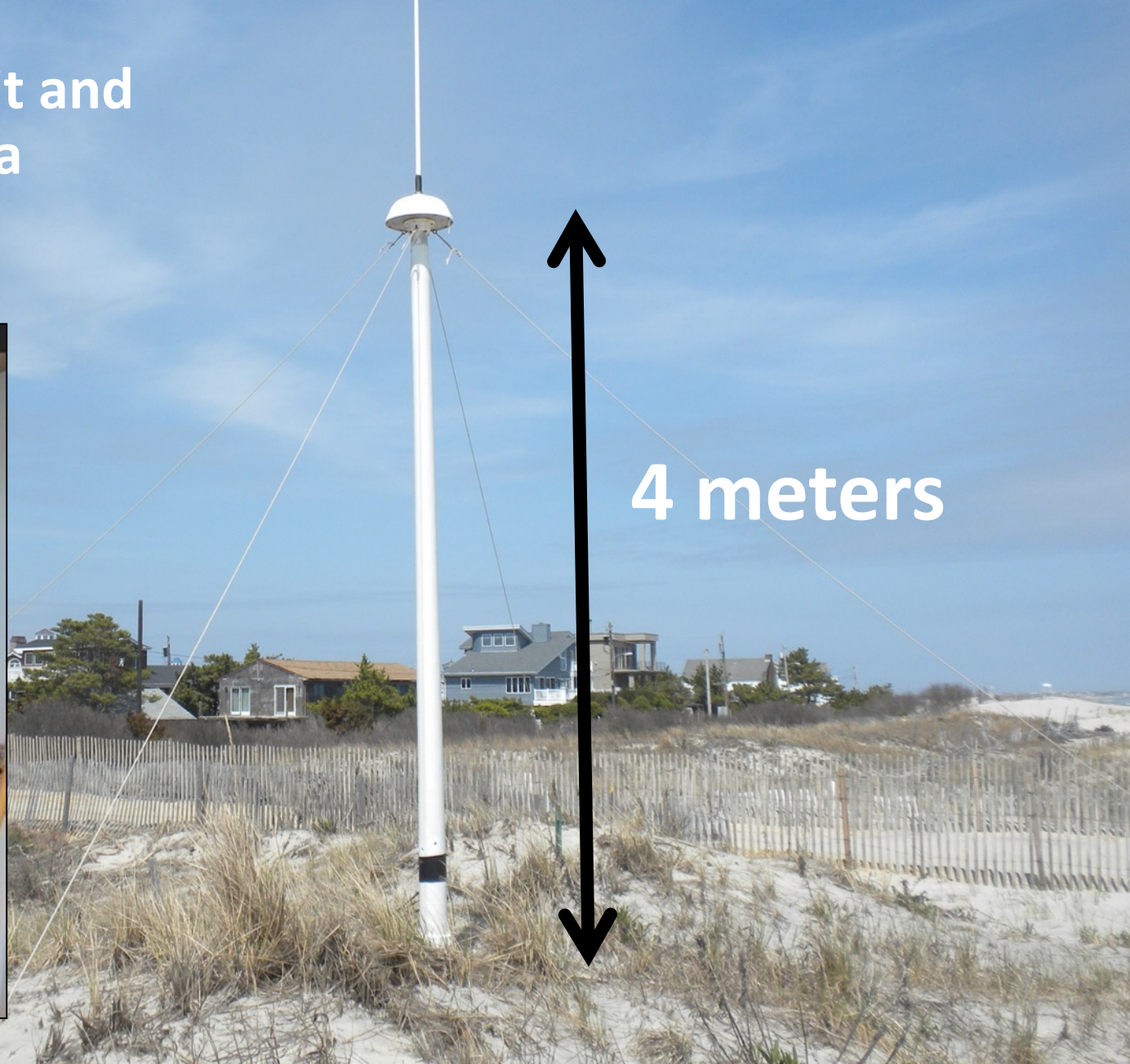


MARACOOS High Frequency Radar

