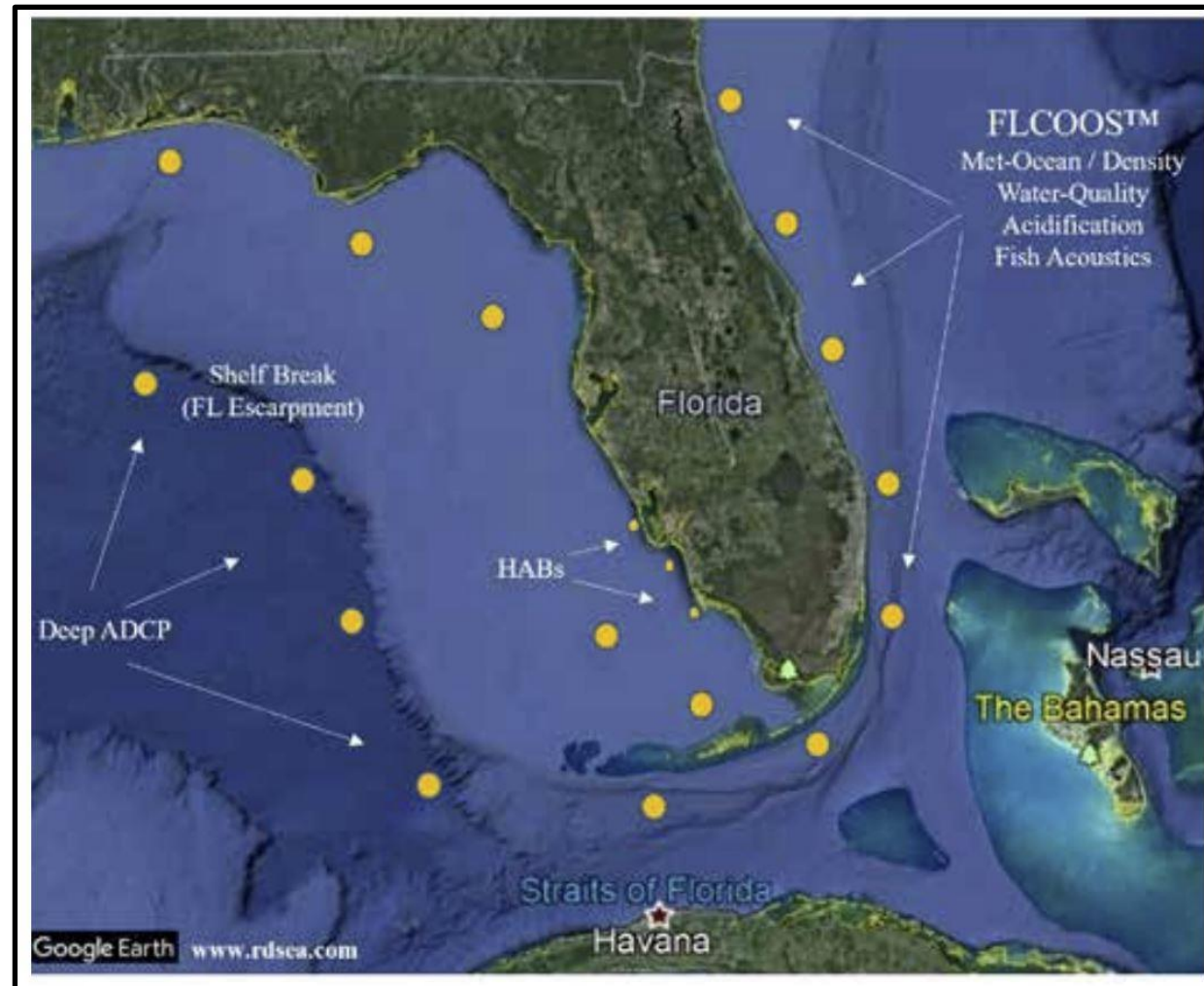


Looking “SeaWARRDD” Towards Florida’s Future Coastal Ocean Observing System (FLCOOST™)

