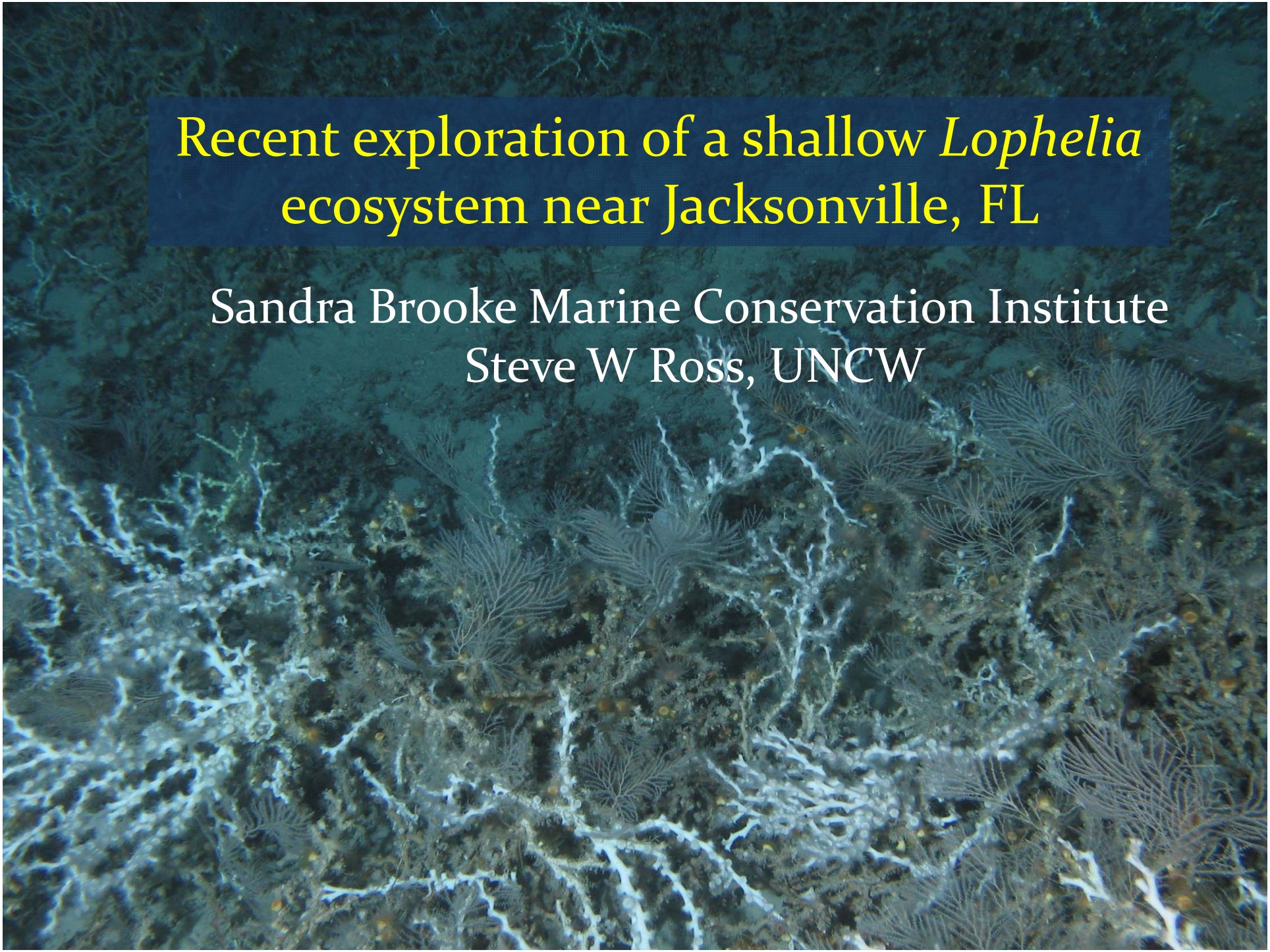
Recent exploration of a shallow *Lophelia* ecosystem near Jacksonville, FL

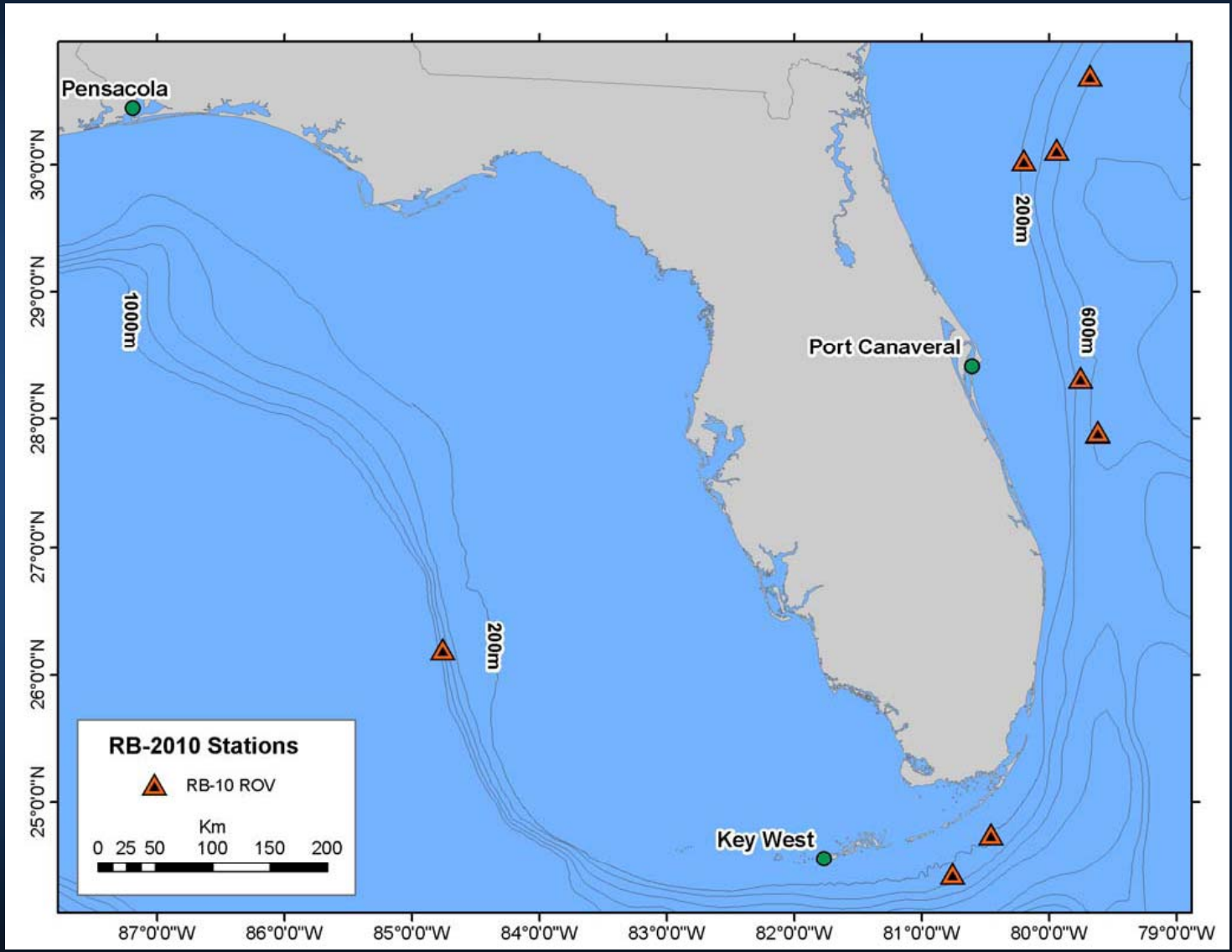
Sandra Brooke Marine Conservation Institute
Steve W Ross, UNCW



Extreme Corals 2010 - funded by NOAA DSCRTP
November 9-23
NOAA Vessel Ronald H Brown and *JASON II* ROV