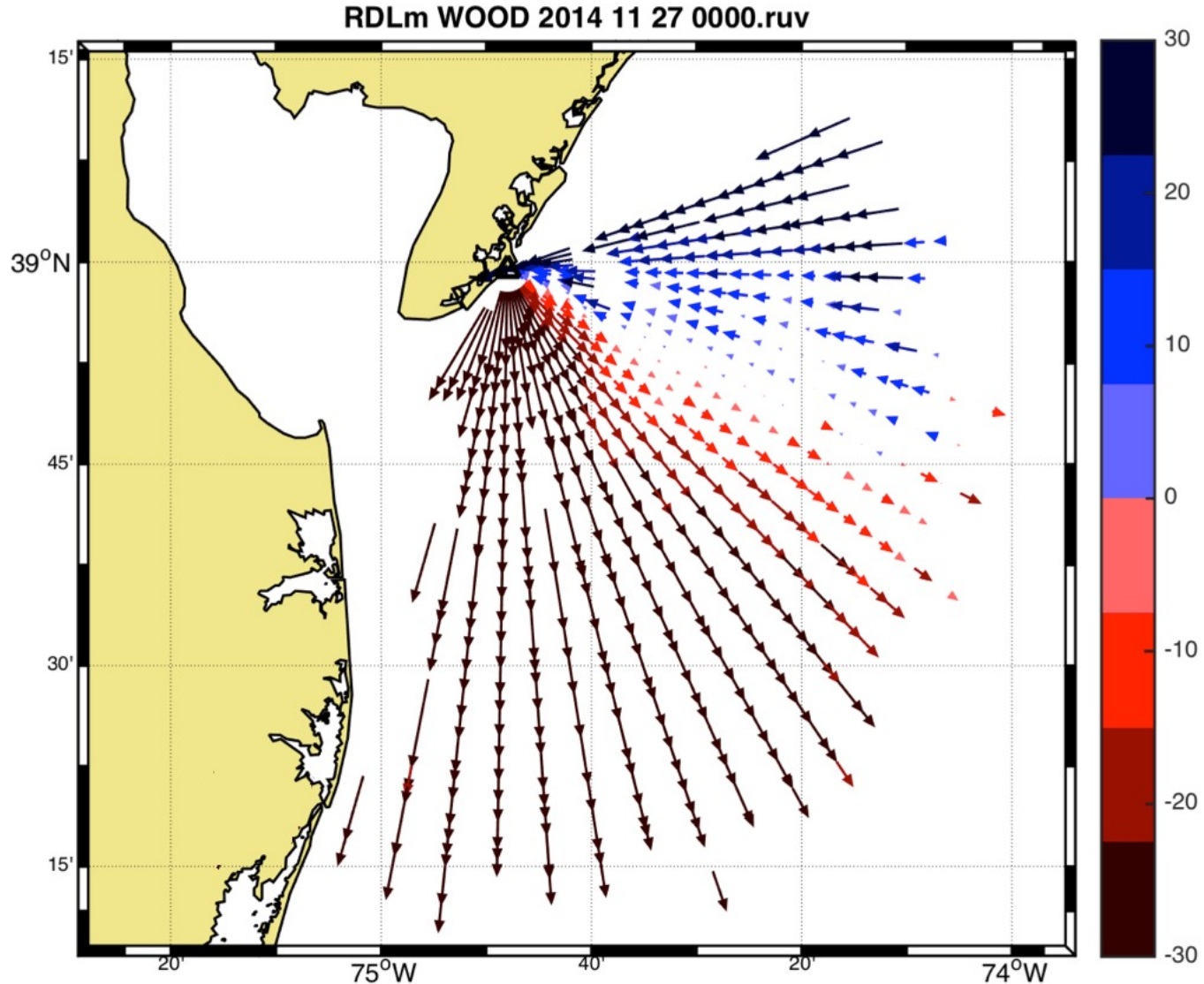
Dr. Hugh Roarty, HFR
Regional Coordinator

