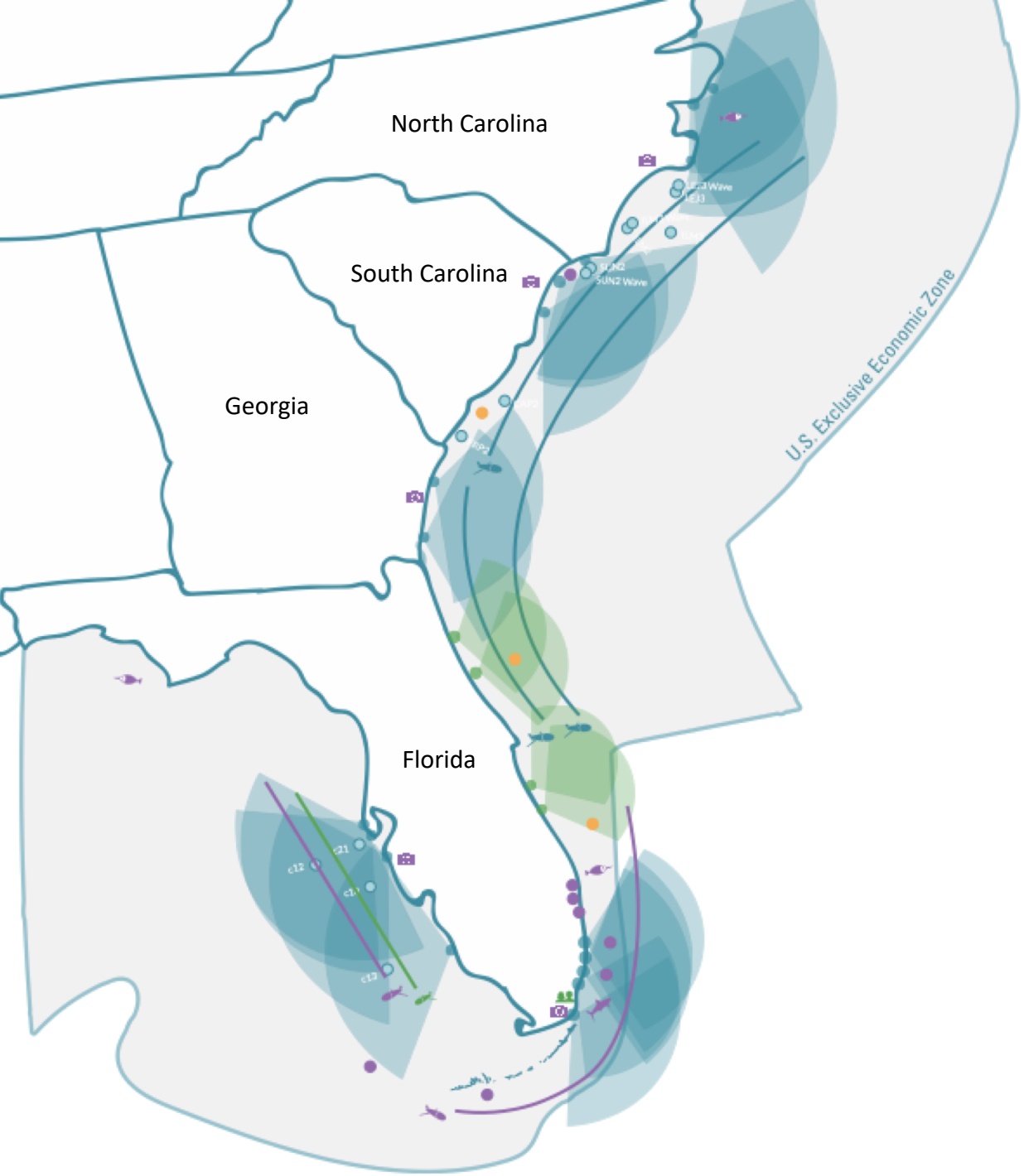


SECOORA
Southeast Coastal Ocean Observing Regional Association

2022 Regional HF Radar Accomplishments and Challenges

Mike Muglia, ECU
Coastal Studies Institute

CODAR OCEAN SENSORS

In-Situ

IOOS
Integrated Ocean Observing System

HF Radars Updates from SECOORA

THE UNIVERSITY of NORTH CAROLINA at CHAPEL HILL

ECU

Coastal Studies Institute
A Multi-Institutional Research Partnership

Harvey Seim and Mike Muglia

MIAMI ROSENSTIEL SCHOOL of MARINE & ATMOSPHERIC SCIENCE

Lynn K. (Nick) Shay

Skidaway Institute of Oceanography
UNIVERSITY OF GEORGIA

Catherine Edwards and Dana Savidge

UNIVERSITY OF South Carolina
College of Arts and Sciences

George Voulgaris

UNIVERSITY OF SOUTH FLORIDA
College of MARINE SCIENCE

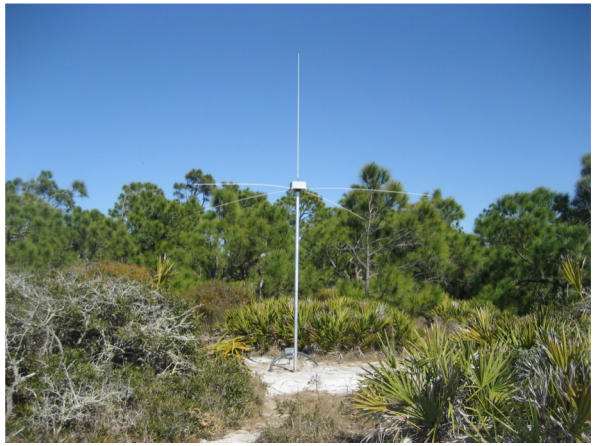
Cliff Merz

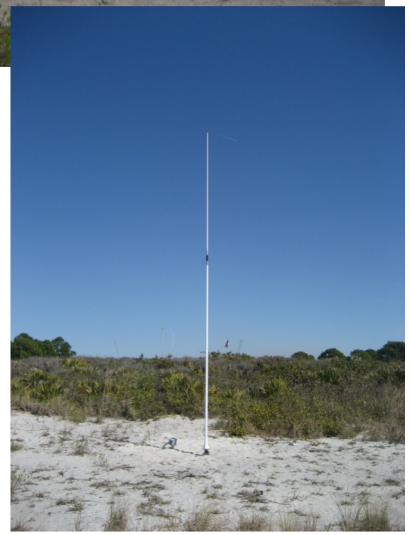