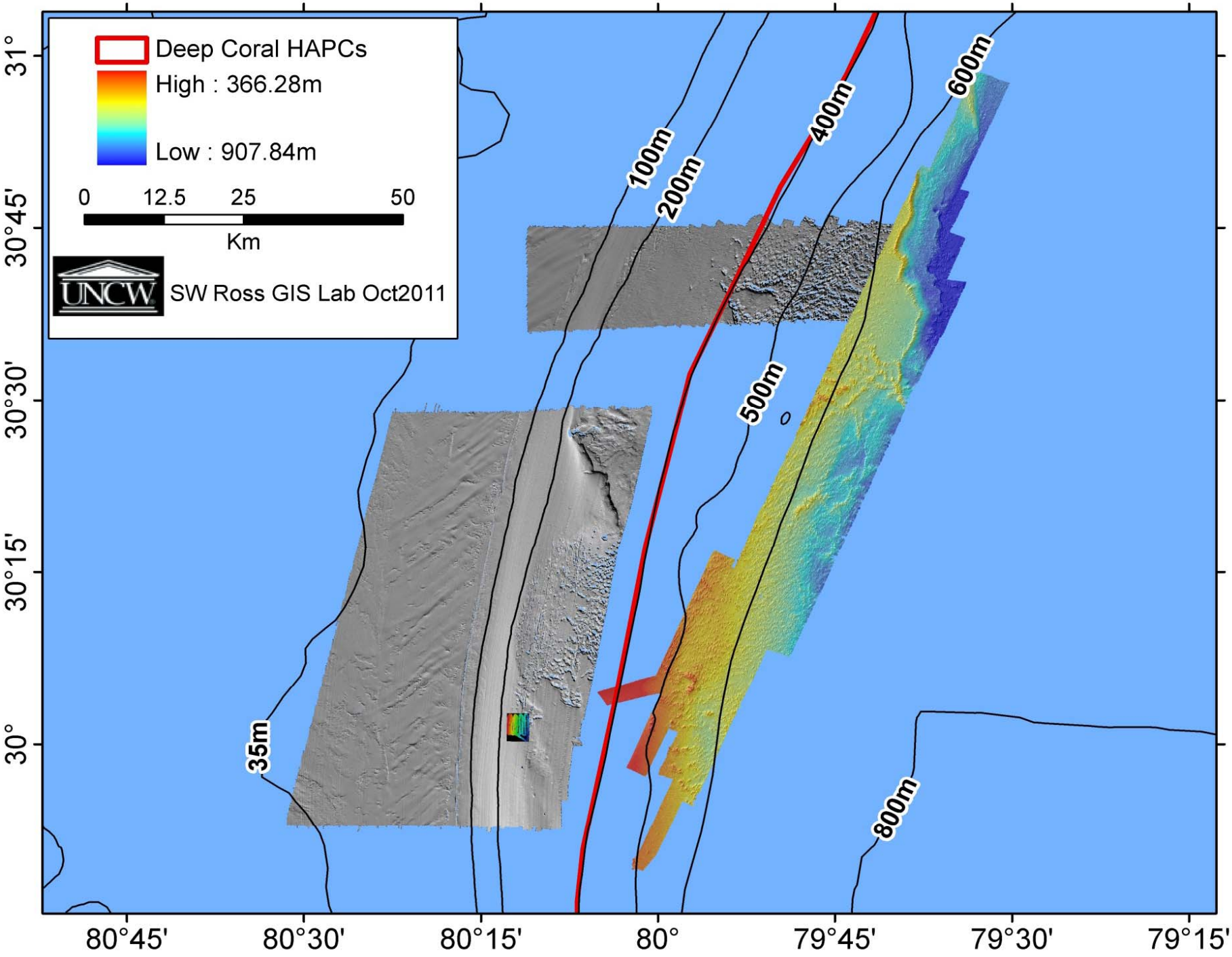
Multi-disciplinary cruise with investigators from NOAA, USGS, CIOERT and other academic institutions
PIs: SW Ross and S Brooke

ROV dive sites: west Florida slope to Jacksonville

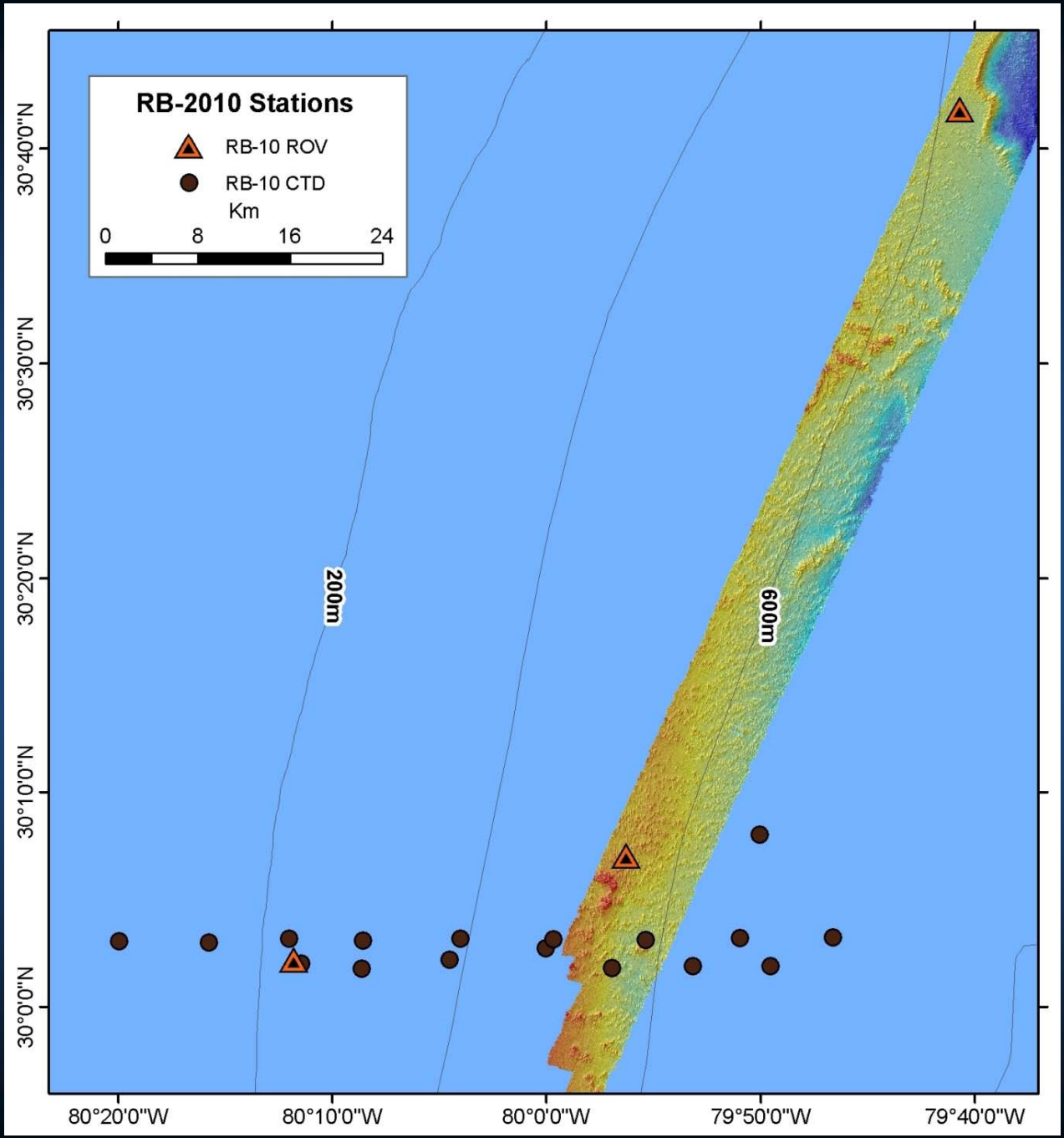


Cruise objectives

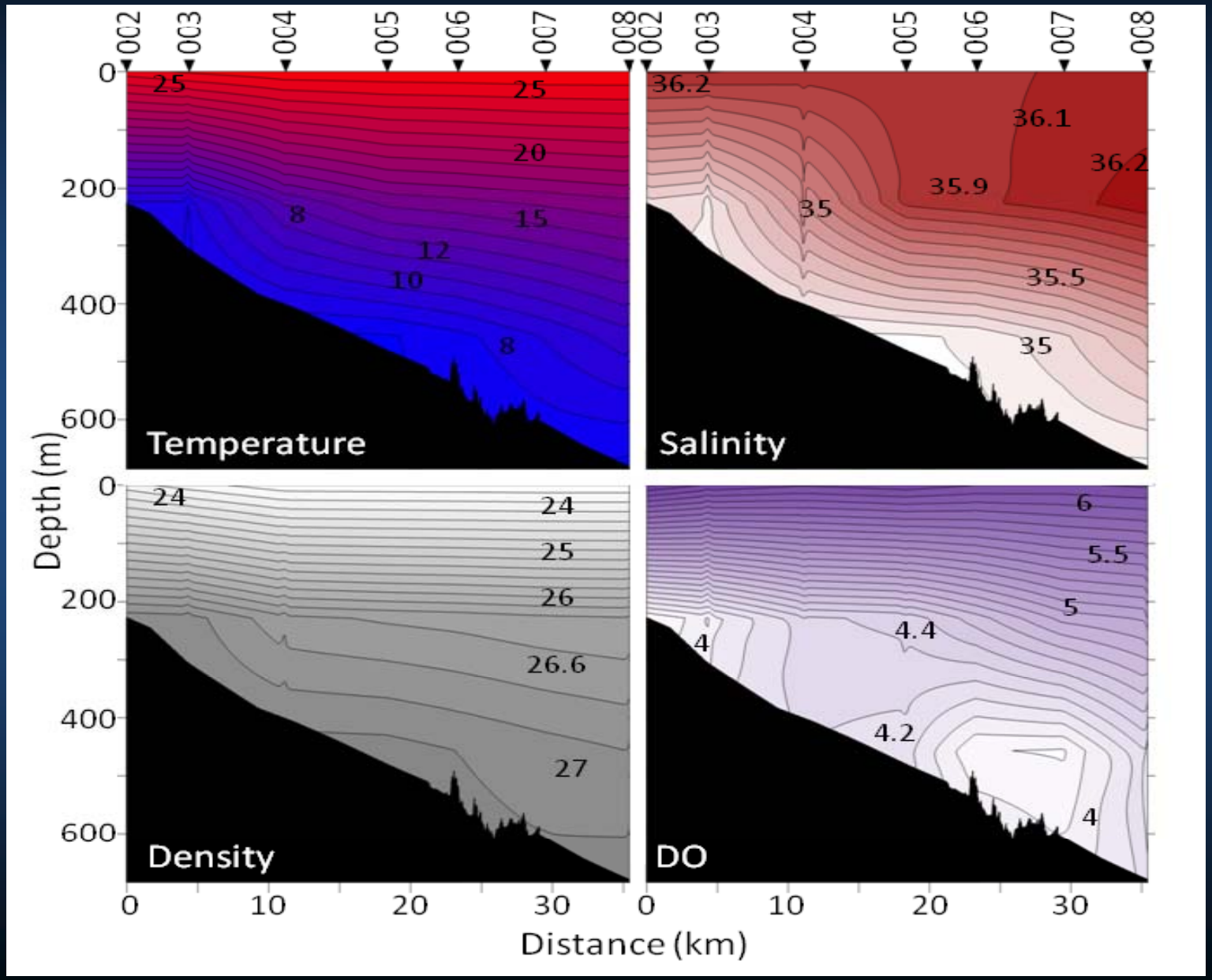
1) Map and explore coral and sponge habitats
2) Physical environment of reef and off reef areas
3) Fauna-habitat associations and community structure of reef and off-reef ecosystems
4) Coral population genetics to assess connectivity between deep coral ecosystems
5) Sponge taxonomy and genetics
6) Reproduction, feeding and energetics of major structure forming corals
7) Trophodynamics of communities associated with reef and off-reef habitats
8) Paleoecology (coral age, growth and historical temperature and productivity)
9) Aragonite saturation state and nutrient analysis from near corals and water column
10) Education and outreach activities (teacher at sea, web sites, daily updates, blogs)