RPS
South Kingstown, RI
July 26, 2023

13 MHz Transmit and Receive Antenna



Radial Current Measurements from a Single Station



High Frequency Radar Network

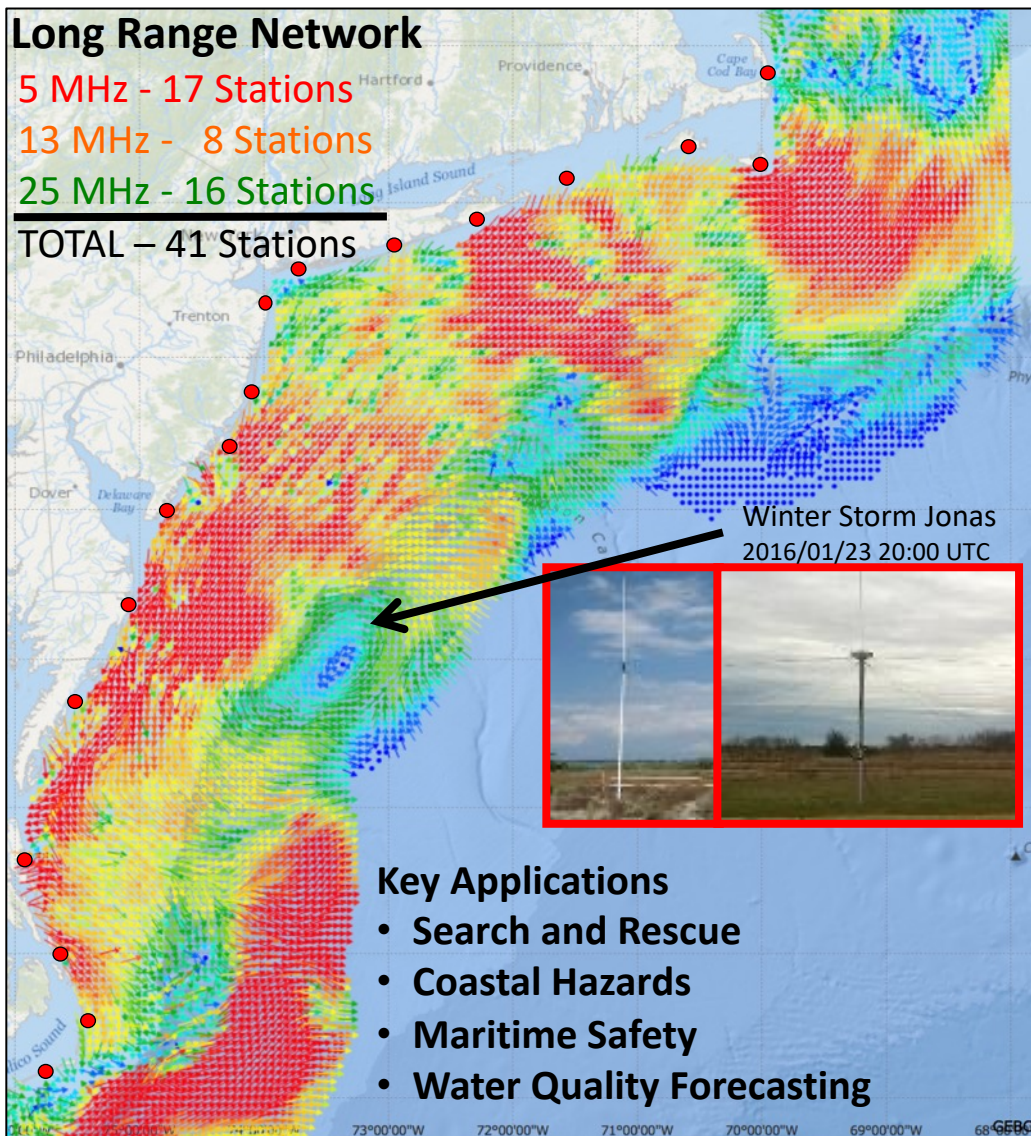
Long Range Network

5 MHz - 17 Stations

13 MHz - 8 Stations

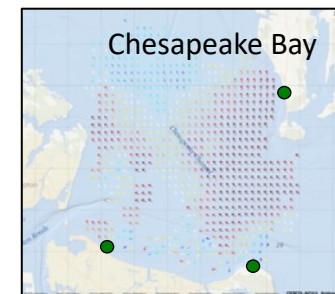
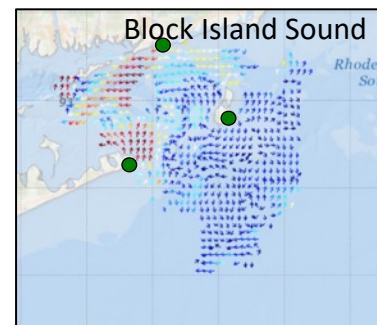
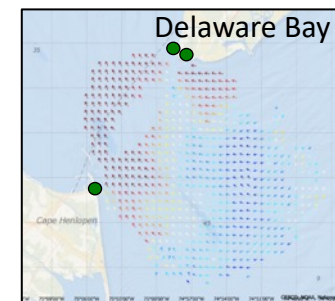
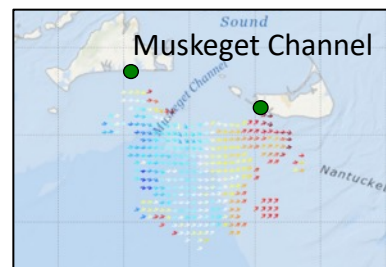
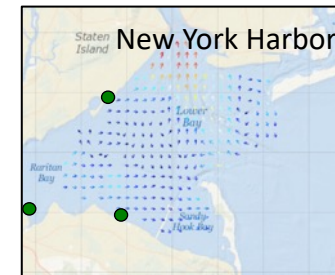
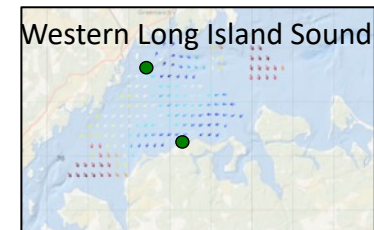
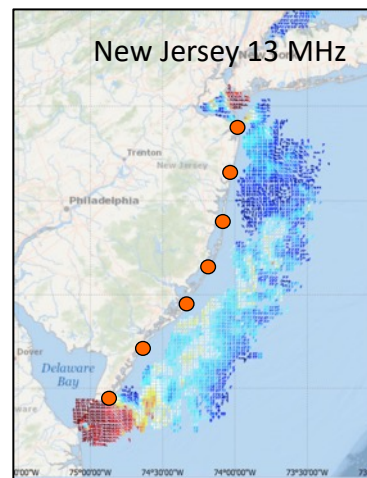
25 MHz - 16 Stations

