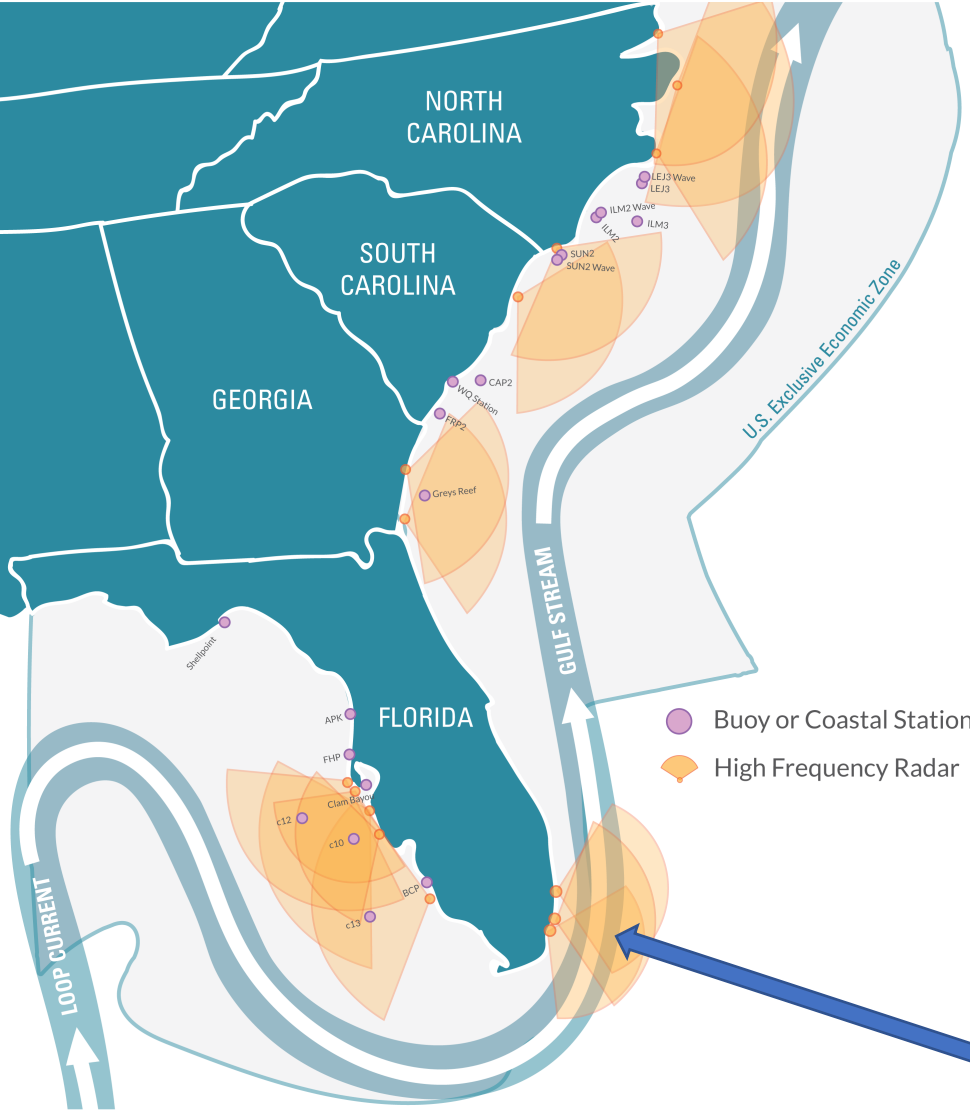
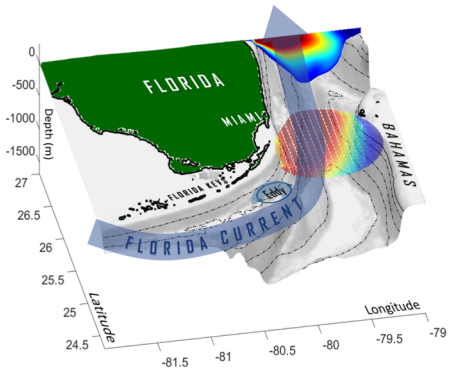