Rick Cole

RDSEA International, Inc.
St Pete Beach, FL

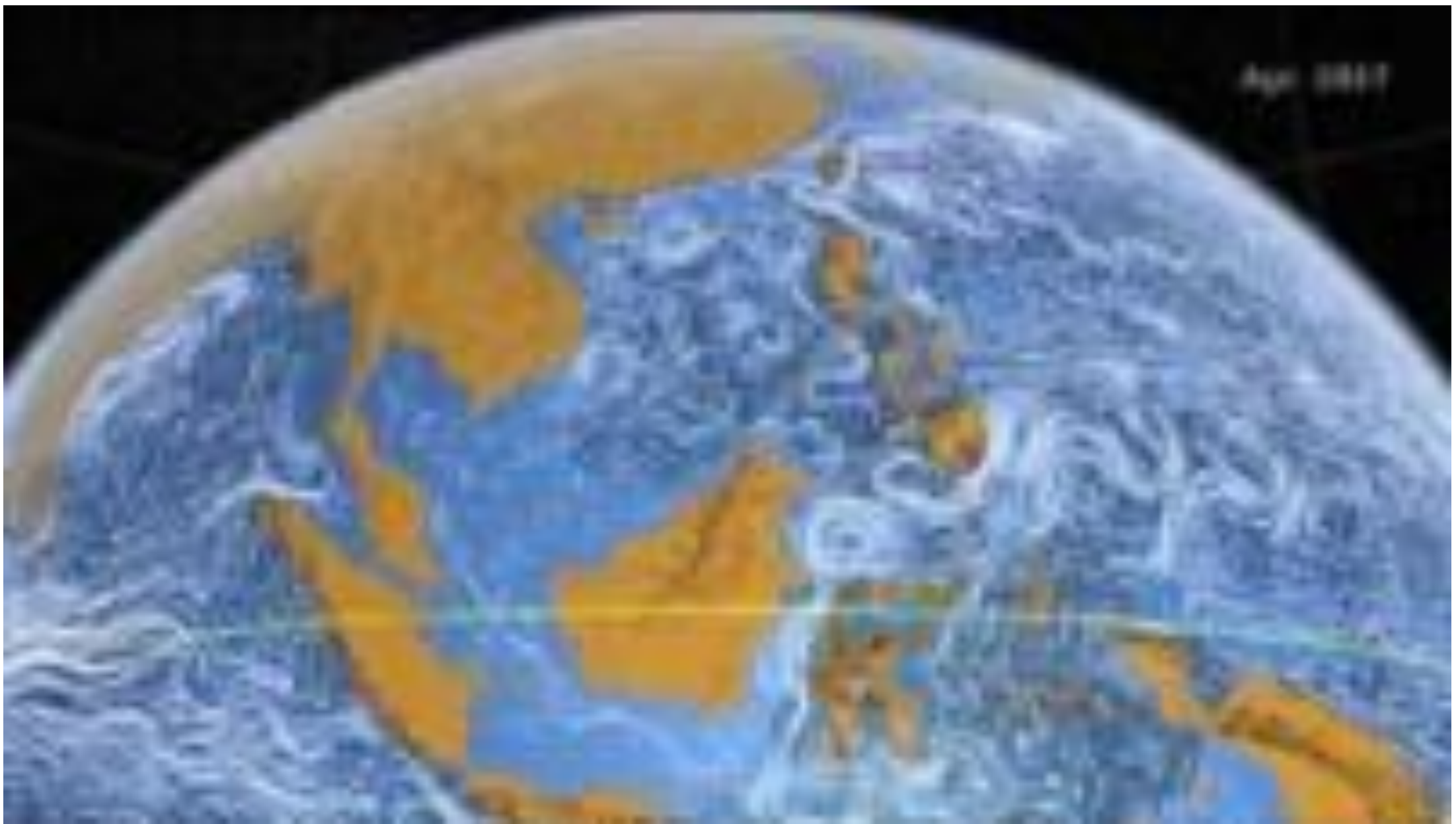


Scott Duncan

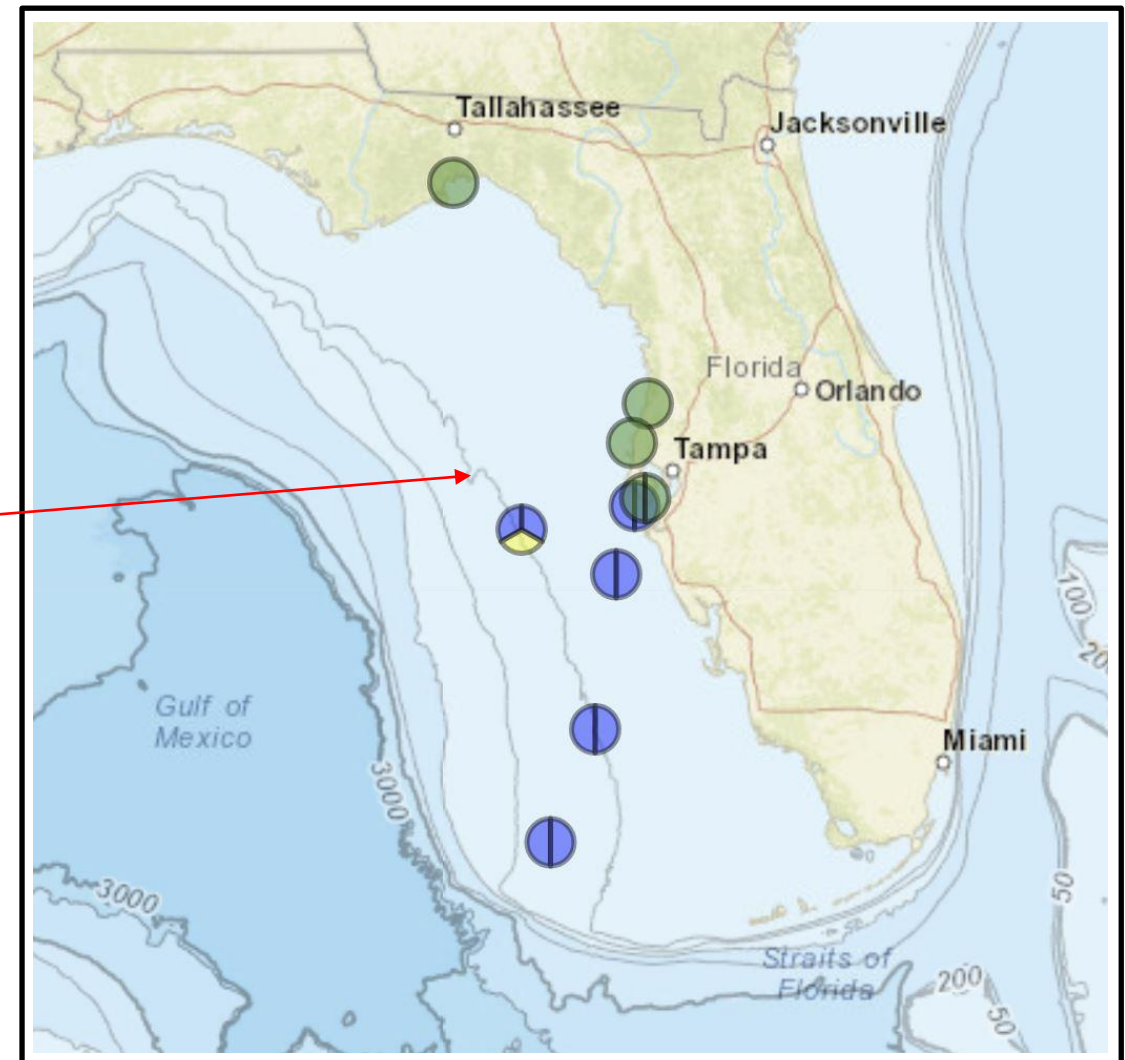
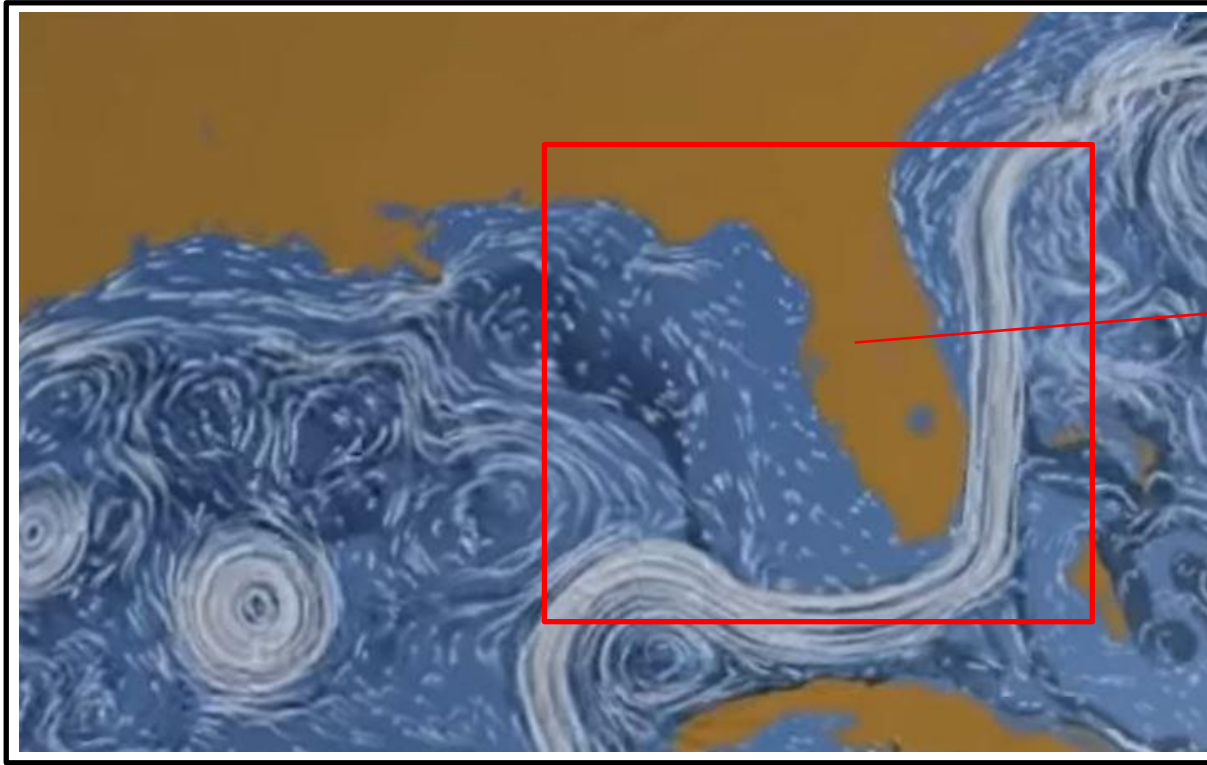
Navocean
Seattle, WA

Discussion Track:

- Brief History, Florida Observing
- Present Systems and Data
- Goals
 - The “SeaWARRDD” System Concept
 - New Blue Tech
 - ADCPs / Subsea Radiotelemetry (RF /Wireless)
 - Mooring Wire-Crawlers
 - eDNA
 - AI/ML/Neural Networks
- Gaps in Monitoring
- Funding