TOTAL - 41 Stations



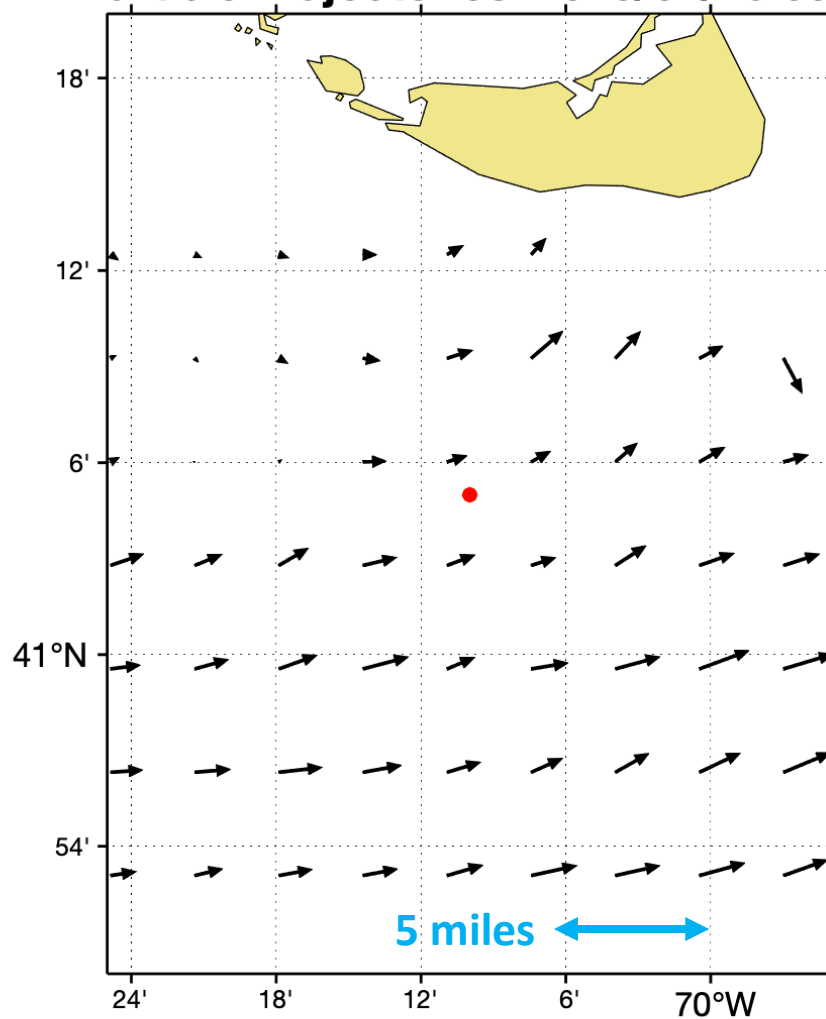
Key Applications

- Search and Rescue
- Coastal Hazards
- Maritime Safety
- Water Quality Forecasting