Deep Coral HAPCs
High : 366.28m
Low : 907.84m
0
12.5
25
50
Km
UNCW
SW Ross GIS Lab Oct2011
35m
100m
200m
400m
500m
600m
800m
31°
30°45'
30°30'
30°15'
30°
80°45'
80°30'
80°15'
80°
79°45'
79°30'
79°15'

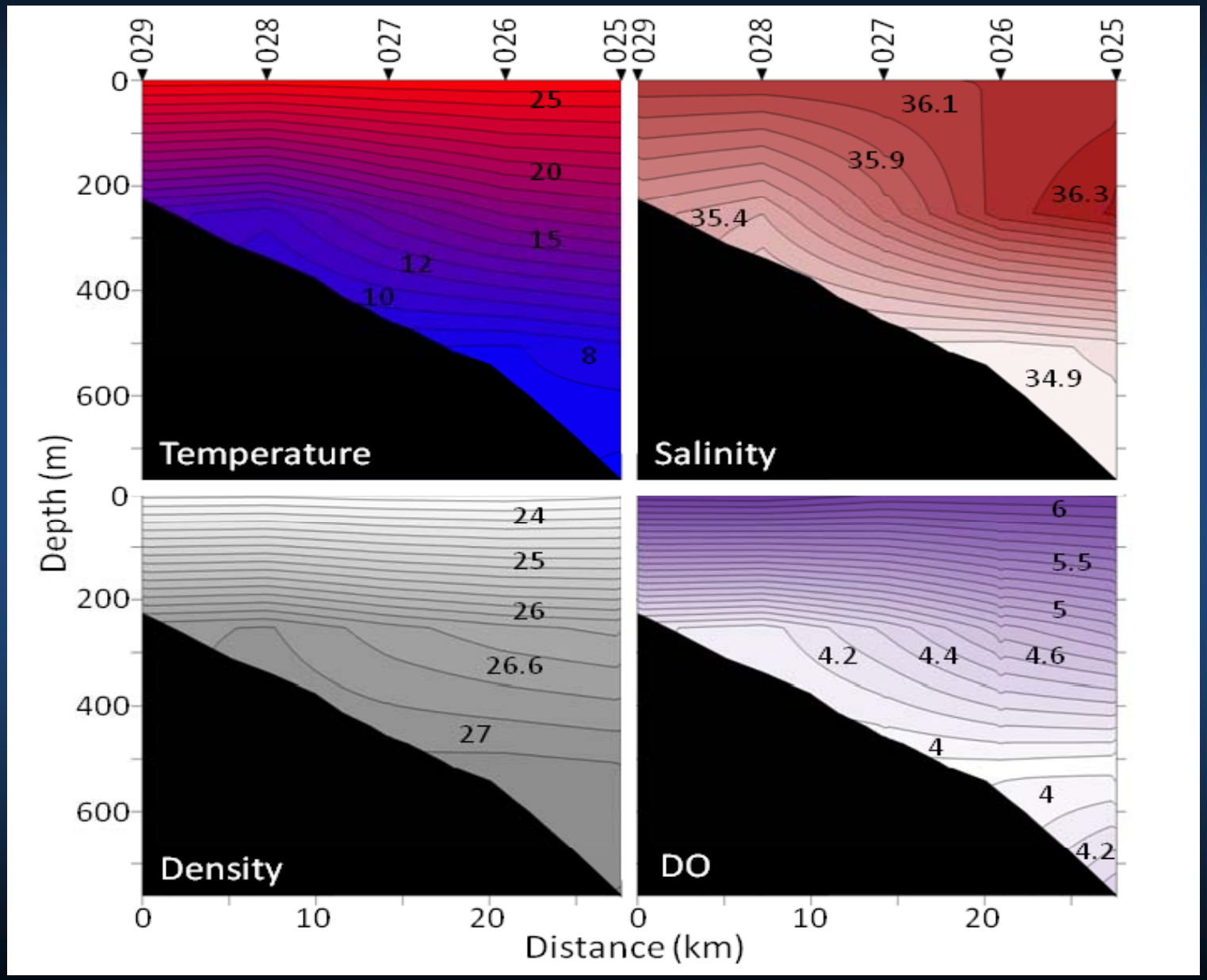
CTD transect lines
(~650m to ~200m)
off Jacksonville, FL

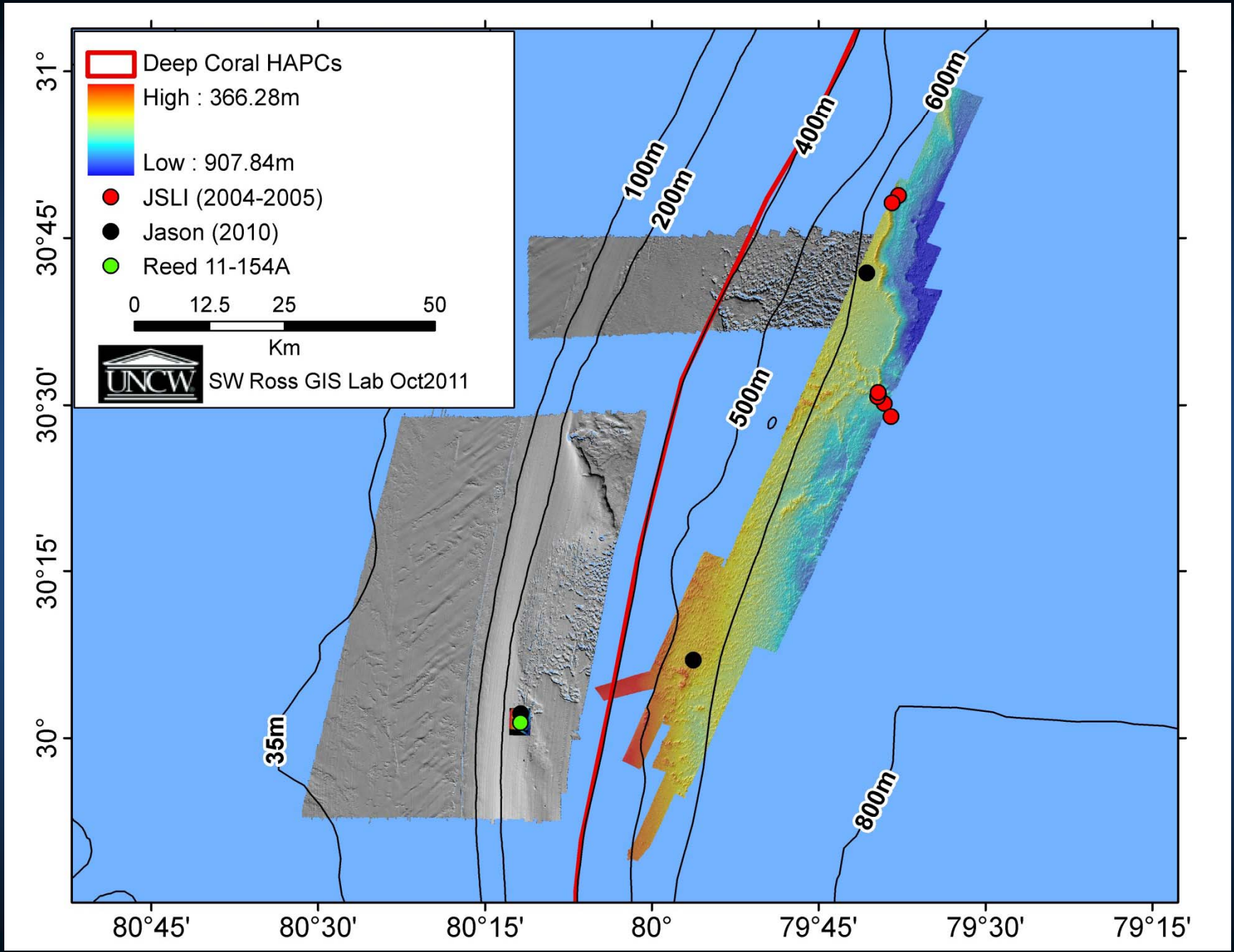


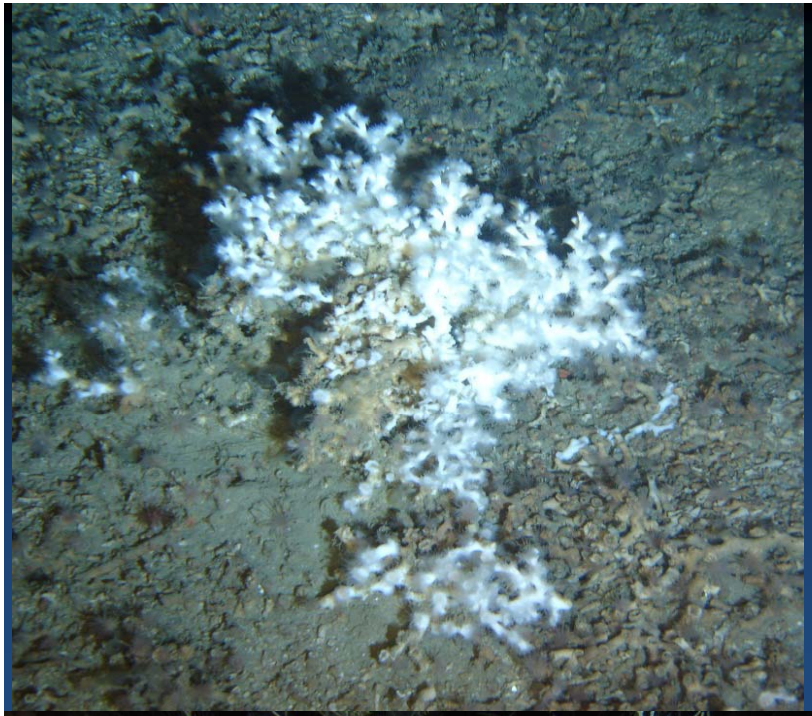
Shallow Jacksonville temperature profile