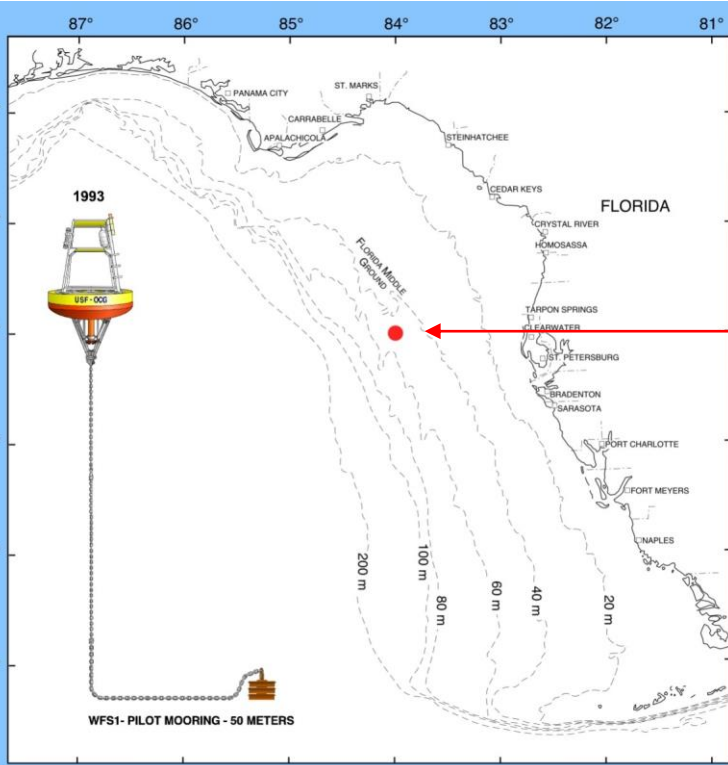


FLCOOST™

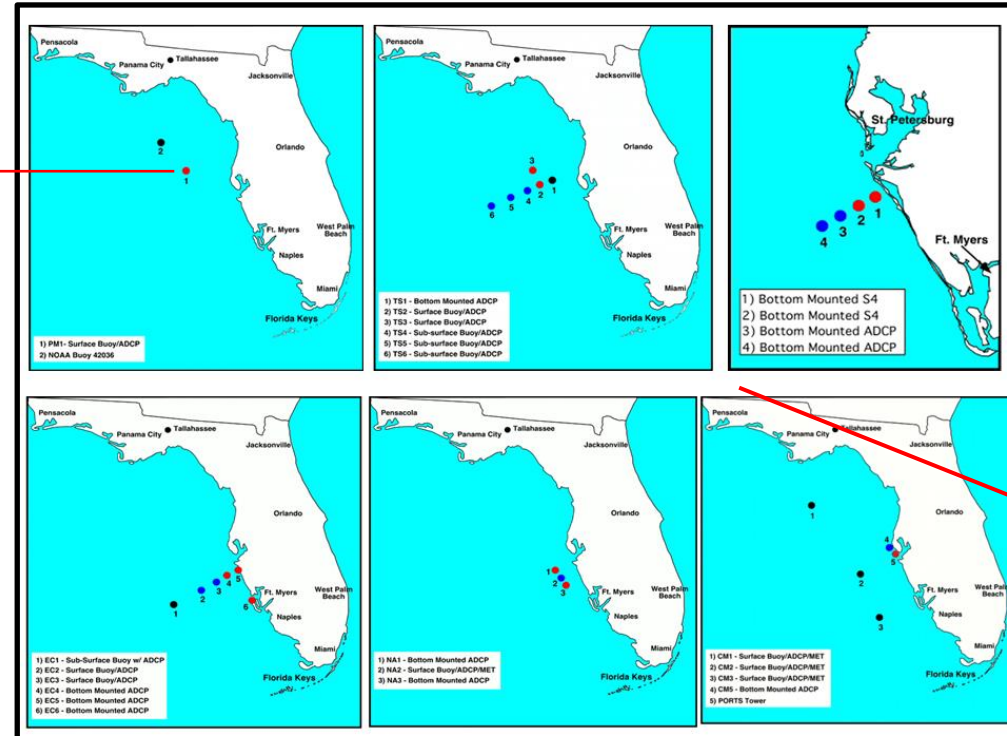


Present Configuration of USF-COMPS, WFS
Florida's only Real Met-Ocean Observing System