Surface Currents from HF Radar

MARA Particle Trajectories: 2020/04/18 00:00 GMT



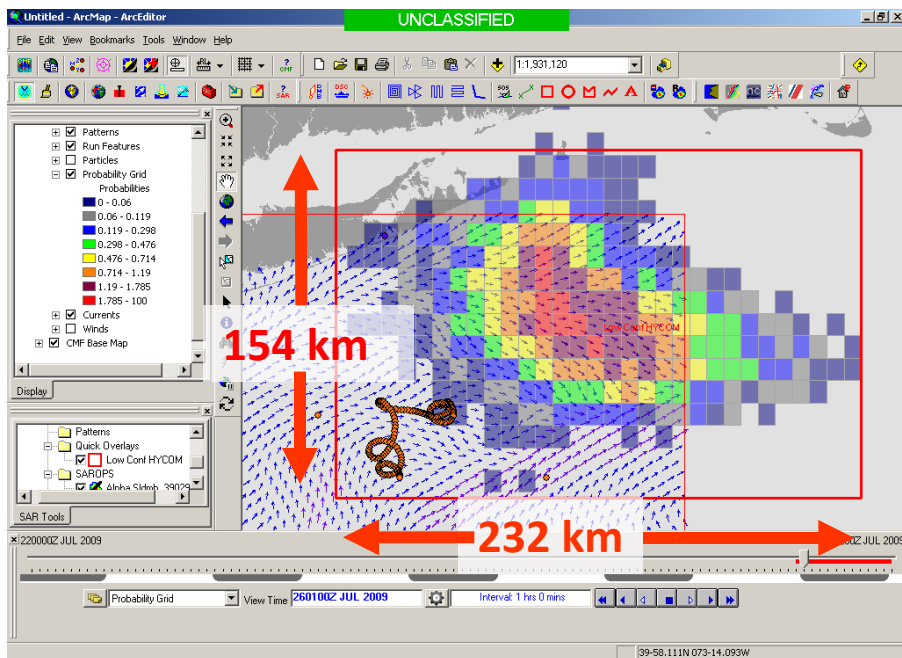
04/21/20 trajectories_from_5.m

Application: USCG Search and Rescue

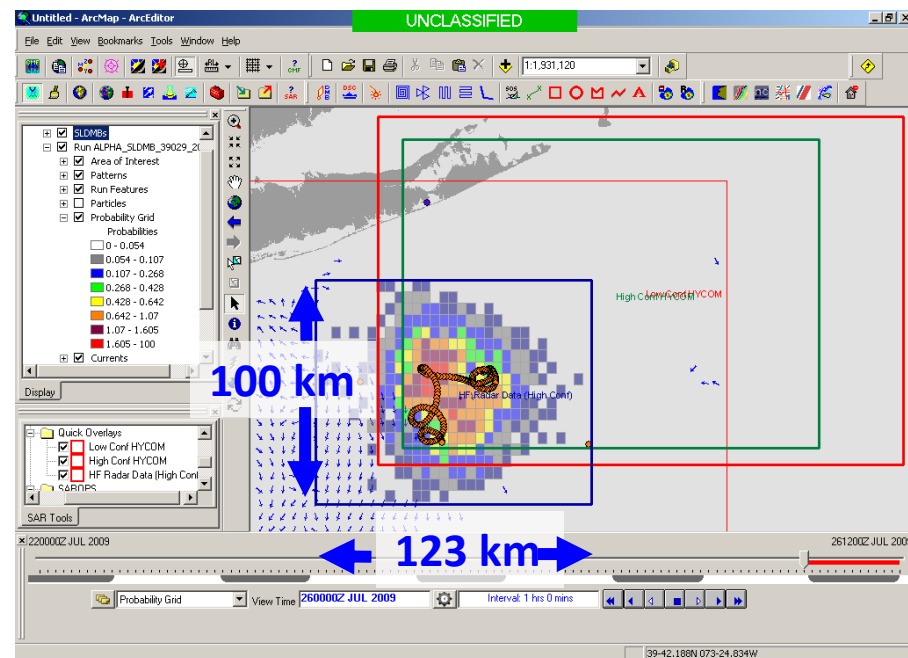


Results of a 1-year blind validation study -
For every real drifter deployed at sea:

- 5000 Virtual Drifters Deployed in SAROPS
- Search Areas compared to real drifters every 12 hours