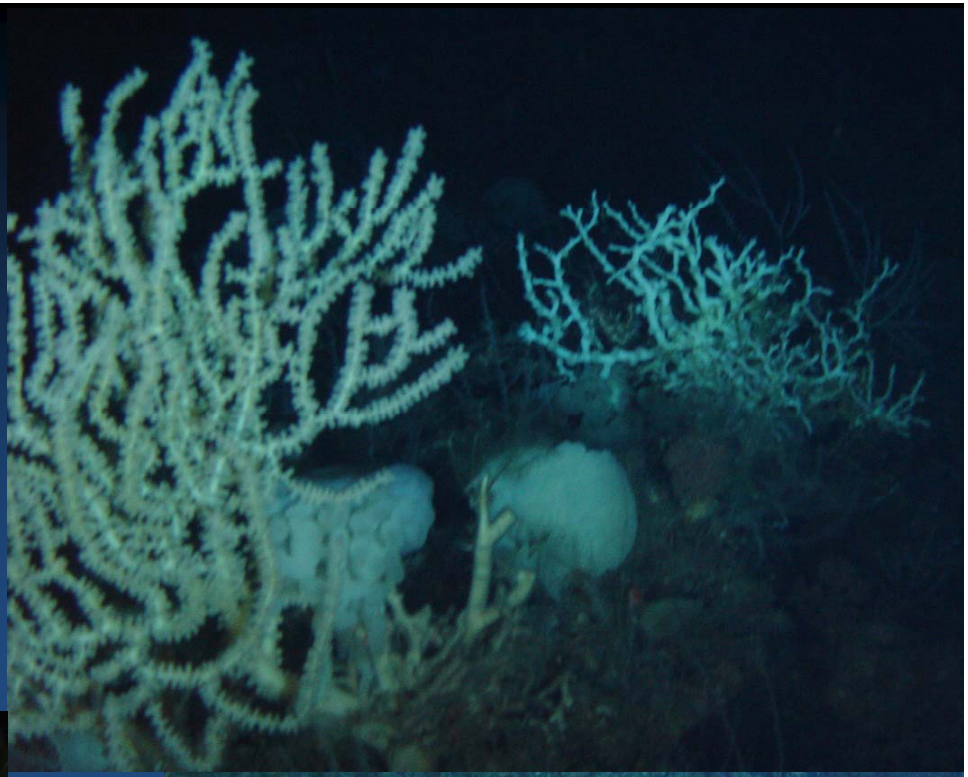


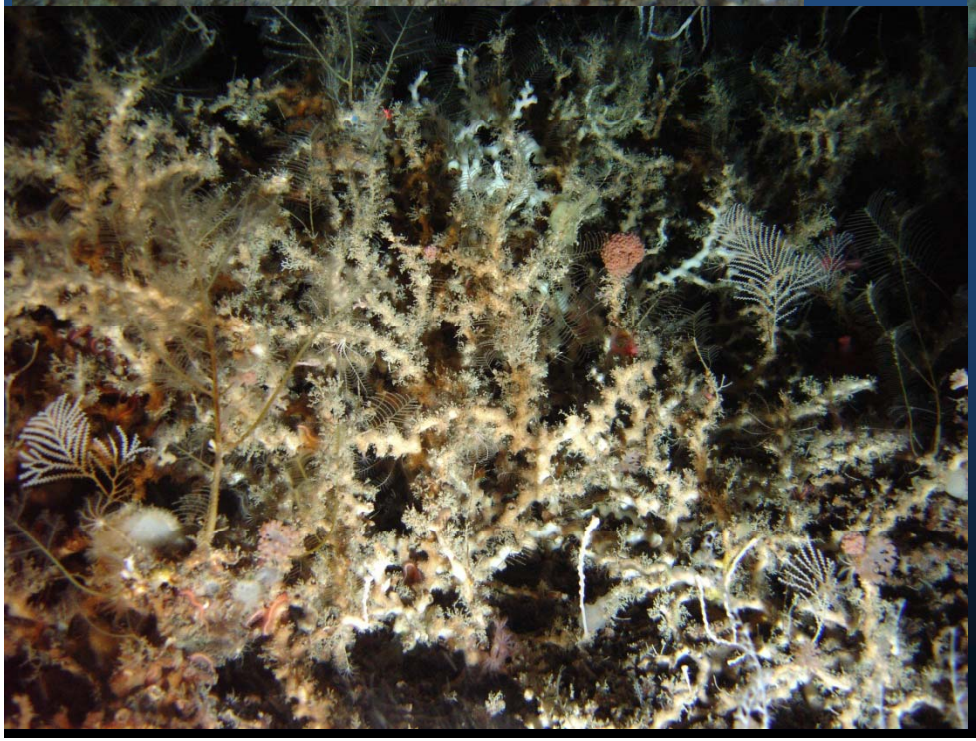
Cape Canaveral temperature profile

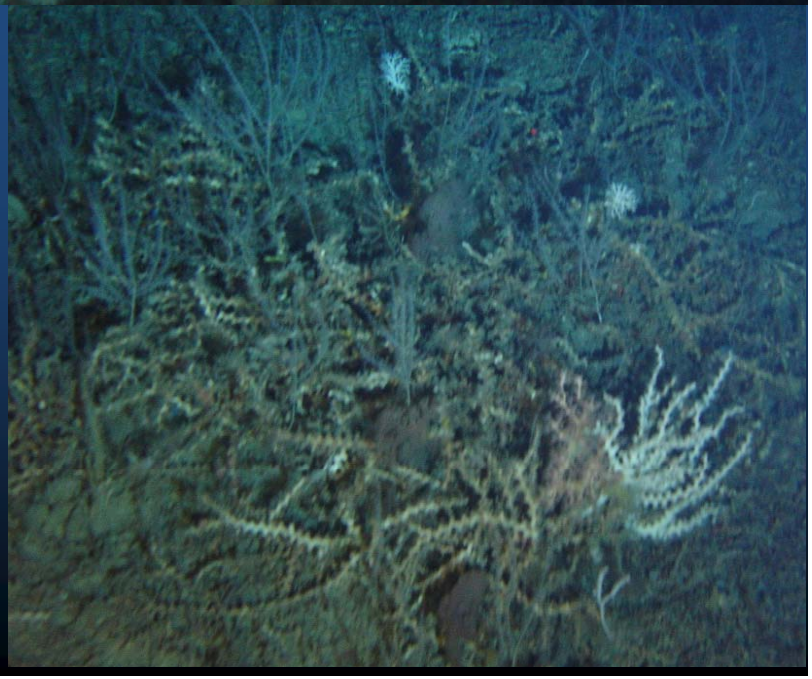


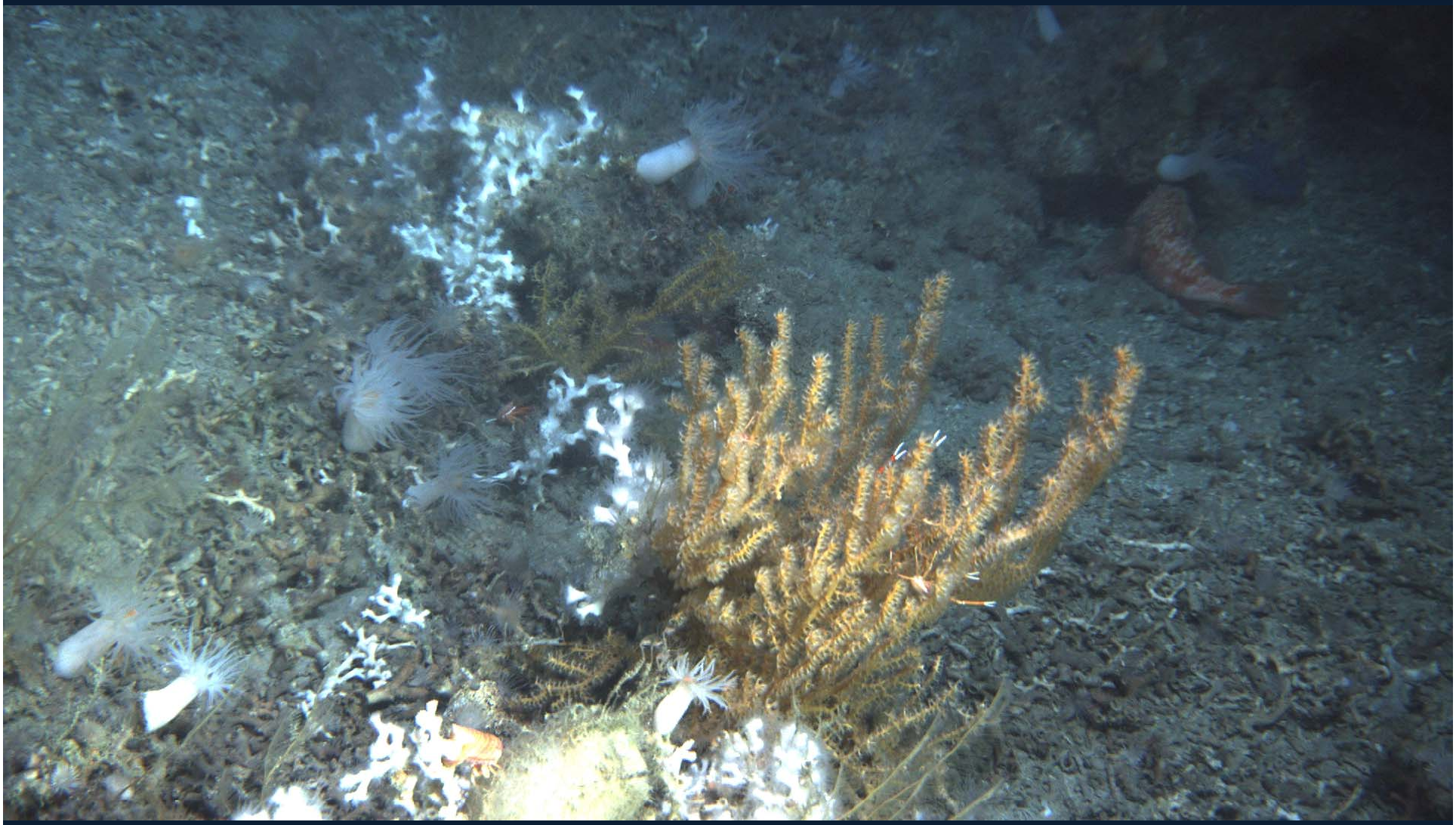

Deep Coral HAPCs
High : 366.28m
Low : 907.84m
JSLI (2004-2005)
Jason (2010)
Reed 11-154A
0
12.5
25
50
Km
UNCW
