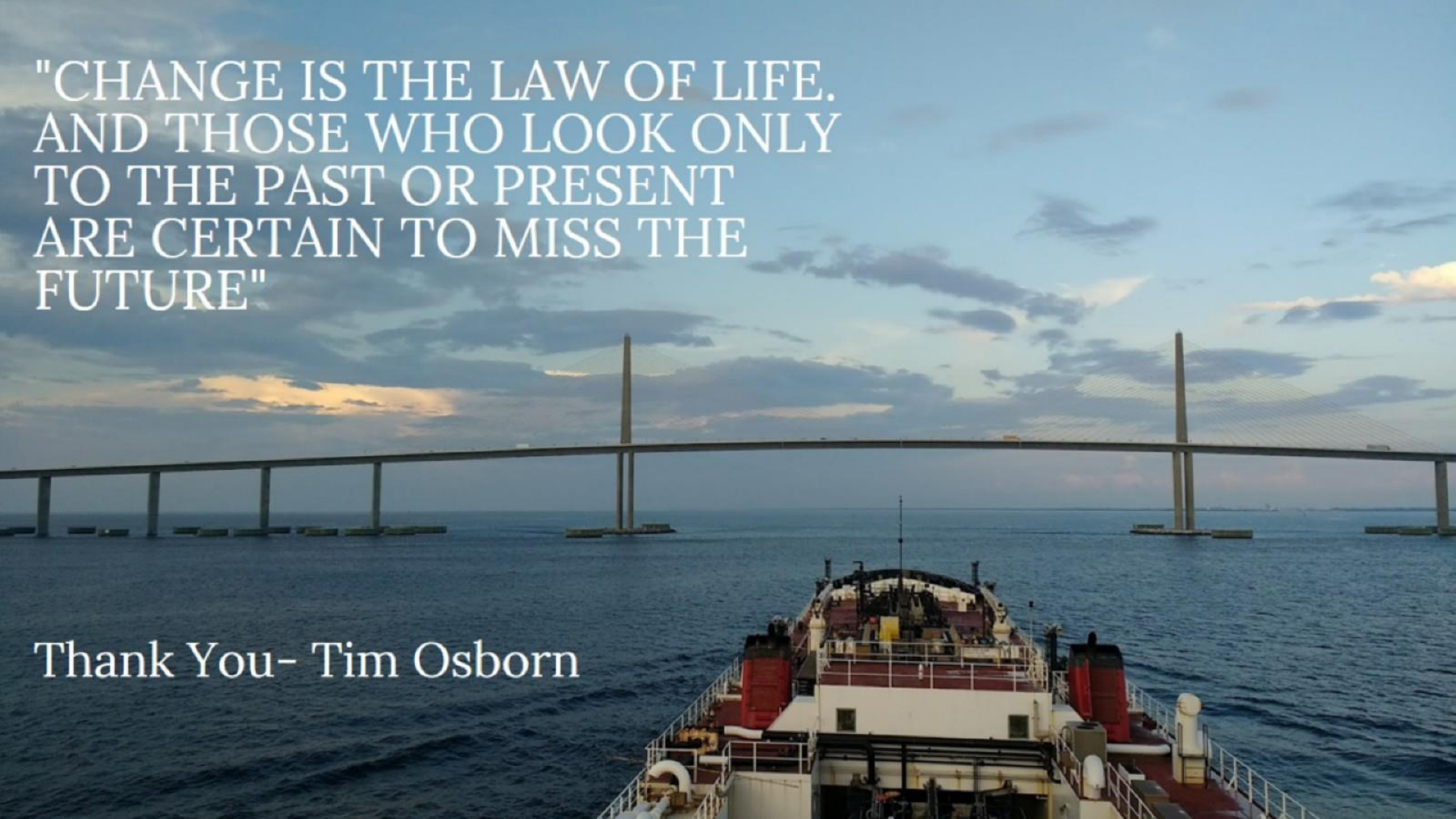
Planned vs Actual

- Dynamic Environment
- Flexible
 - Were Able to pivot with little notice
 - NOAA Contractor surveyed Sea Buoy to Sunshine Skyway Bridge
 - USACE SB-52 pivoted to cover PTB Survey coverage
- Coordination Calls
 - Port Heavy Weather Advisory
 - NOAA/USACE/USCG
 - "Didn't miss a beat"
 - Fast(er) Response/Re-Opening
 - Shaved 12 hours [48→36 hours!]
 - ~\$31,560,000 economic impact