Initial Monitoring Projects in Florida, USF, Early – Mid 1990s

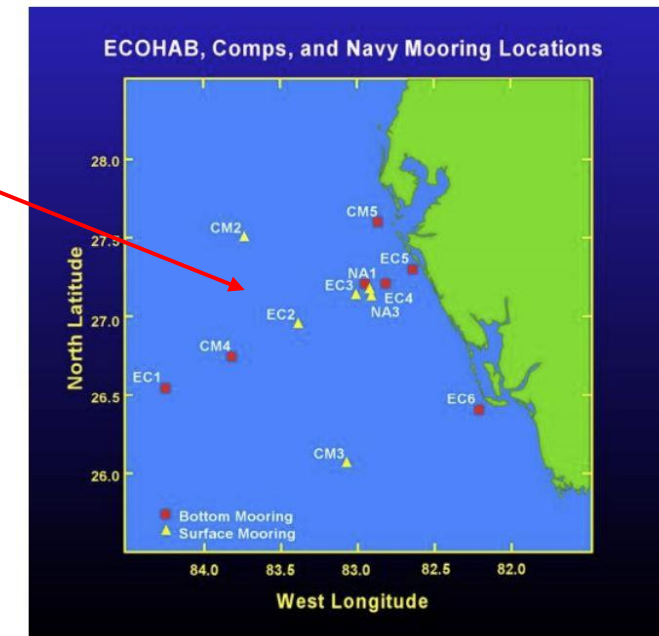


USF Pilot Mooring WFS, 1992

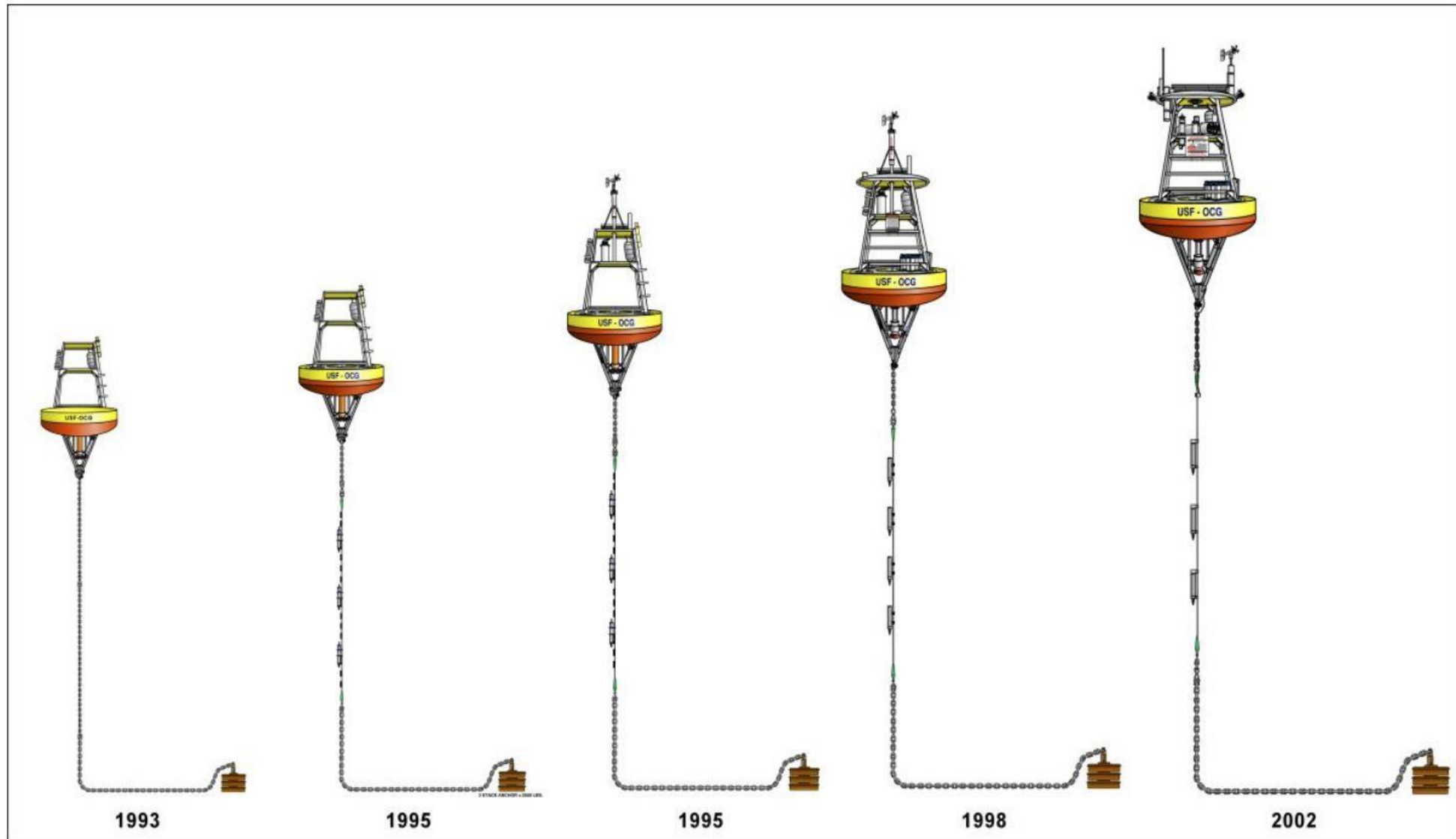


USF-Marine Science Graduate Student Projects

The USF-ENC Array the Initial U.S. Coastal Monitoring System, 1990s



Evolution of a Coastal Mooring System, 1992 - 2002



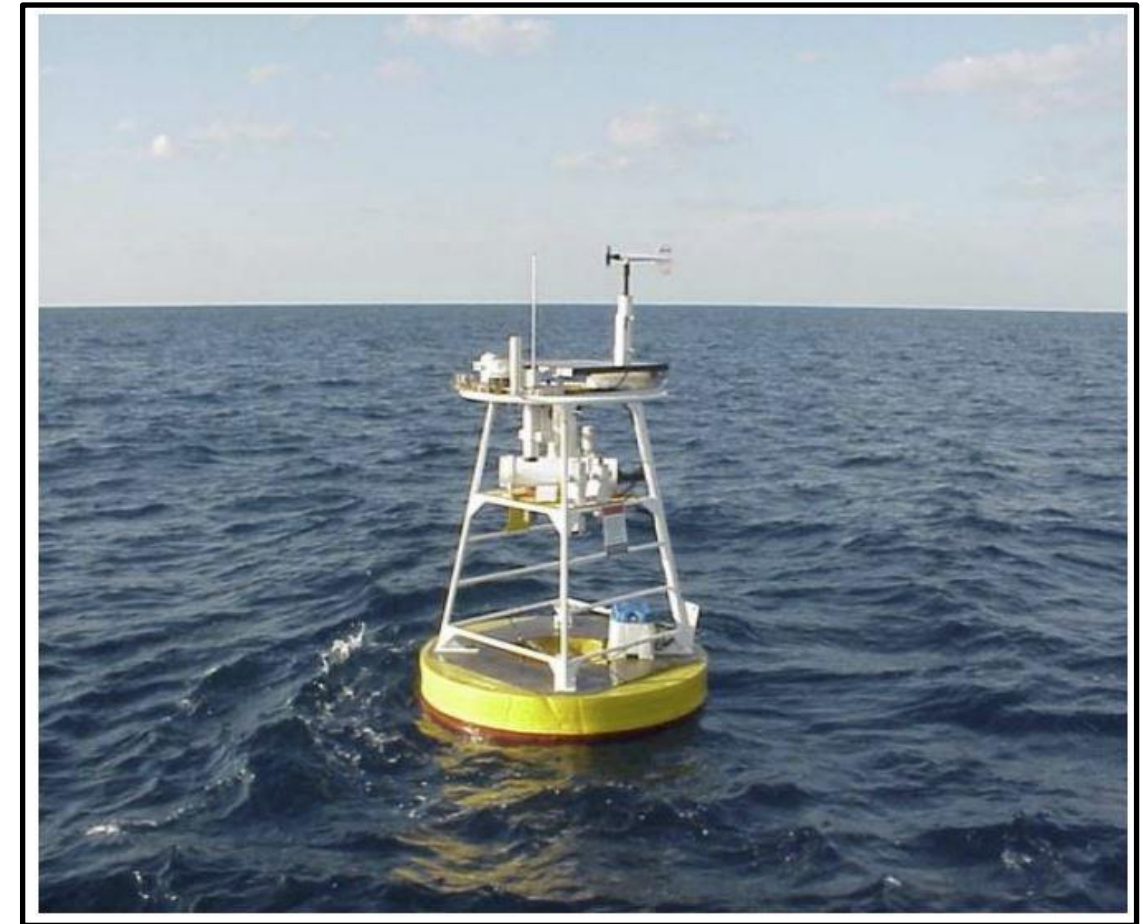
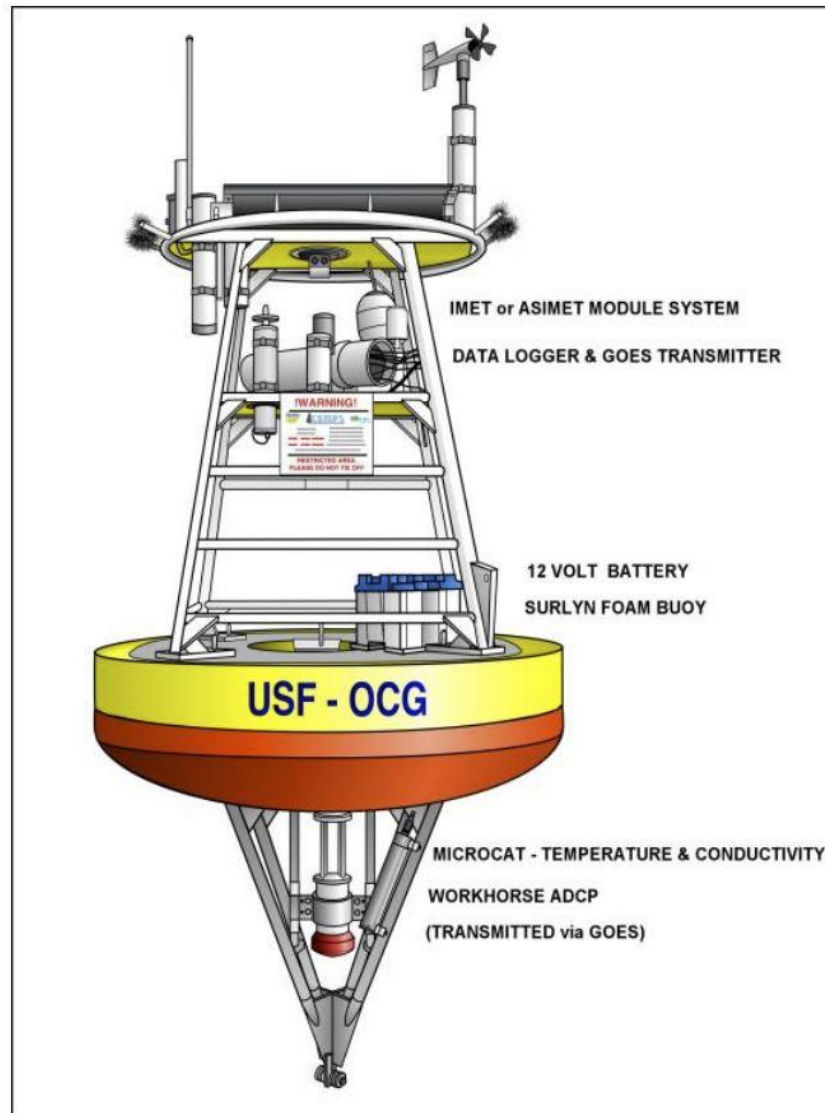
Florida's Past Ocean Observing Network