SW Ross GIS Lab Oct2011
100m
200m
400m
600m
500m
35m
800m
31°
30°45'
30°30'
30°15'
30°
80°45'
80°30'
80°15'
80°
79°45'
79°30'
79°15'







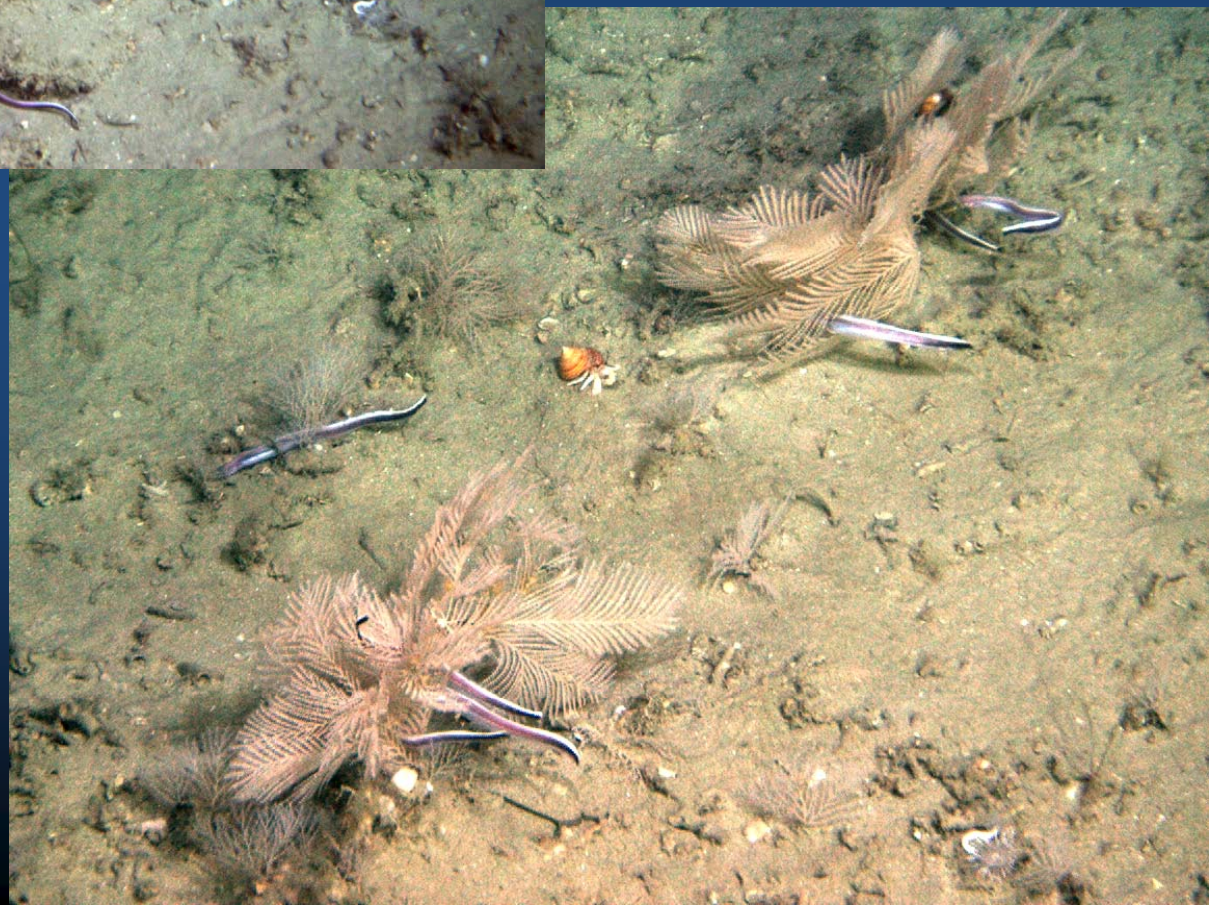




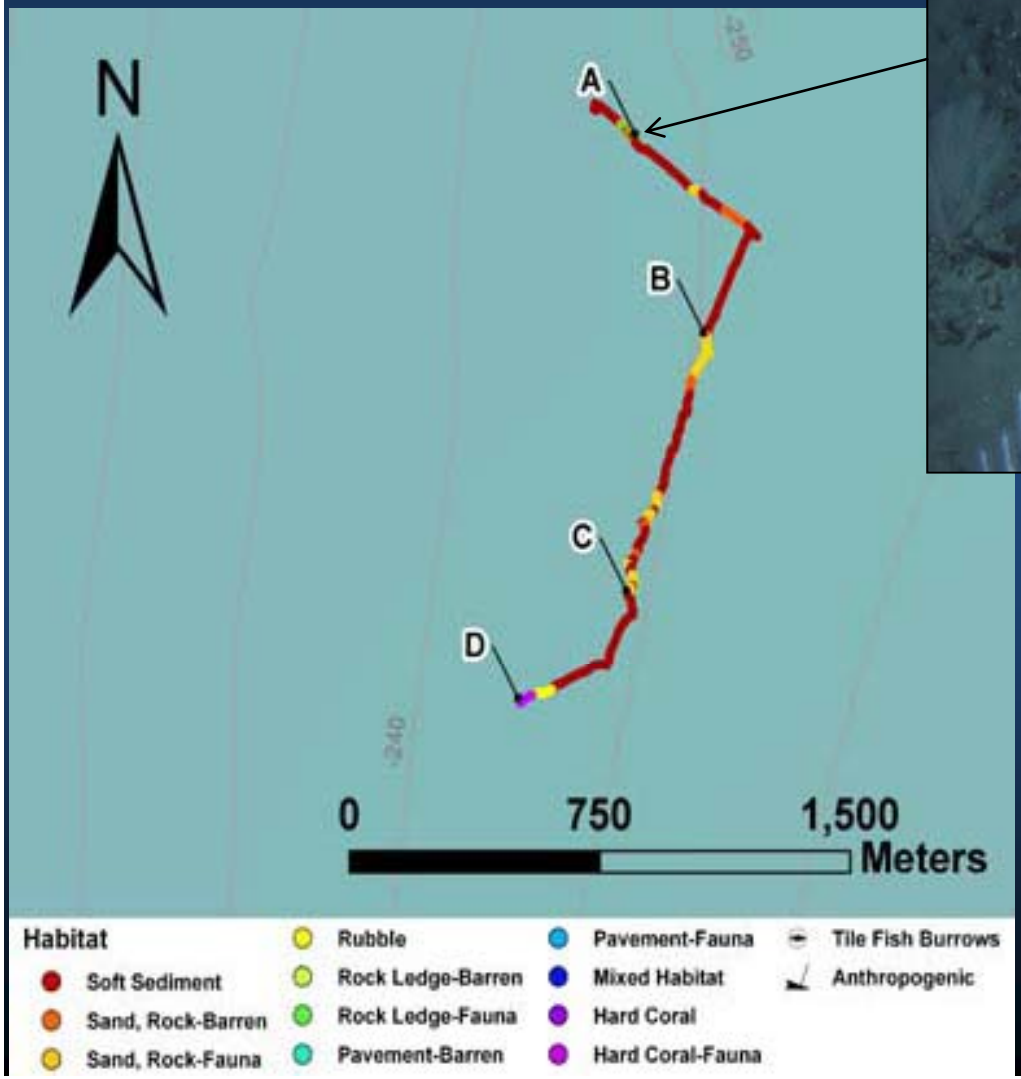
Unusually high abundance of some fish species were observed

synaphobranchid eels

(Dysommina rugosa)