"CHANGE IS THE LAW OF LIFE.
AND THOSE WHO LOOK ONLY
TO THE PAST OR PRESENT
ARE CERTAIN TO MISS THE
FUTURE"

Thank You- Tim Osborn



SUPPLEMENT-
ADDITIONAL
DEMONSTRATION OF
RESOURCE USE TODAY
AND FUTURE WORK

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USV + AUV Teaming

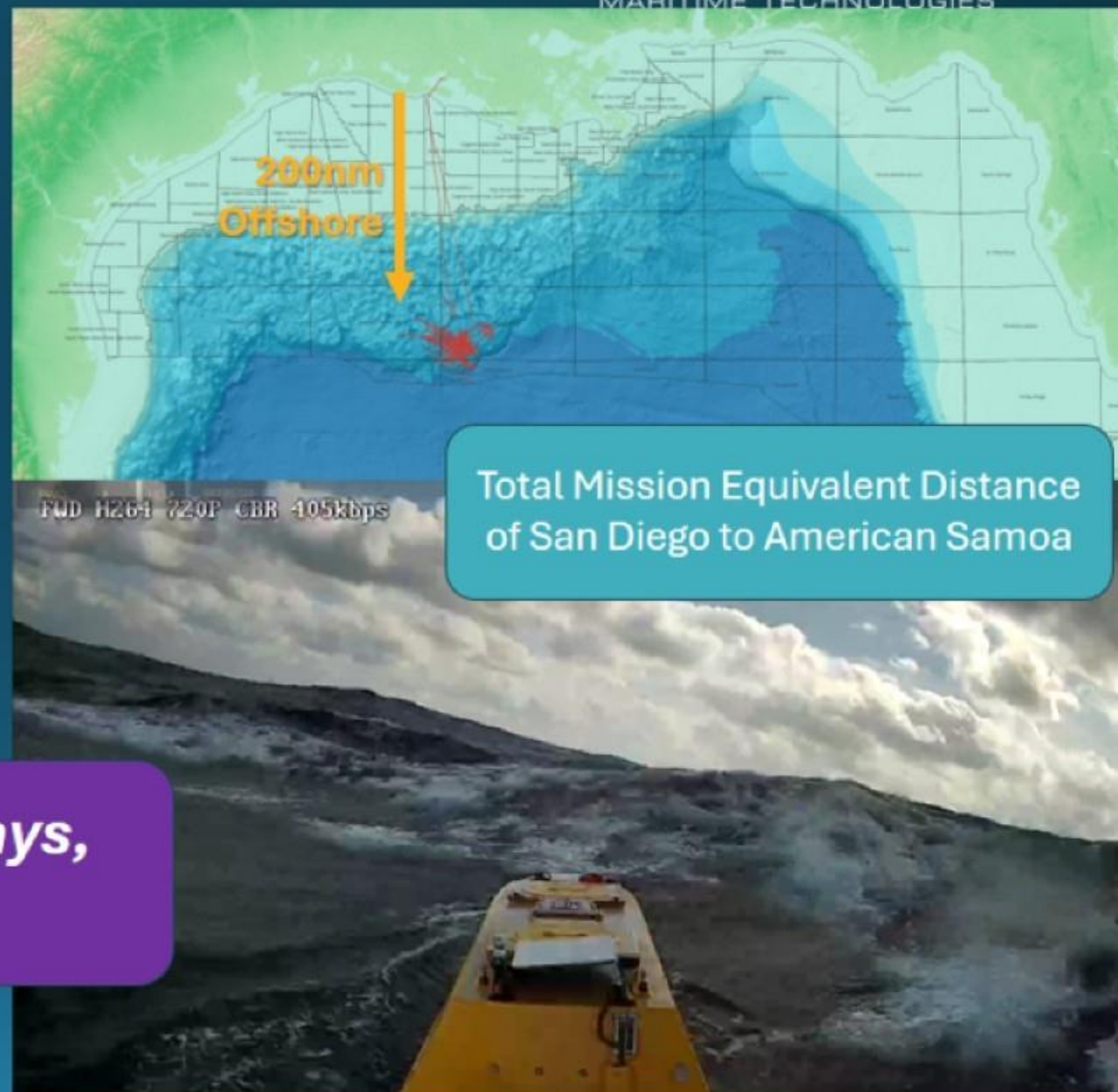
- Super Resolution Mapping of reef with minSAS, Multibeam, Cameras
- Chance MC40 outfitted with USBL to track & provide realtime telemetry of the Anduril Dive LD
- ~100km offshore