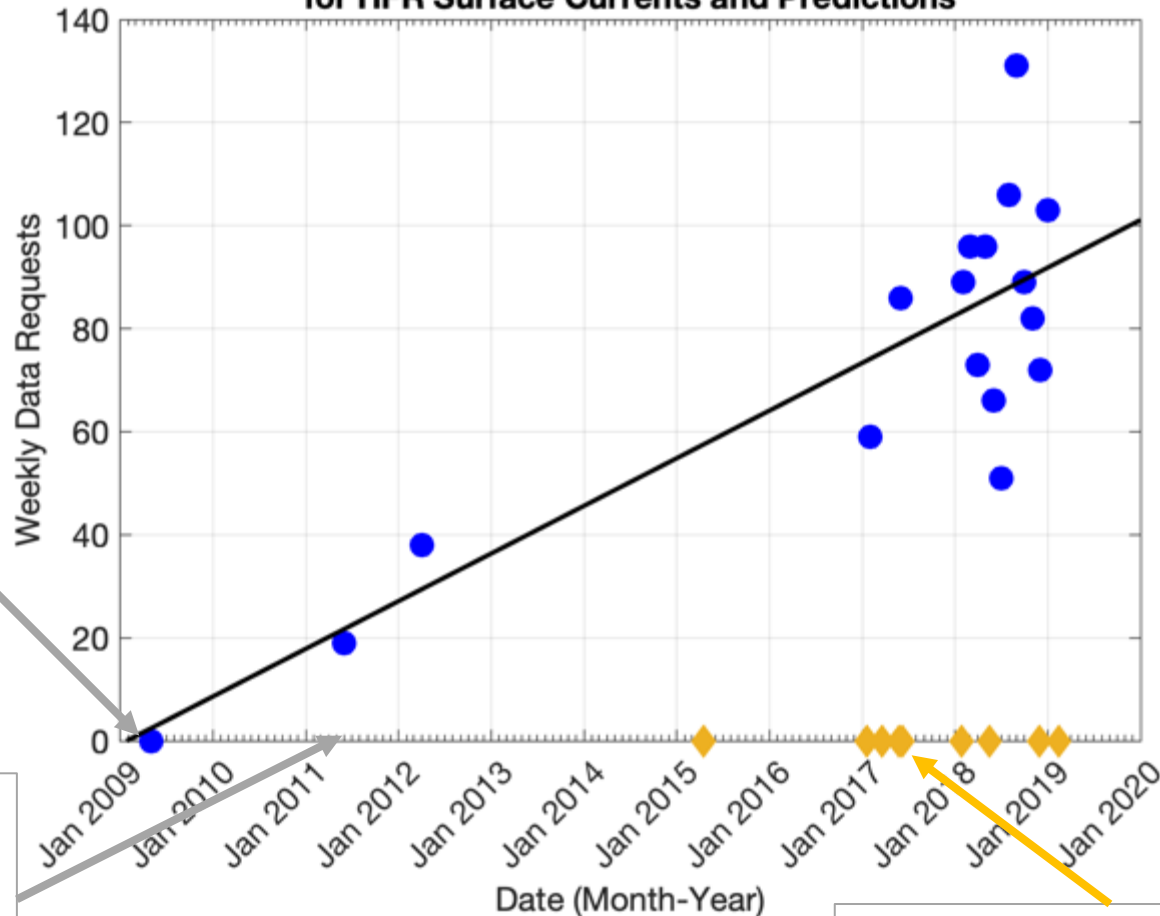
HYCOM 96 hour Search Area
36,000 km²



HF Radar 96 hour Search Area
12,000 km²

National Use of HFR Data and Predictions

US Coast Guard EDS Requests
for HFR Surface Currents and Predictions

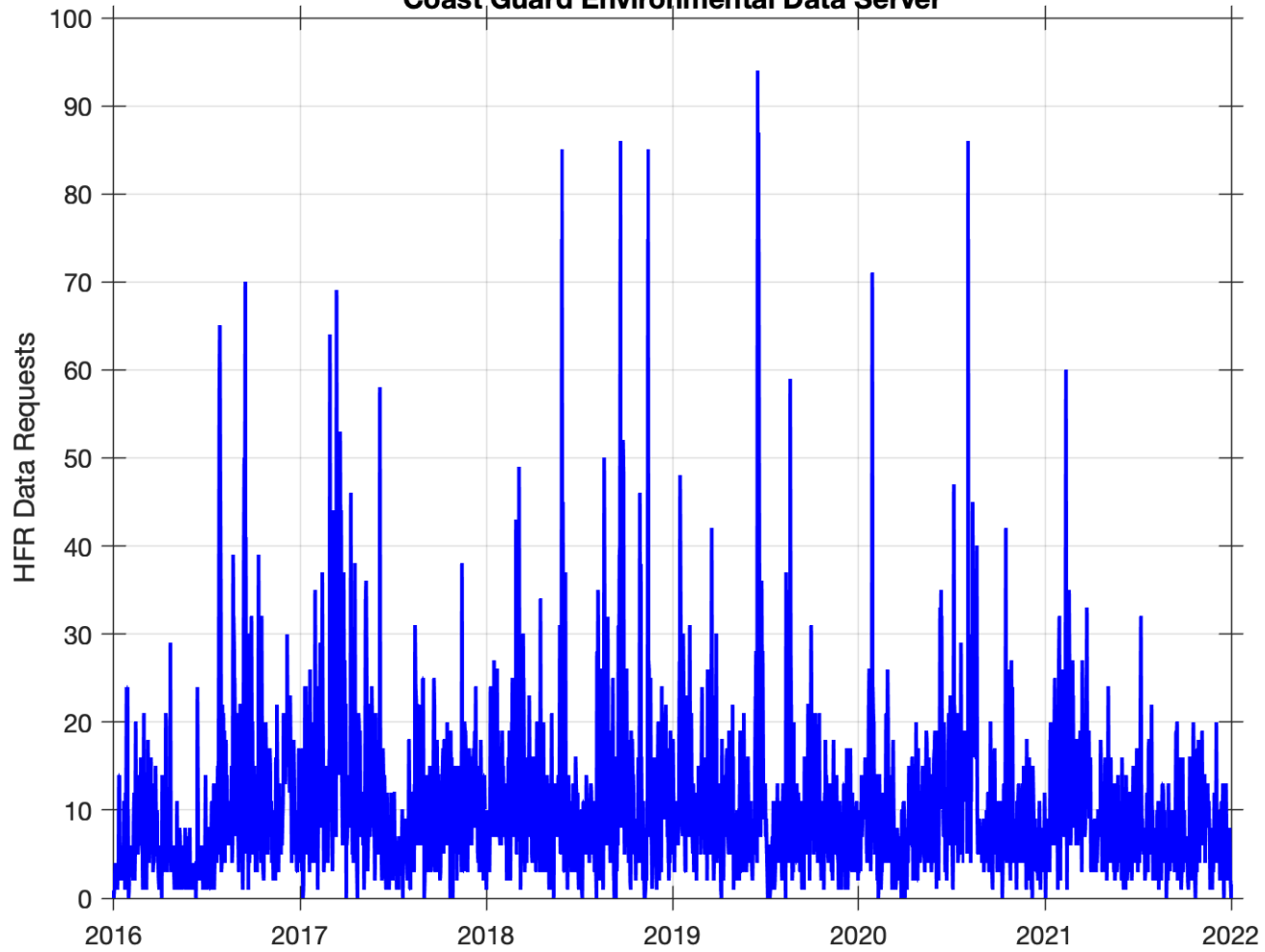


MARACOOS