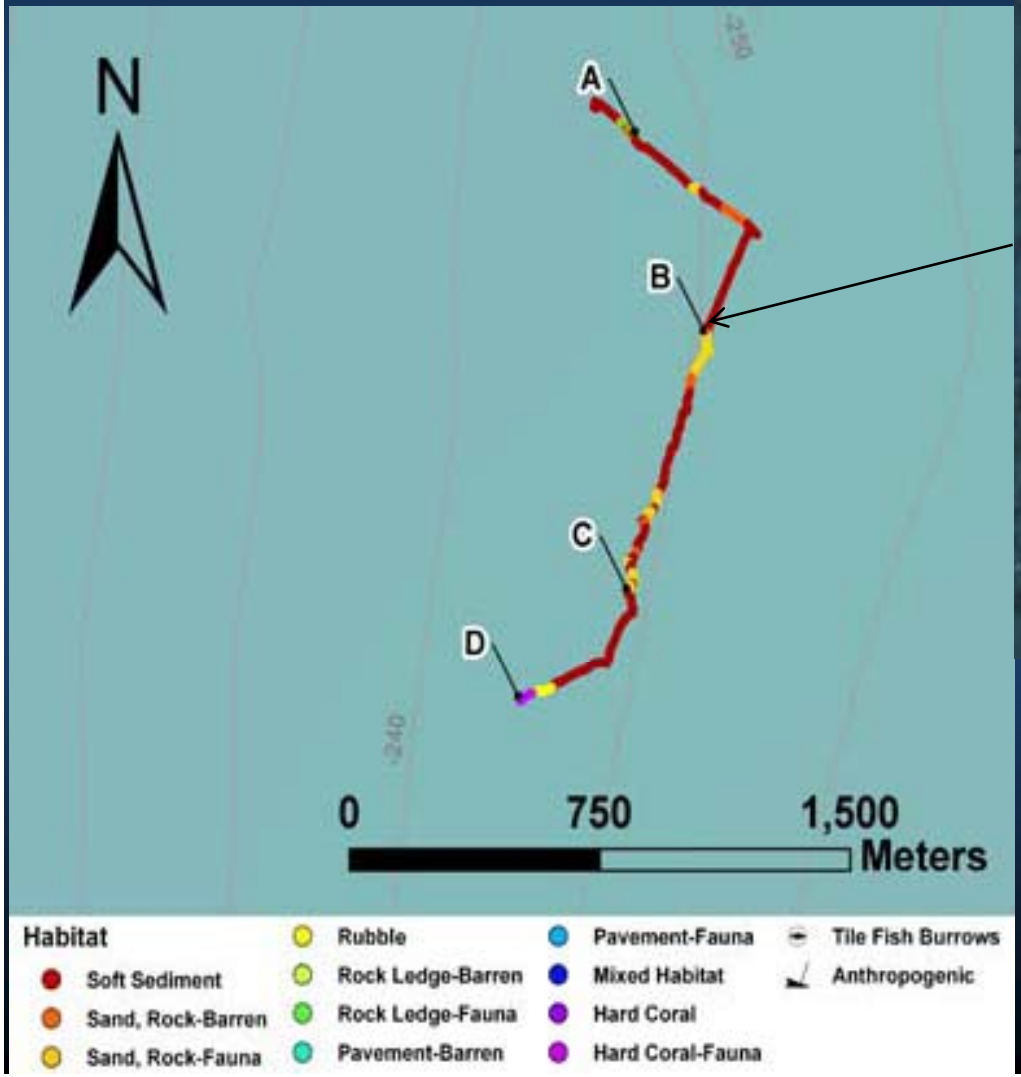


SEADESC habitat description

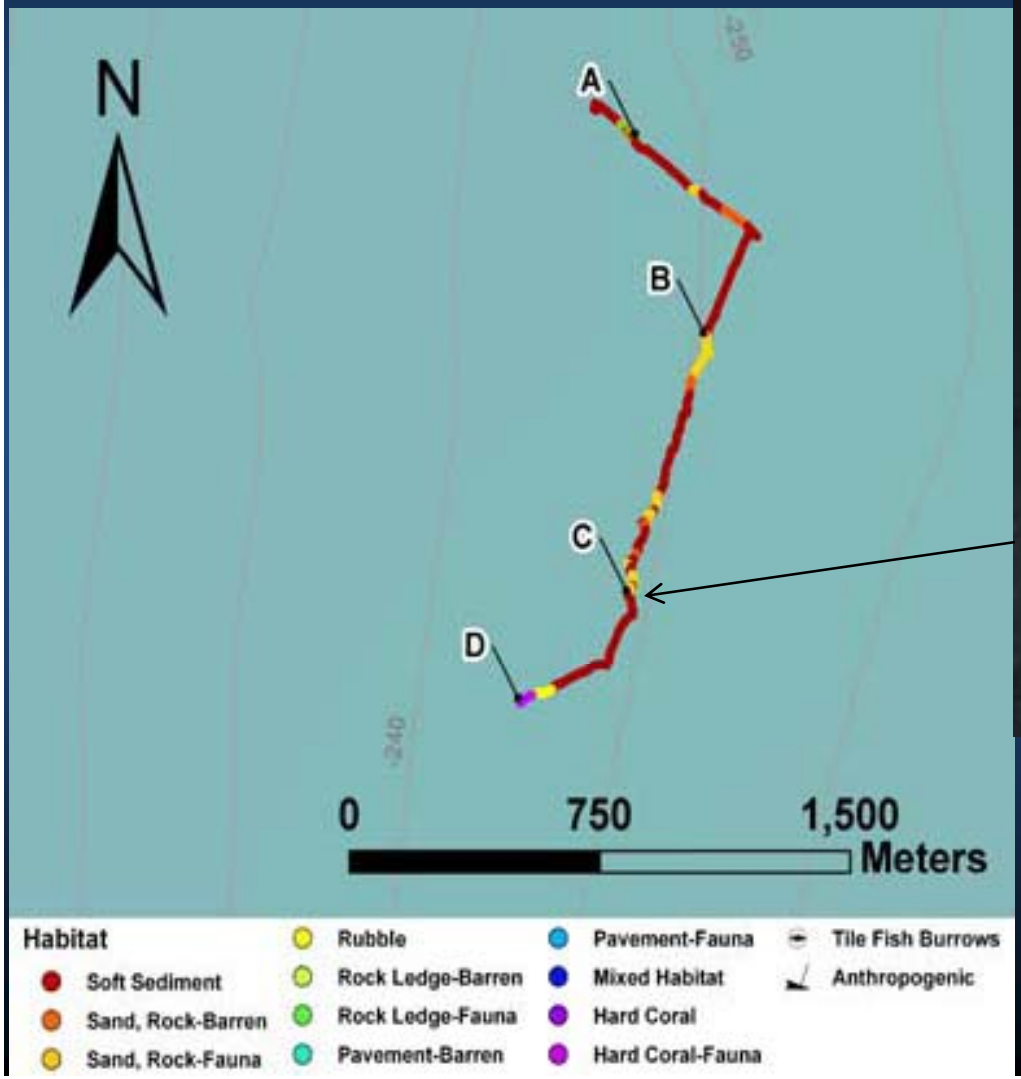


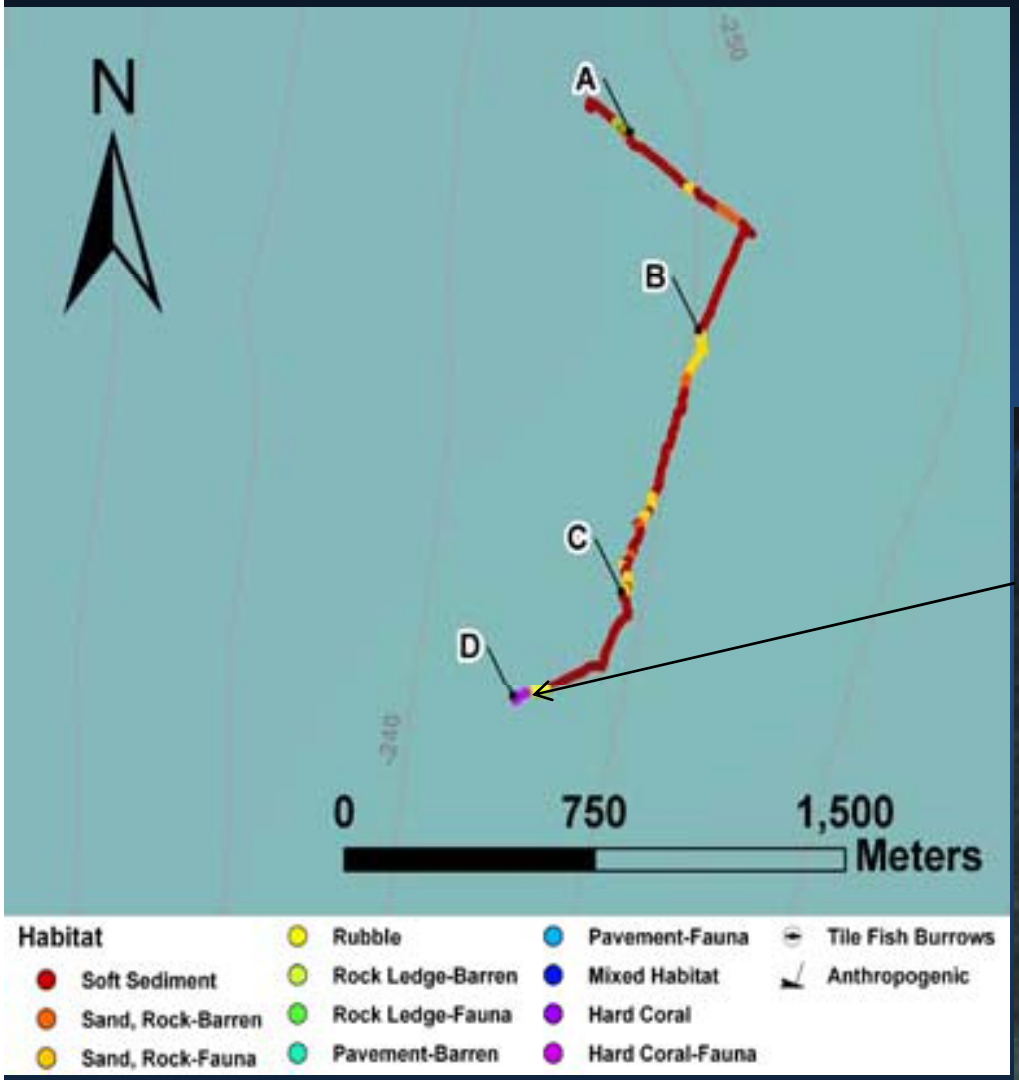
A: Rock ledge with attached fauna

B: Sand/Rock with attached fauna

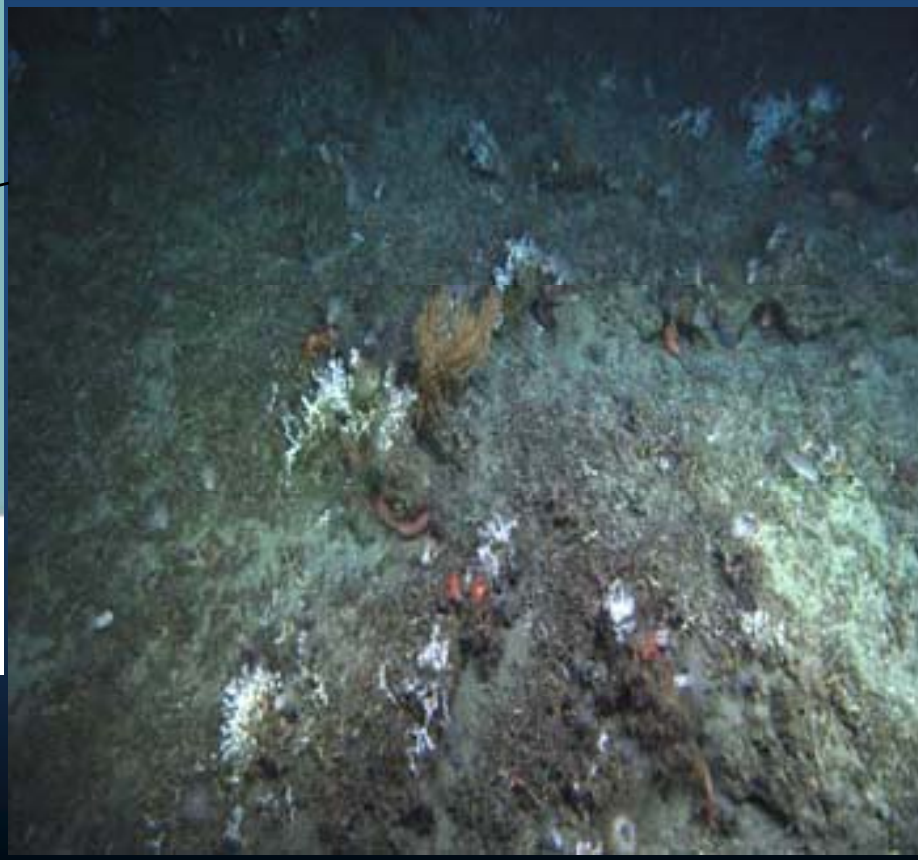