Heavy on
The WFS, GoM
USF-COMPS

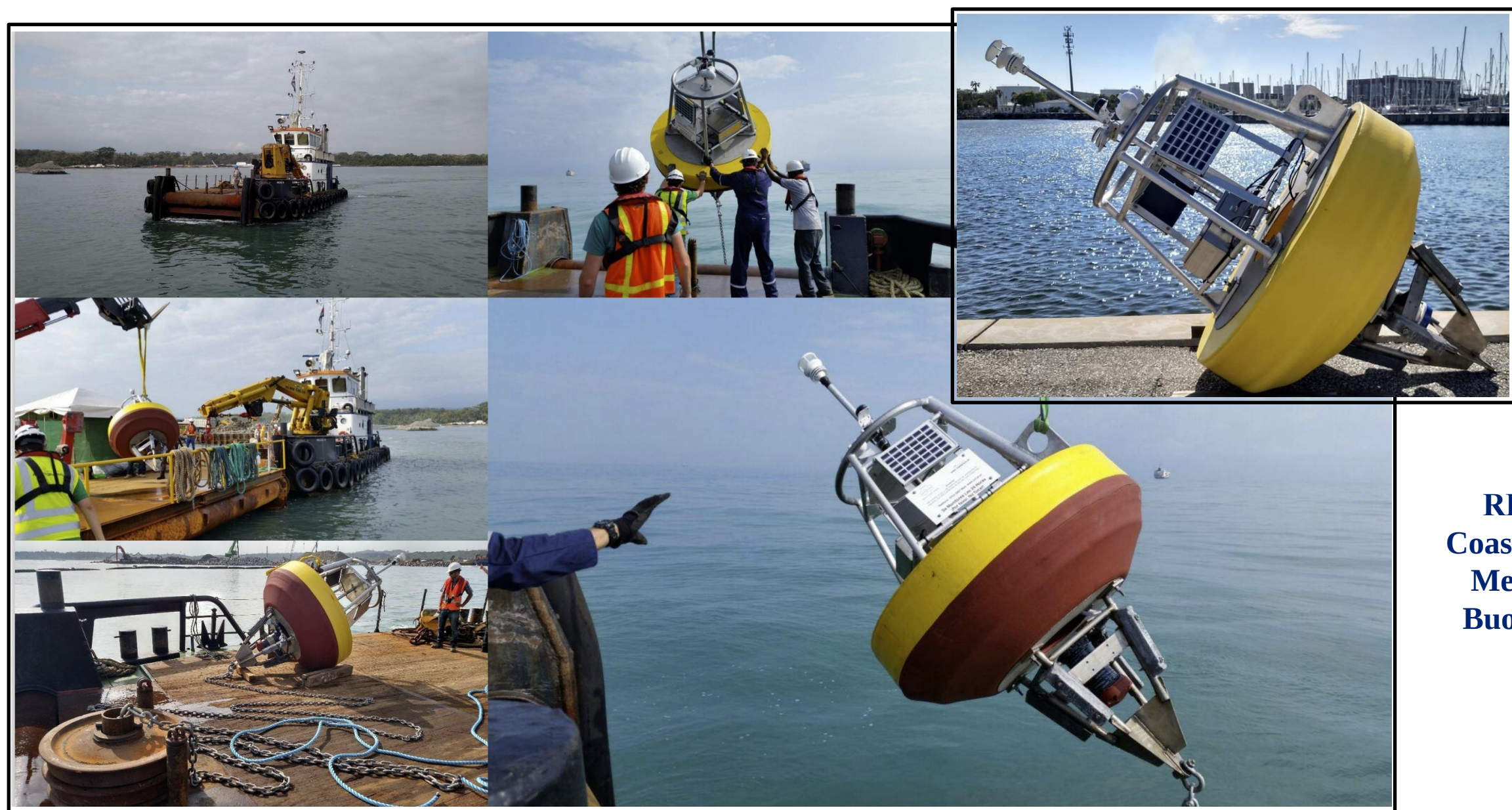


NOAA NDBC
NWS

USF-COMPS
“Full-Up”
Met-Ocean
Buoy System



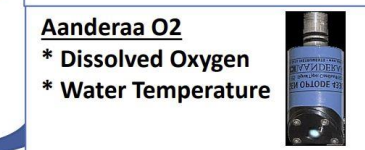
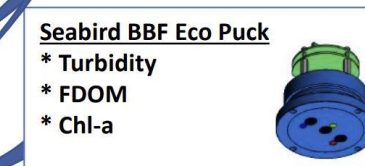
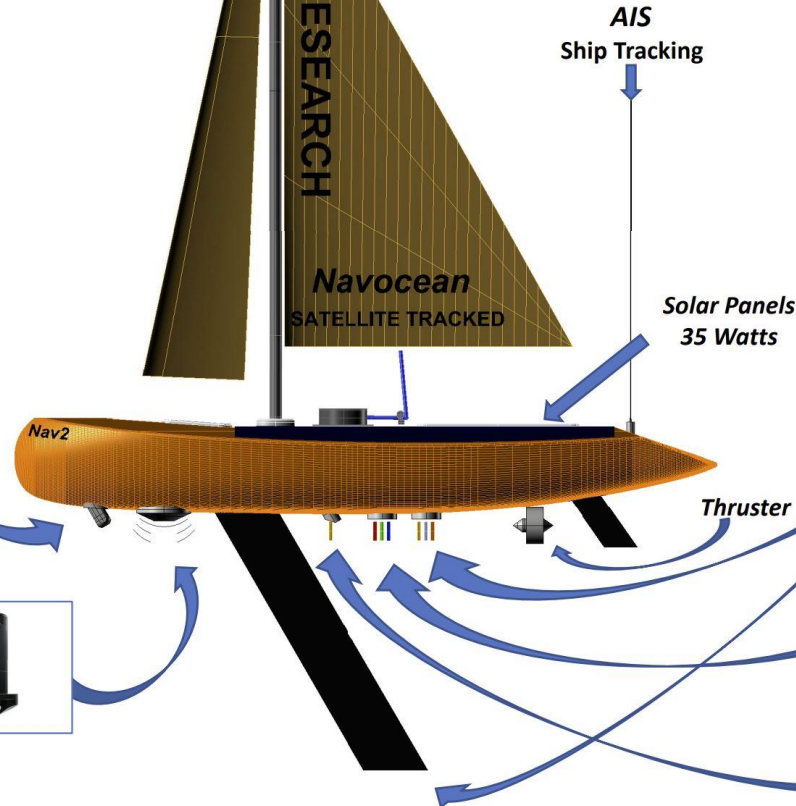
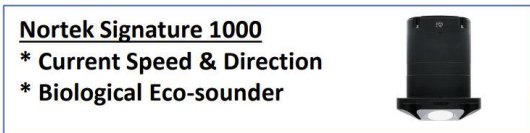
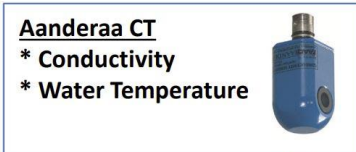
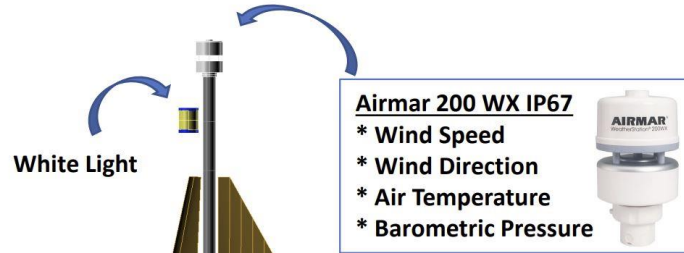
C12 COMPS Site, 50m, West of Tampa Bay
(Credit: USF-MS-OCL)



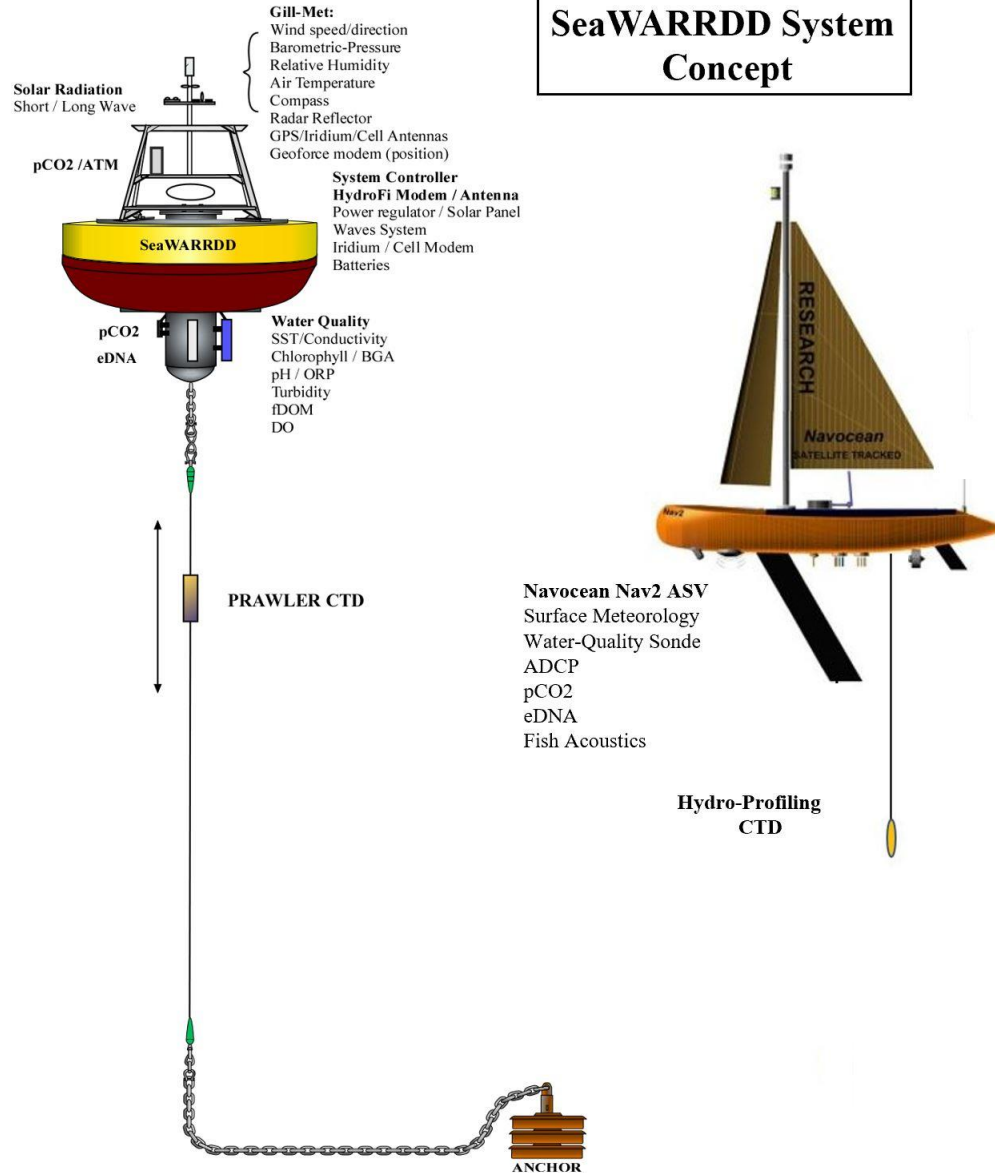
RDSEA's Coastal Hybrid Met-Ocean Buoy System