surface currents
operational with
USCG May 4, 2009

US IOOS surface
currents operational
with USCG March
2011

MARACOOS engagement
events with USCG

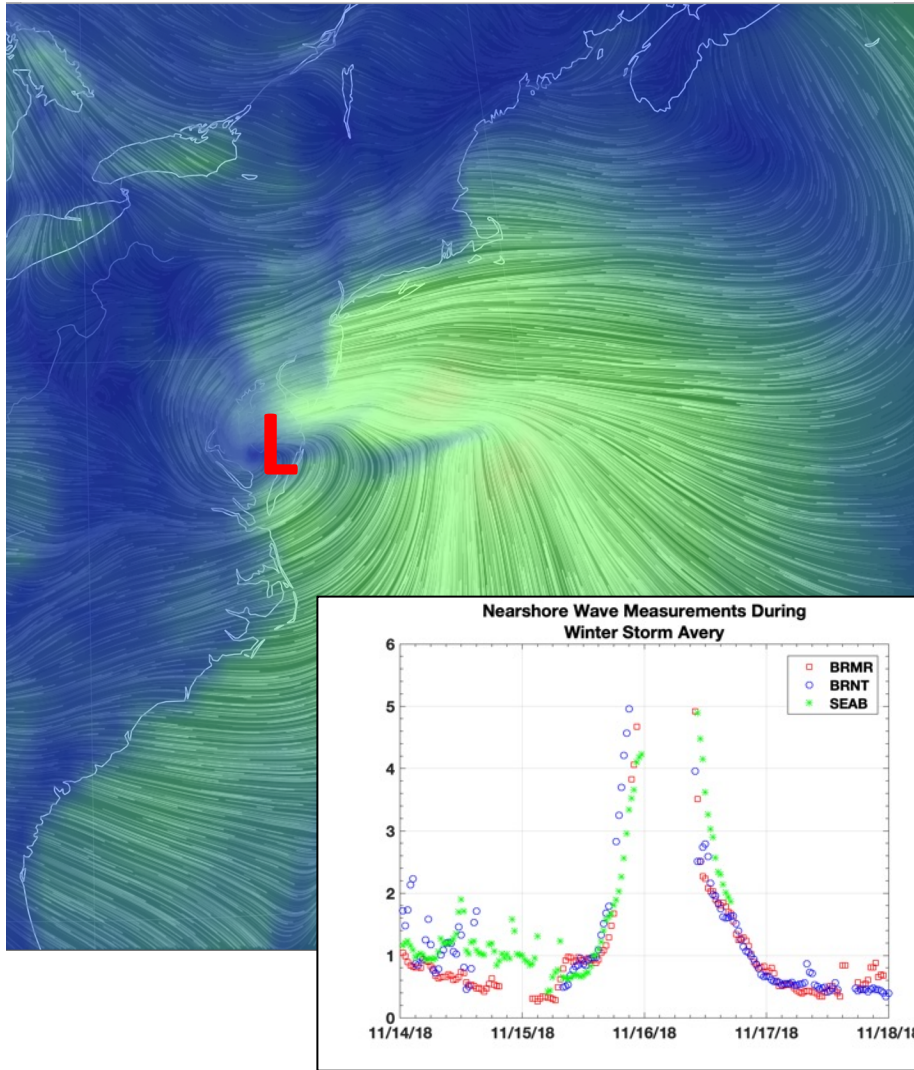
Daily HF Radar Surface Current Data Requests to Coast Guard Environmental Data Server