C: Sand/Rock with attached fauna



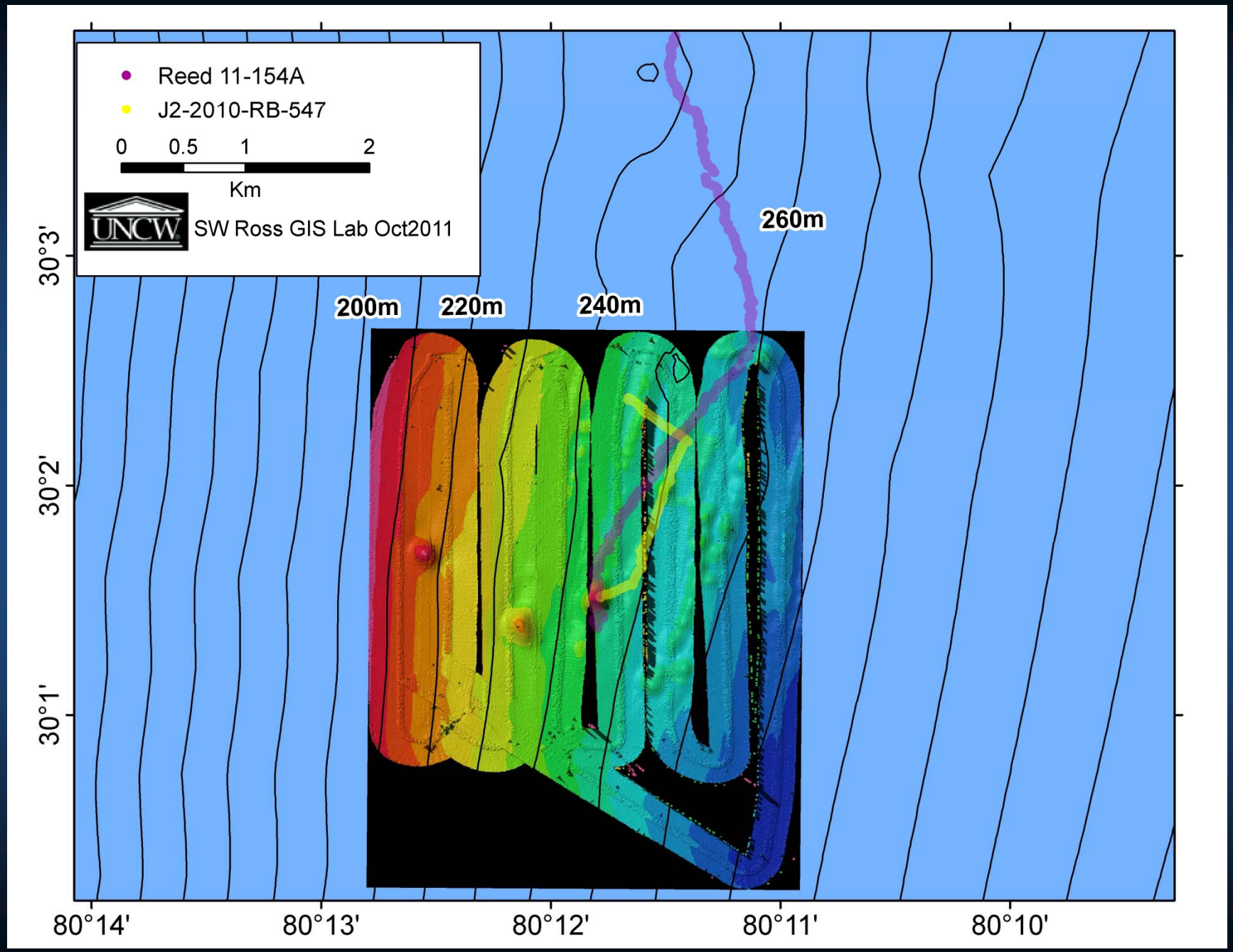


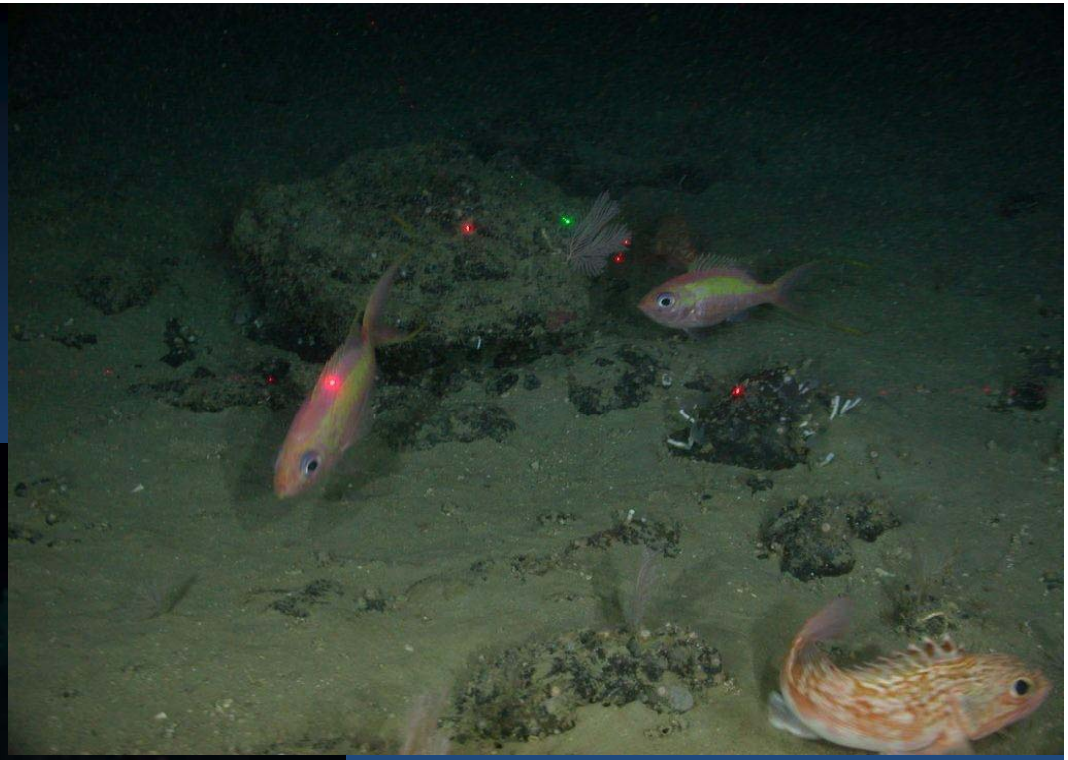
D: Hard corals with attached fauna



Extreme Corals 2011
NOAA Ship Pisces with SWFSC ROV
June 2011
PI: A David (NMFS)