SECOORA
Southeast Coastal Ocean Observing Regional Association

HF Radar Observing of the Florida Current

Lynn (Nick) Shay

University of Miami/RSMAS



IOOS Integrated Ocean Observing System

CODAR OCEAN SENSORS

YSI a xylem brand

Objective and Approach

Objectives:

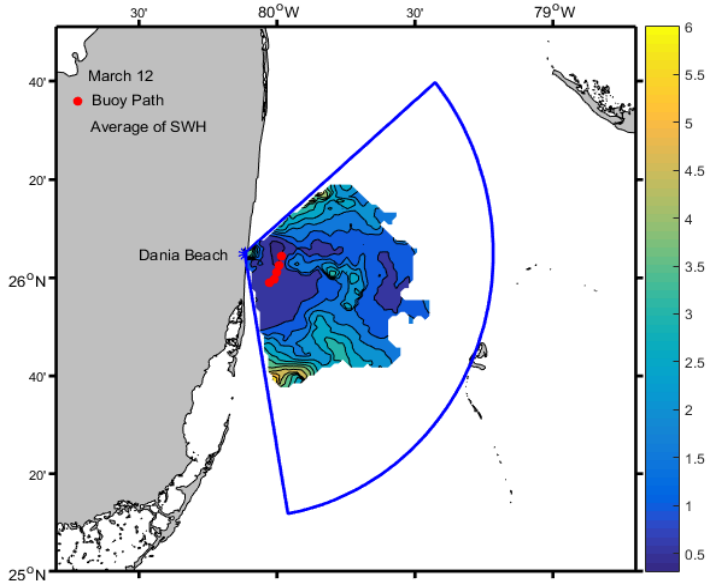
- Operate WERA (Phased Array) sites to maximize uptime and spatial coverage;
- Provide radial velocities to National Network;
- Collaborate with SECOORA region HF Radar operators to:
  a. standardize operations and data delivery,
  b. provide uptime and spatial metrics, and,
  c. archive and manage data;
- Foster integration with other SECOORA subsystem projects; and
- Enhance utilization of the data by stakeholders (e.g., CESU).

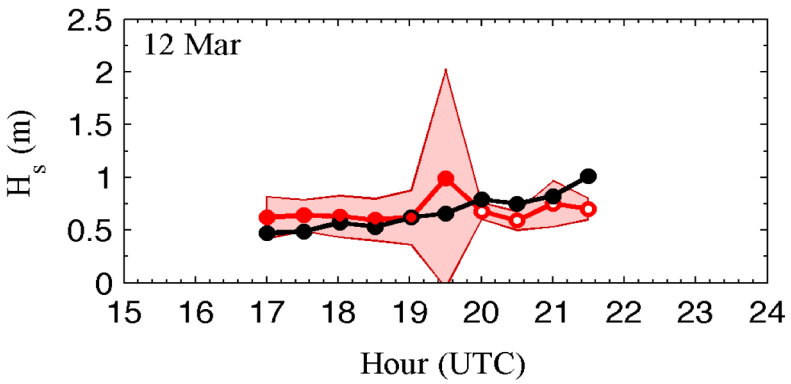
Approach:

- Operate and Maintain HF Radar Sites in Dania Beach, Virginia Key, Crandon Park and Key Largo.
- TX at 12.7 and 16 Mhz with 16-element RX elements.
- Quality control radial current data and average over hourly intervals subsampling to a 2 km grid.
- Upload real time data to RSMAS website using all sites to estimate the 2-D current field.
- Estimate significant wave heights from 2nd order returns.