Oceanography

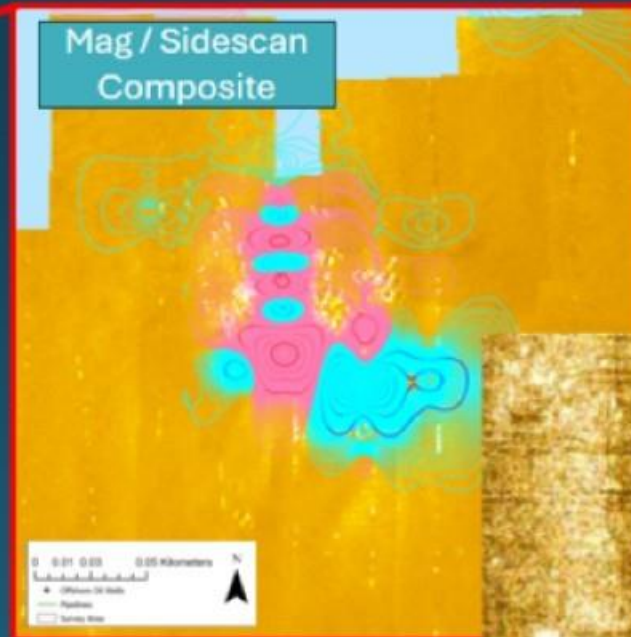
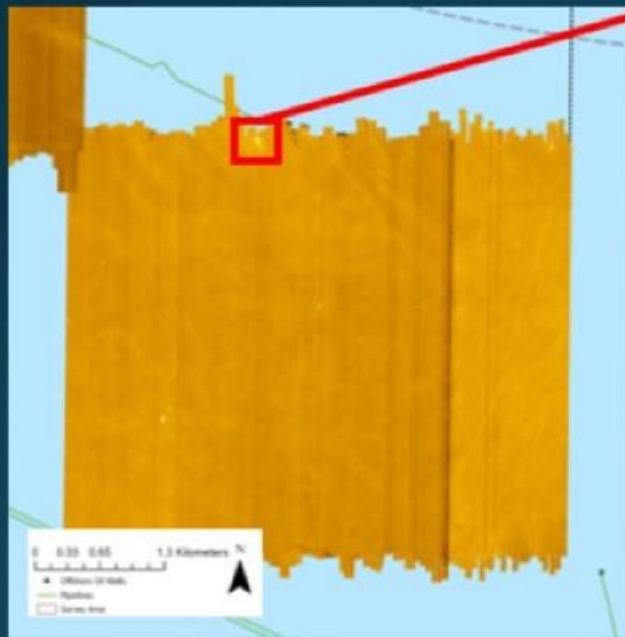
- Chance MC40 USV
- Launched 30 Nov 2025, recovered 06 Jan 2026
- 38 Days Continuous Unmanned Operation 200nm Offshore, without mothership
- Average 4.6 kt speed
- Sea State 0 – 5 (short period)
- Commercial Oil/Gas Project

***4,000 nm over 38 continuous days,
no manned interventions***



Geophysical / Marine Arch Survey

- Sidescan, Mag, Sub-bottom, Singlebeam
- +1200nm towed sidescan/mag
- Maintained mag altitude <6m off bottom
- <50m line spacing, Chance LR30 USV
- Approx. 15nm south of Horn Island, MS



NOAA Class B UMS Program

- Awarded to Chance Maritime Technologies Summer 2026
 - Chance LR30 USV
 - Davit or trailer deployed
 - Up to 8 LR30 delivered to NOAA
- Modular sonar gondola system with through-hull moonpool
- Fit existing davits common for standard launches – dual “stab” pick points for remote attachment