Re-visted the Jacksonville shallow site
Conducted multibeam survey and ROV dive


Reed 11-154A
J2-2010-RB-547
0 0.5 1 2
Km
UNCW
SW Ross GIS Lab Oct2011
260m
200m
220m
240m
30°3'
30°2'
30°1'
80°14'
80°13'
80°12'
80°11'
80°10'



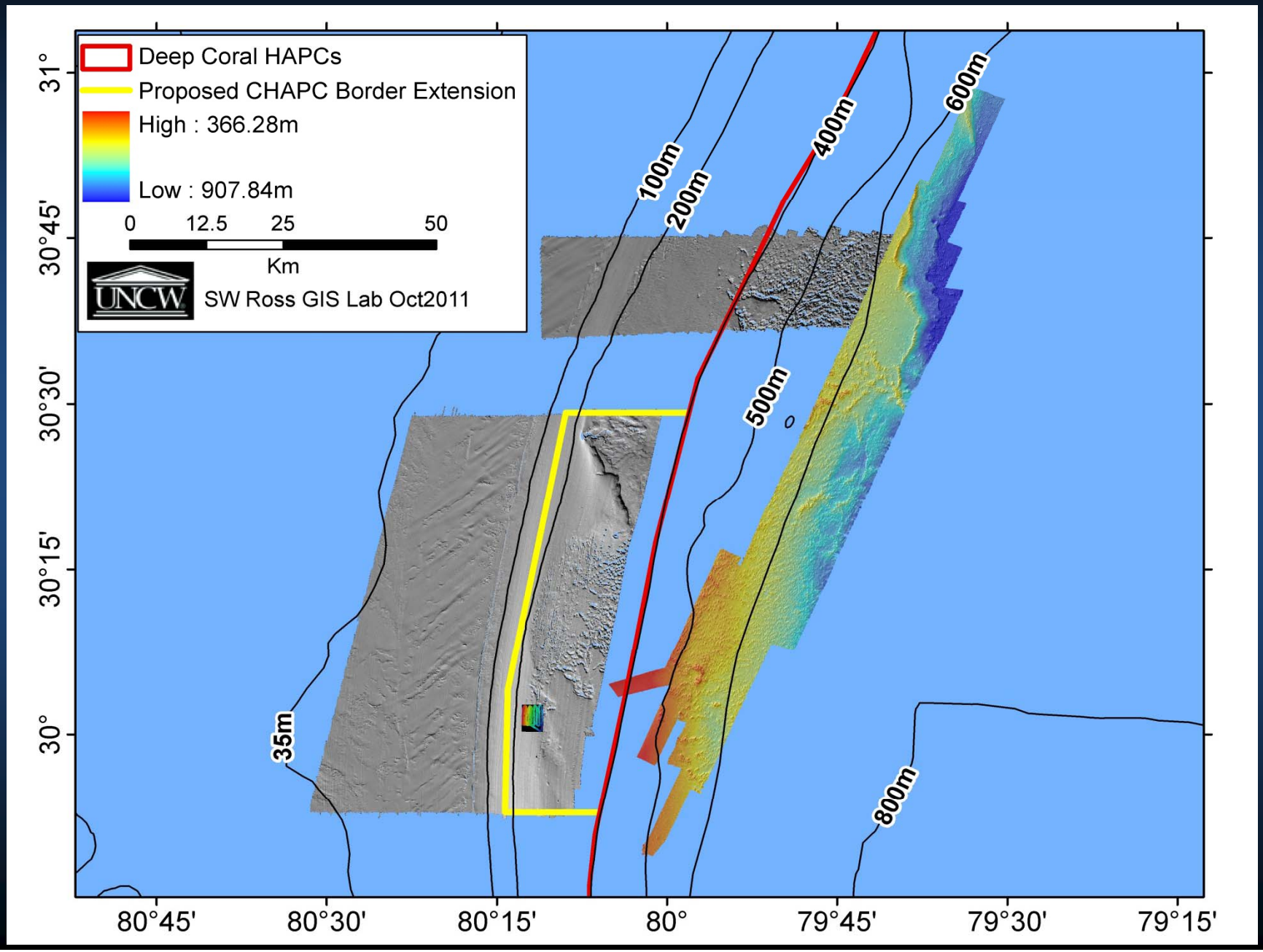
Images: A David and J Reed, NOAA PISCES 2011

Summary

- Unusually shallow occurrences of deep water species, including corals, sponges, mobile invertebrates and fish
- Presence of coral thickets and rubble indicates established ecosystem rather than anomalous occurrence
- Communities maintained by long-term oceanographic feature that brings cold water onto the shelf
- Unclear how extensive this feature is but abundant rugged bathymetry along the shelf could likely support coral ecosystems if water temp is appropriate
- Unusually high abundance of mobile species, implies high productivity possibly from upwelling into photic zone.
- Large numbers of BBRF make this area a potential fishing target

Needs more research!!!

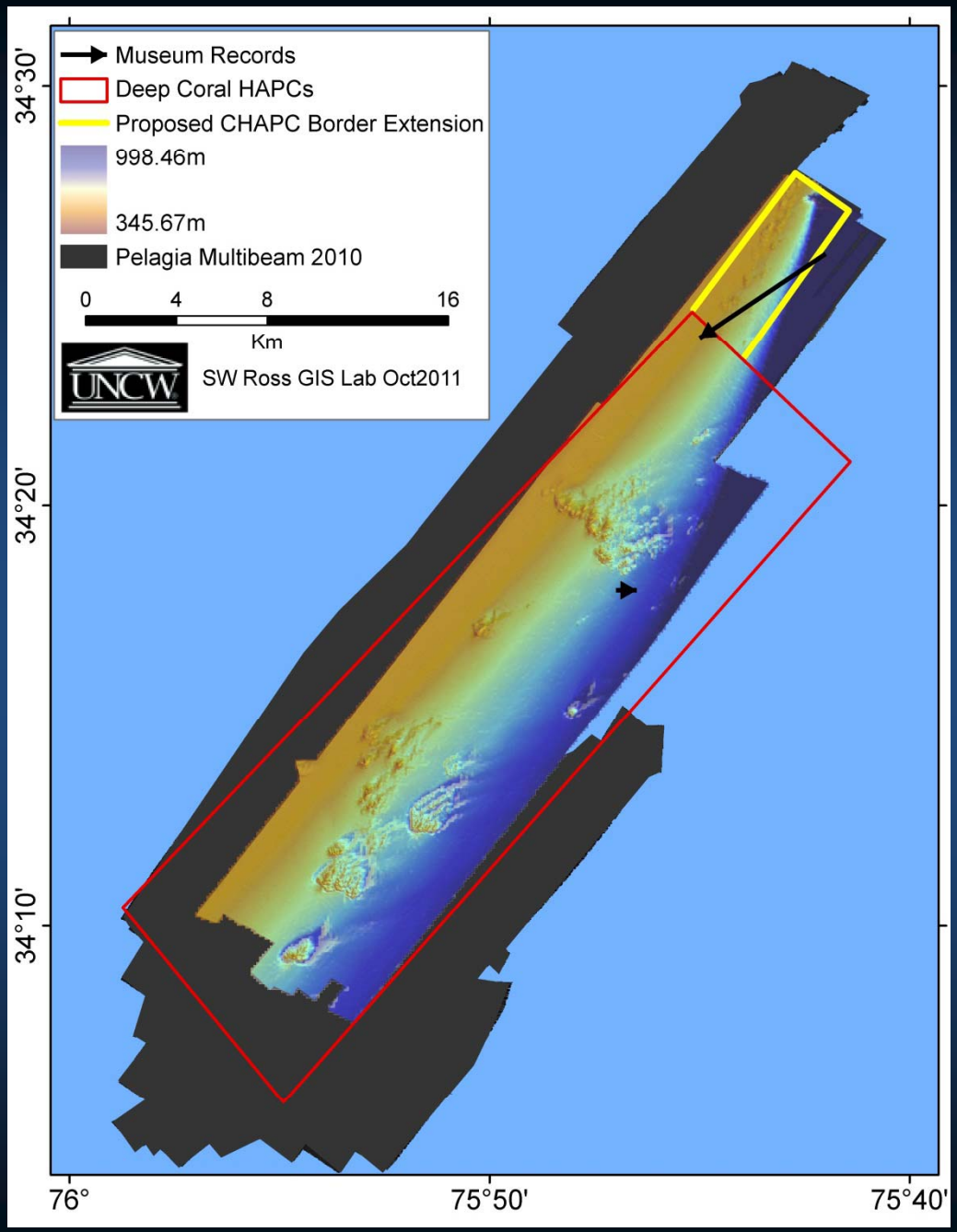
Suggested CHAPC boundary expansion



Multibeam Bathymetry of Cape Lookout CHAPC

This map indicates the presence of a series of small mounds to the north of the current boundary that are probably coral bioherms.

Museum records support this hypothesis

Recommendation:

Expand the CHAPC boundary as show to include these mounds