SeaWARRDD Nav2 ASV

Navocean Inc, Scott Duncan
207.807.4388
scott@navocean.com
www.navocean.com



SeaWARRDD System Concept



Goal:

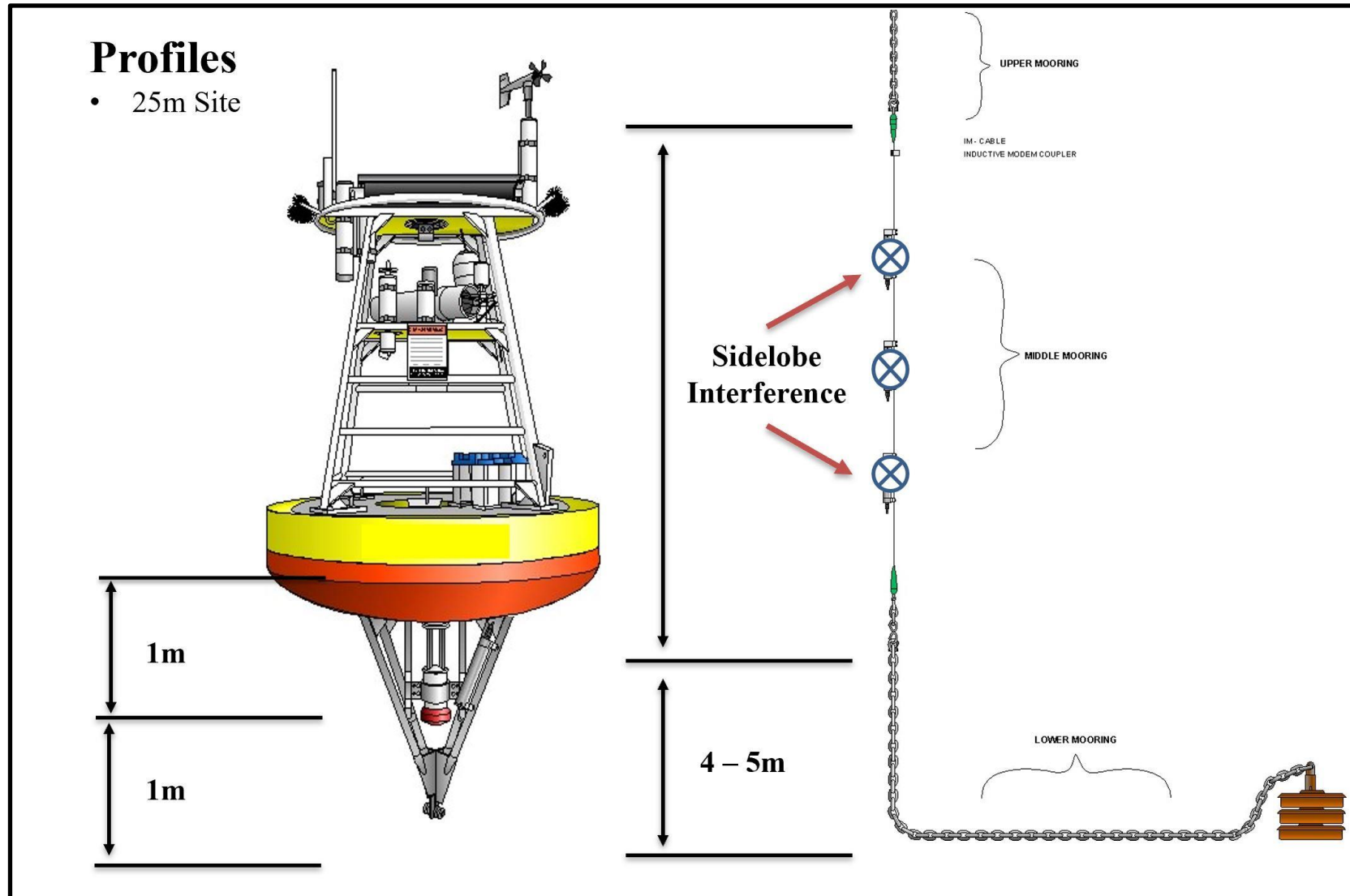
“Coastal Warning and Rapid Response Data Density System” (SeaWARRDD)

RDSEA Coastal Hybrid Met-Ocean+ Buoy Coupled with a Navocean Nav2 ASV

SeaWARRDD Wish List:

- Full Surface Met
- Water-Column Currents (ADCP)
- Full Water-Column Density (CTD)
- Subsea Radiotelemetry
- Water-Quality Monitoring/HABs
- pCO₂ (1m / ATM)
- eDNA Sampling/Sensing
- Fish/Mammal Acoustics
- Fixed and Roving Time-Series