FLORIDA INSTITUTE OF TECHNOLOGY 1958

Steven Lazarus

USF: Cliff Merz

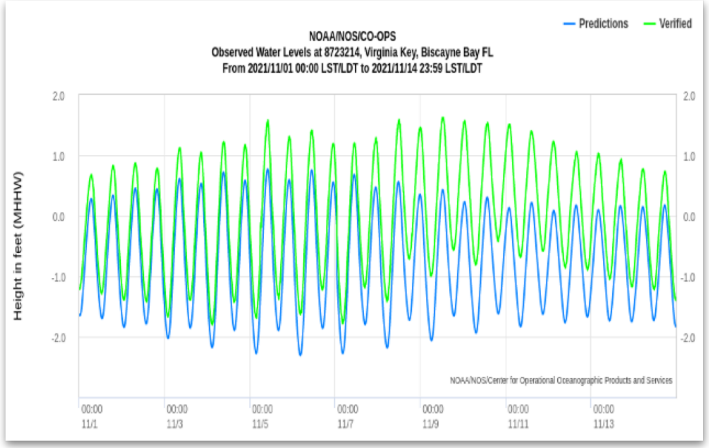
- Co-authored HFR build out plan
- Leveraged NASEM-GRP Gulf of Mexico Current outflow study
  - 3 new Codar installations in Marathon, Key West, and Dry Tortugas
  - all part of HFR build out plan
- All Codar sites upgraded to R21
- Challenges include infrastructure upgrade discussions with Elgin AFB: WERA and CODAR location





U Miami: L. K. (Nick) Shay, J. Martinez Pedraja and B. Jaimes de la Cruz

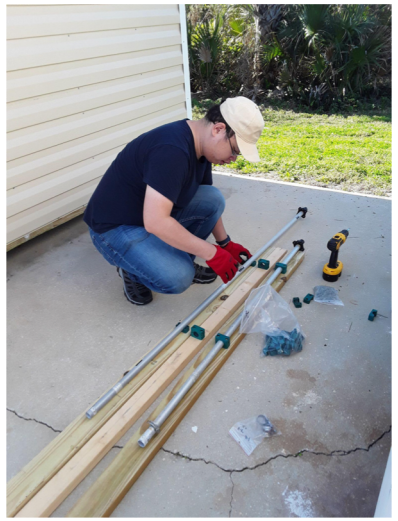
- Re-deployed WERA radars at Virginia Key and Crandon Park damaged by Hurricane Irma
- Virginia Key WERA repaired and redesigned after King Tide water damage
- Challenges: Hurricanes, King Tide damage, and park maintenance cable damage, rising costs for travel, electricity, and technician time