Accomplishments

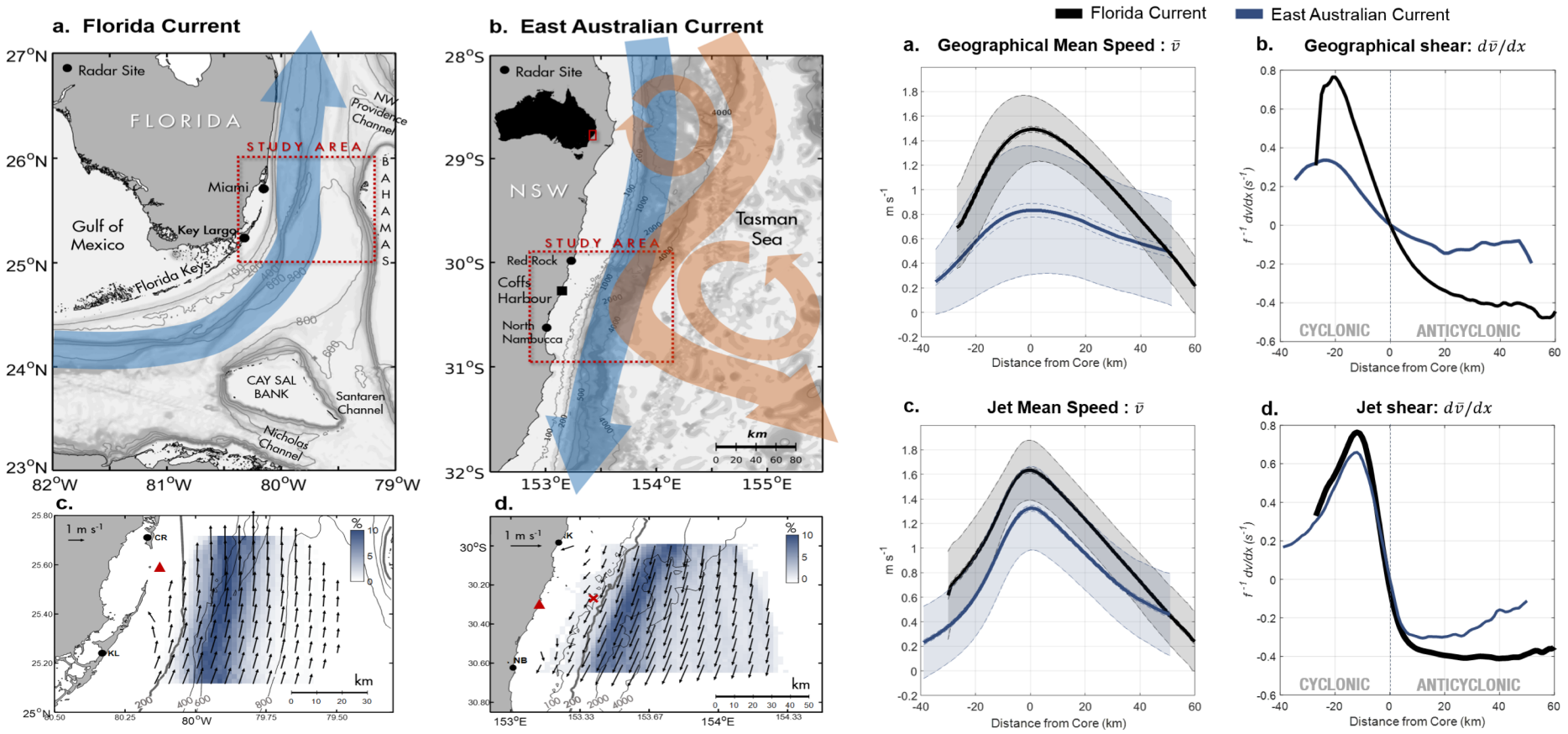
- Provided measurements up to hurricane Irma in Sept 2017. Dania Beach back on line on 12 April, working on other sites.
- Conducted mini-waves experiment conducted from 12-16 March mapping significant wave height for the US Navy Test Facility from SIO Wave Buoys and HF radar (see below).
- Providing current measurements for ACOE dredging project off Port Everglades.
- Compared Florida Current to East Australian Current in a submitted GRL paper.





*HF Radar: **Red** Dots*
Buoy: Black Dots

FC Versus EAC From WERA (Archer et al., GRL)



The kinematic similarity of two western boundary currents revealed by sustained high-resolution observations, 2018, GRL, Archer, Keating. Roughan, Johns, Lumpkin, Beron-Vera, and Shay.

Impacts

- Real time measurements central to Marine Transportation, Search and Rescue (USCG), Wave Climate (US Navy), Dredging Operations (ACOE), and pollutant transport (local beach management).
- Reducing operational overhead for US Navy small boat operations, Resolving the current structure that affects dredging operations (where is the Florida current?), Providing data for S&R operations.
- Monitoring of the Florida Current and sea level during episodic King Tide Currents in the Florida Straits that floods Miami Beach in the fall when combined with altimetry products for sea level.