ADCP Sidelobe Issues on Surface Buoys/Moorings



Present Met-Ocean Configuration for FL Waters

USF-COMPS

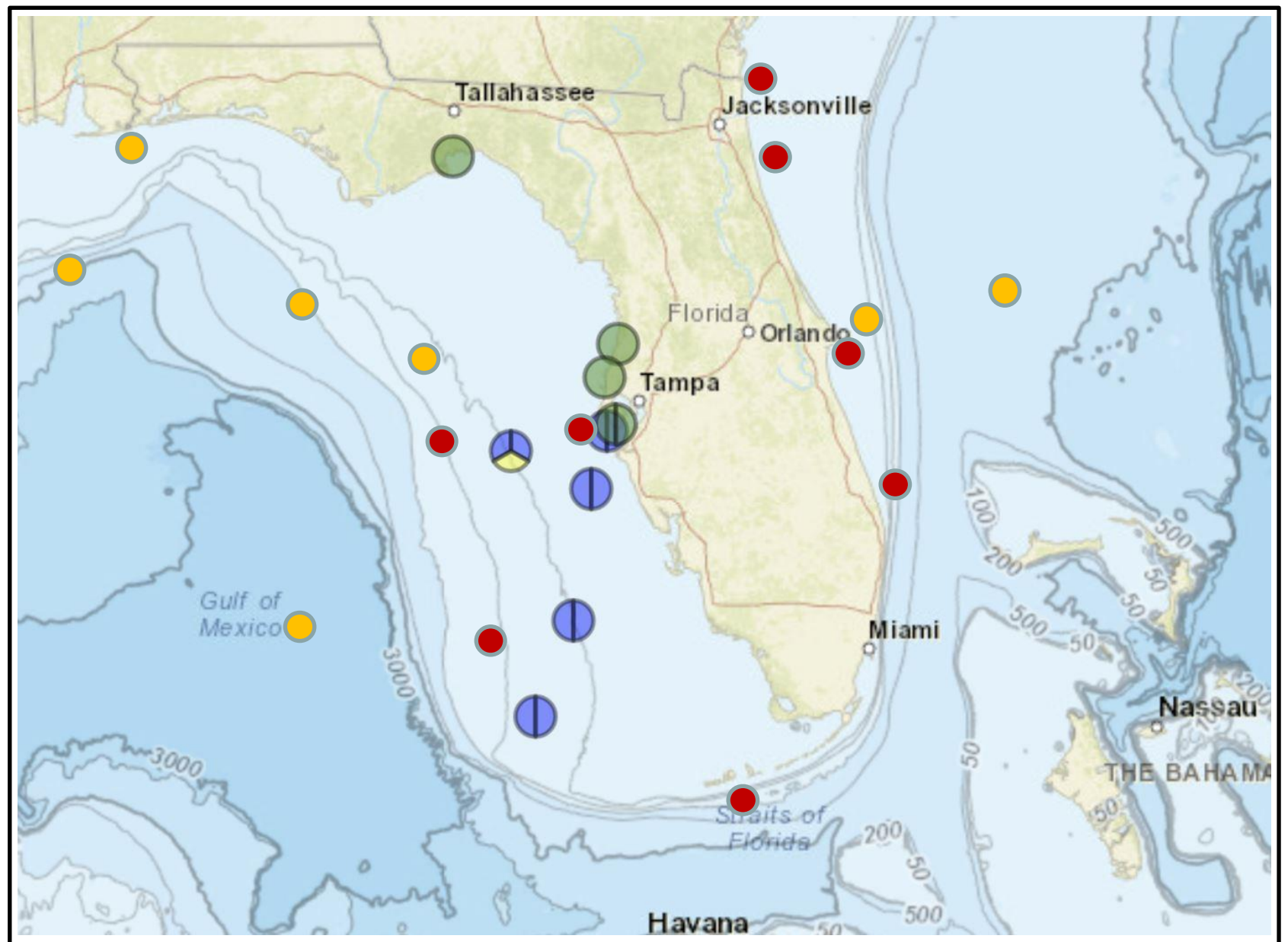
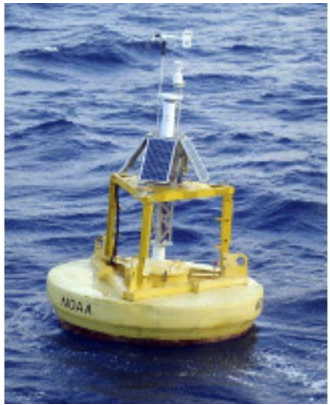
- surface met
- water-column currents
- some density (CTD)

NDBC/NWS Buoys

- surface met
- waves

USACE-SIO-CDIP

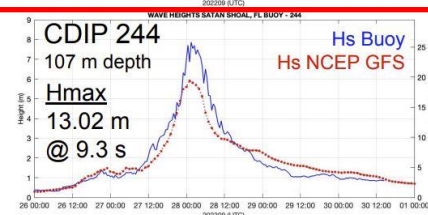
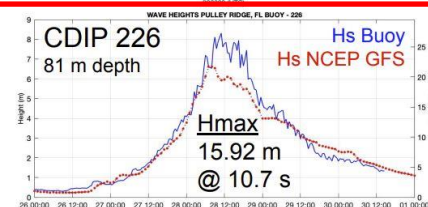
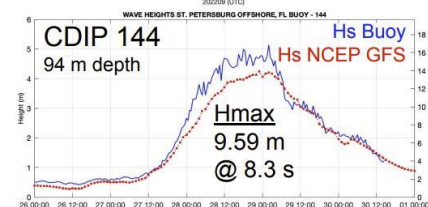
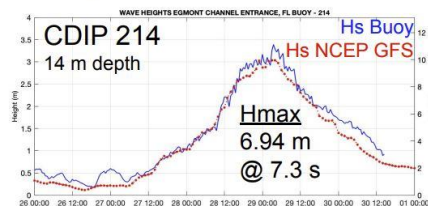
- Waves
- SST



CDIP Wave Observations: Hurricane Ian September 26 - October 1, 2022

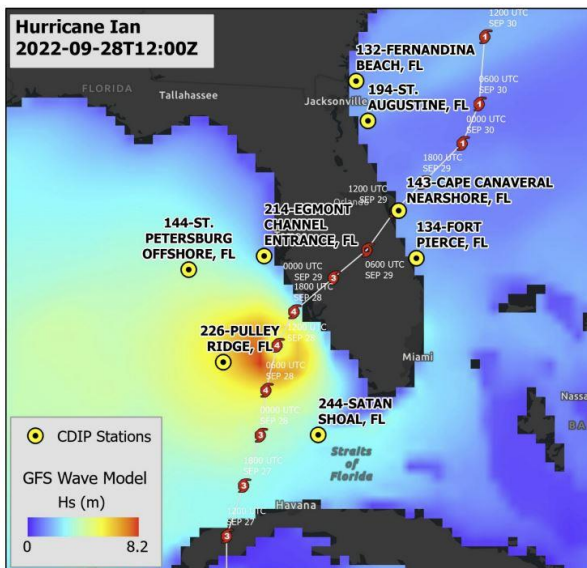


US Army Corps
of Engineers®

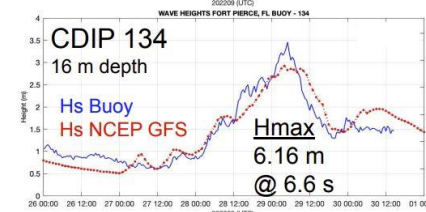
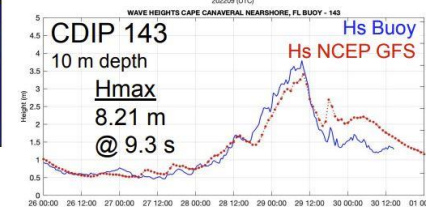
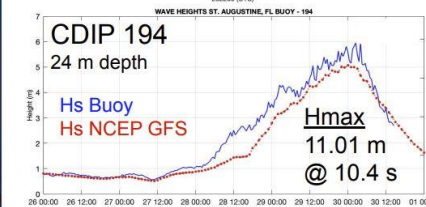
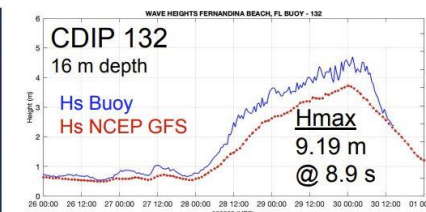