King Tide shown in green. Water levels were much higher than predicted at Virginia Key, causing damage to the HFR. Image credit: NOAA NOS

UGa. SKIO: Catherine R. Edwards, Kris Maedke-Russell, Karen Dreger, Dana Savidge

- Rebuilt GA WERA stations on Jekyll and St. Catherine's (JEK, CAT) in spring 2021; completed frequency conversion for both
- CAT and JEK operational but troubleshooting/ fighting hardware component failures
- Installed/tested/calibrated Canaveral National Seashore (CNS) WERA station Jan 2022
- Land Use permits secured for Kennedy Space Center (KSC) spring 2022, full installation Aug/Sept pending scheduling with NASA site managers



U. South Carolina: George Voulgaris

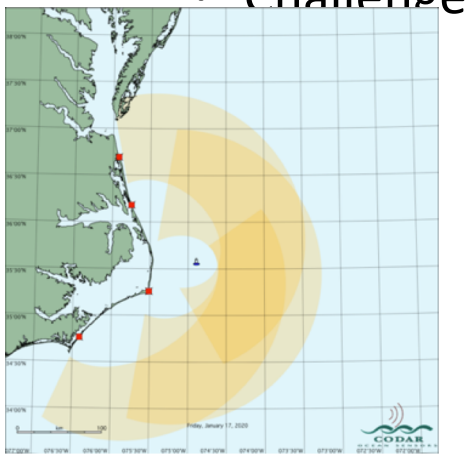
- Existing sites at Georgetown (GTN) S.C. and Ft. Caswell N.C. converted to approved ITU 5.25 MHz - more noise
- 3rd site install completed at Myrtle Beach State Park in 2021 at ITU approved 13.5 MHz
- GTN: New Tx/Rx cables and Tx array rebuilt and new Rx antennas installed
- Guy-less antennas optimized for turtle nesting
- Experimented with beamforming vs. direction finding- hybrid solution may optimize radar performance
- Challenges remain with king tides, storm surge, and erosion damage

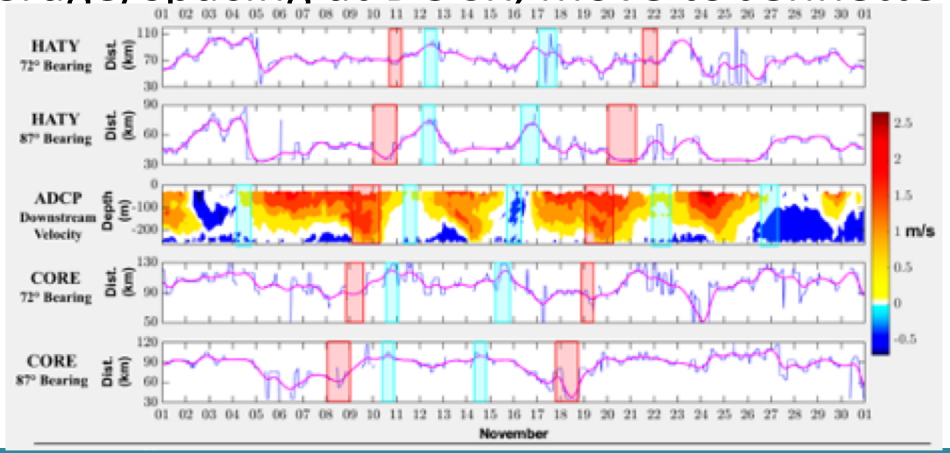
Florida Institute of Technology: Steven Lazarus

- Treasure Shores WERA installed February, 2022
- Satellite Beach WERE approved by city council, install planned for November 2022
- Challenge 1: IT communication with Treasure Shores
- Challenge 2: Permissions and install window for Satellite Beach

UNC CH/ECU CSI: Harvey Seim, Sara Haines, Trip Taylor, Spencer Wilkinson, Tony Whipple, and Mike Muglia

- Ocracoke ~5MHz Codar installed and operational March, 2021
- NSF HFR project funded- re-analyze NC HRF data since 2004 to quantify Gulf Stream variability at Cape Hatteras
- Phase 1 DOE SBIR completed with Oscilla Power, Codar, CSI: design wave-powered offshore transmitter to complement NC coverage. Phase 2 in review
- 3 new HFR related publications in press
- Cooling problem with Low Power HFR at CORE solved
- Challenges: poor coverage/spacing at DUCK, move to Jennette's Pier, Nags Head





Received!