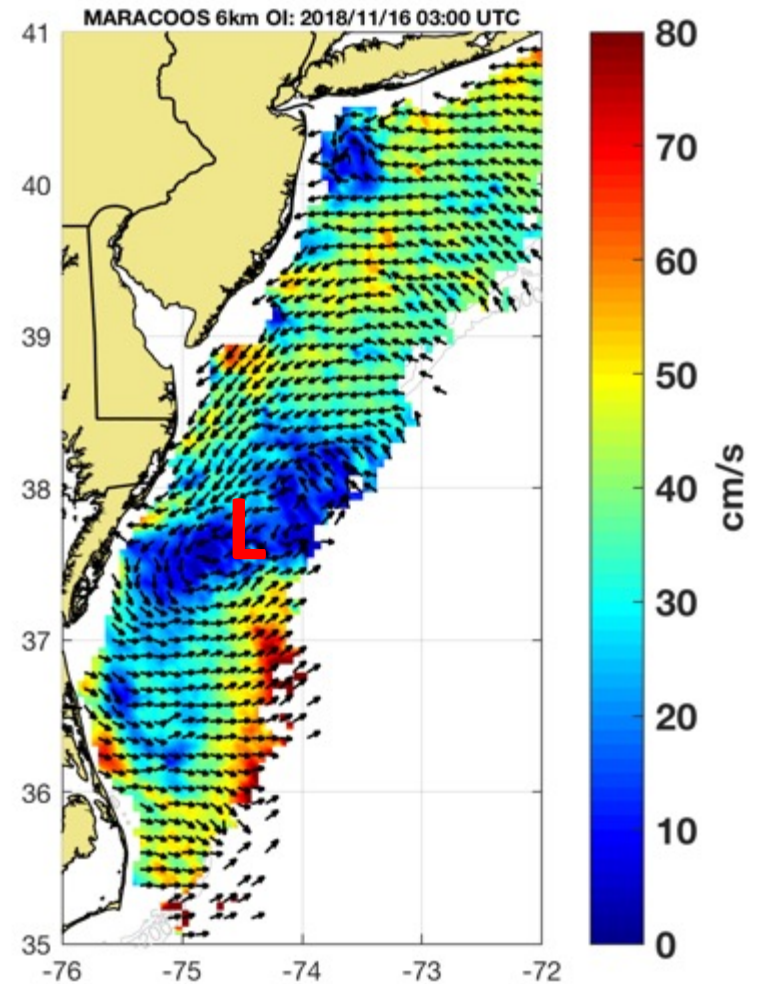
09/13/22 EDS_top5_daily_v04.png / plot_EDS_top5_daily_v04.m

HFR Highlights: Winter Storm Avery – 11-15-18

GFS 11/16/2018 03:00 UTC



HFR 11/16/2018 03:00 UTC



MARACOOS High Frequency Radar



Questions?

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www.maracoos.org

302-605-2727