UC San Diego

SCRIPPS INSTITUTION OF
OCEANOGRAPHY

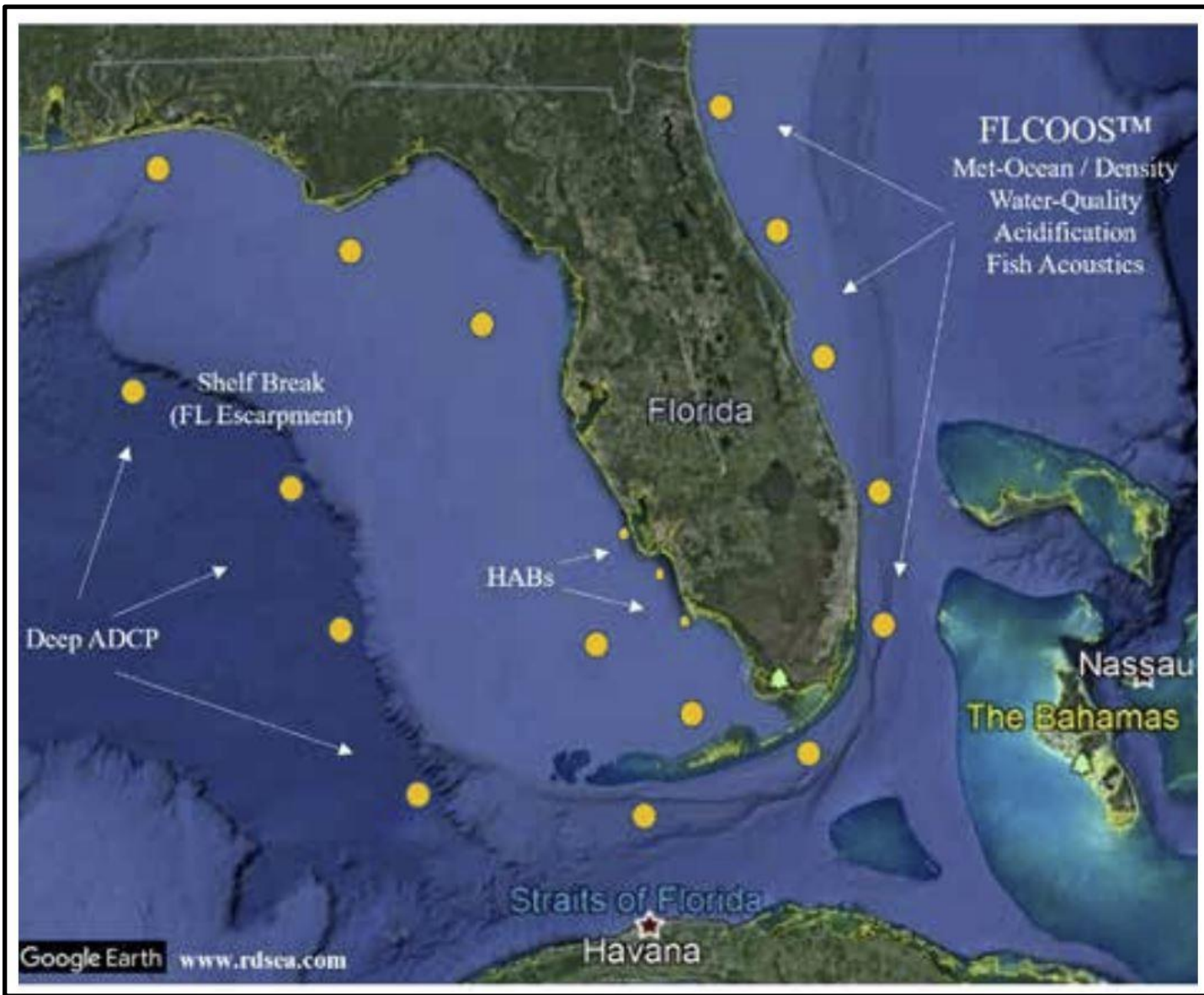


- Hurricane Ian made landfall in SW Florida as a strong Cat 4 Storm with 155 mph sustained winds following rapid intensification.
- Significant wave heights (Hs) at stations 226 and 244 exceeded all previous events measured by the CDIP array along the Gulf Coast of Florida, dating back to 2007, and were 1-2 m > NOAA GFS wave model.
- The largest individual wave measured (Hmax) was 15.9 m (52'), at 10.7 period, at CDIP 226.
- Storm surge estimated to be 12-18 ft in the coastal region surrounding Charlotte Harbor.
- Waves at CDIP 214 and along the East Coast were highly energetic, typical for strong storm events.



CDIP wave bulletins:

cdip.ucsd.edu/themes/cdip?d2=p12



U.S. IOOS RA SECOORA: Listed 16
Gap Regions in Their Domain
(RCOOS-Priorities, 21-26)

“13” of those Sites are in Florida Waters

FLCOOST™

- Fill Met-Ocean Gaps in FL Waters
- Compliments Existing Monitoring
- Coastline/Littoral to Open Ocean
- Has a HABs Focus (WFS)
- Studies the Shelf Break, GoM
- Pushes “Edge-AI” (at the source)
- Enhances Storm Tracking (NWS)
- Supports Emergency Management
- Offers Educational Opportunity (students)
- Creates Jobs
- Makes Ocean Observing.... Better!

A Global “Zoom-In” Dataset



How to Pay for it?

Legacy Funding Formats (LFF):

- ~~Standard NOAA RFP~~
- ~~Standard NSF RFP~~
- ~~NSF SBIR~~
- ~~Standard NAS RFP~~
- ~~Standard ONR RFP~~
- ~~State, County, Municipality~~

Philanthropy:

- A Billionaire That Cares!





National Oceanic and
Atmospheric Administration
U.S. Department of Commerce

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Weather
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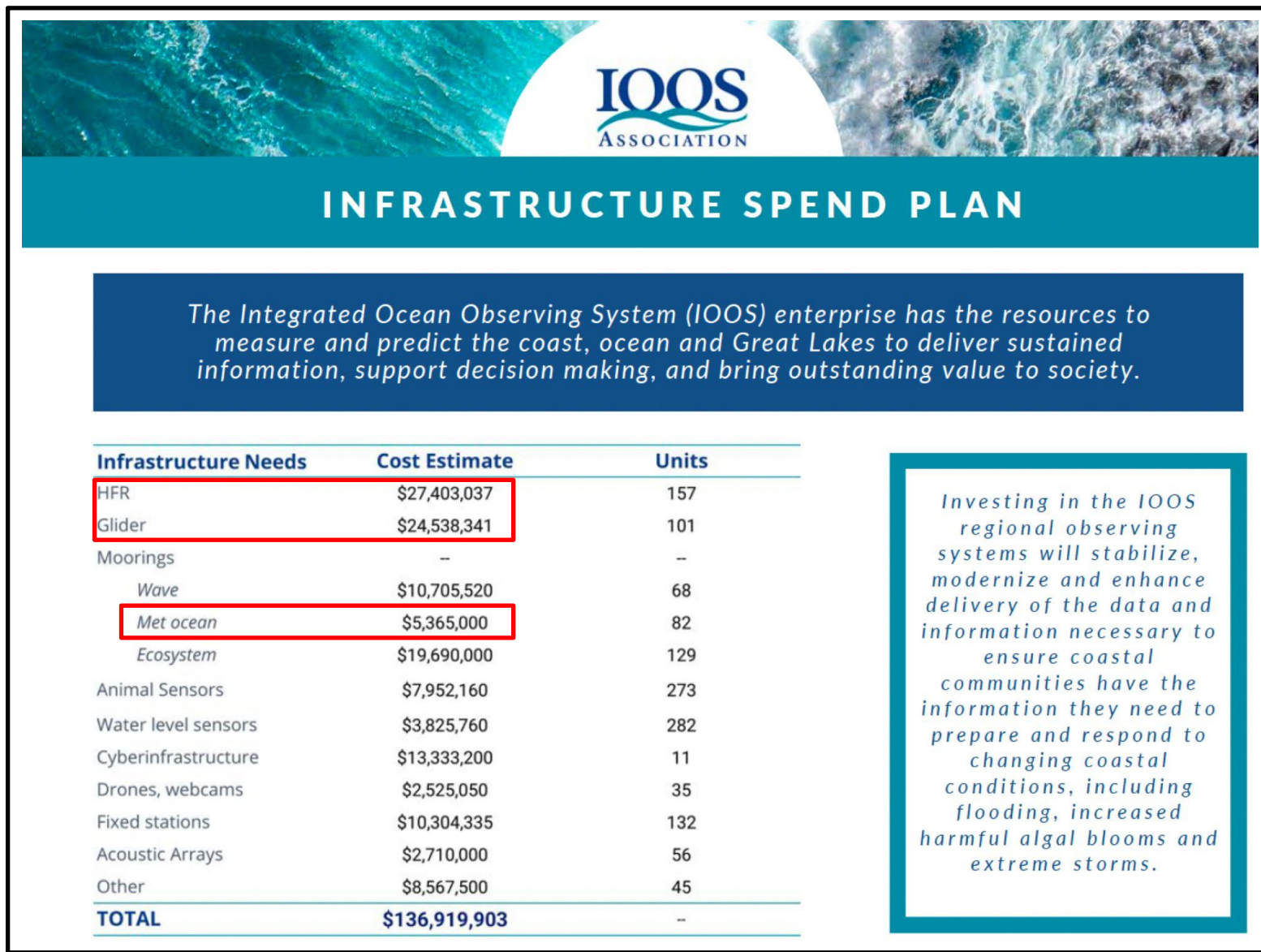
Oceans
domain

Domains

- [Satellite](#)
- [Fisheries](#)
- [Weather](#)
- [Oceans](#)

NOAA Focus on U.S. Small Business Reserve

Appropriations
from
Infrastructure Bill
~ \$3B to NOAA for
Climate and Coastal
Resilience
~\$137,000.000.00
to U.S. IOOS
(Credit: SECOORA)





Thank You!

“SeaWARRDD / FLCOOST™”
*Rethinking Coastal Ocean Observing,
Intelligence,
Resilience, and Prediction*



We Appreciate the Opportunity to Be Here

