Deep Reef Communities and Habitats of the West Florida Slope

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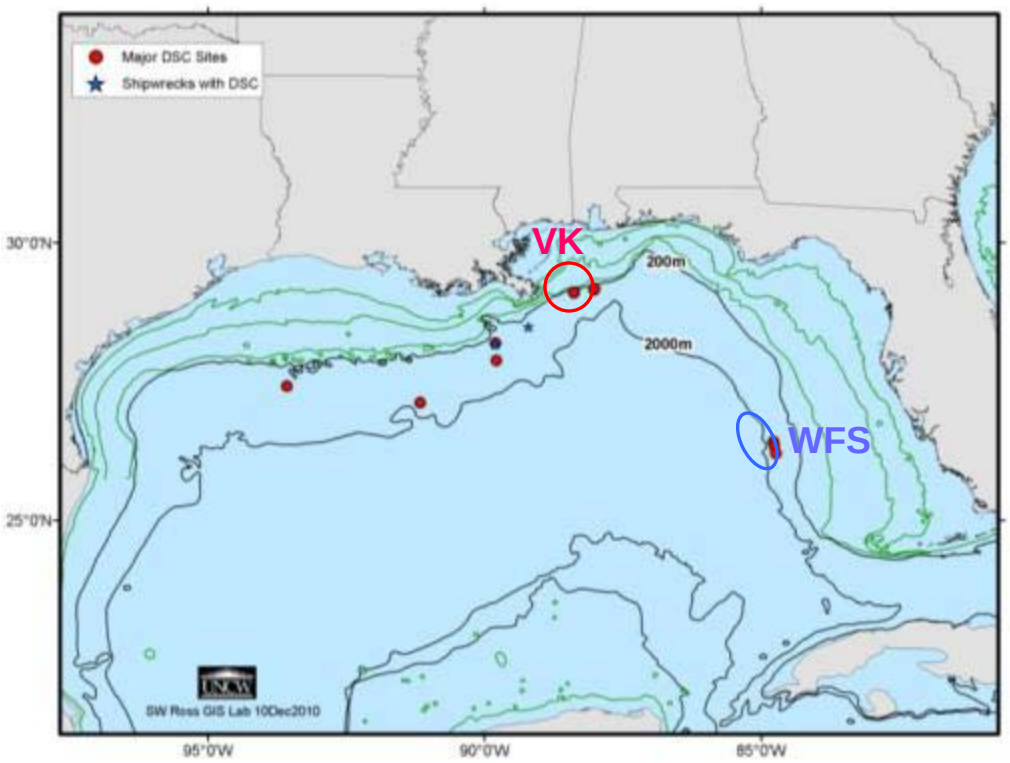
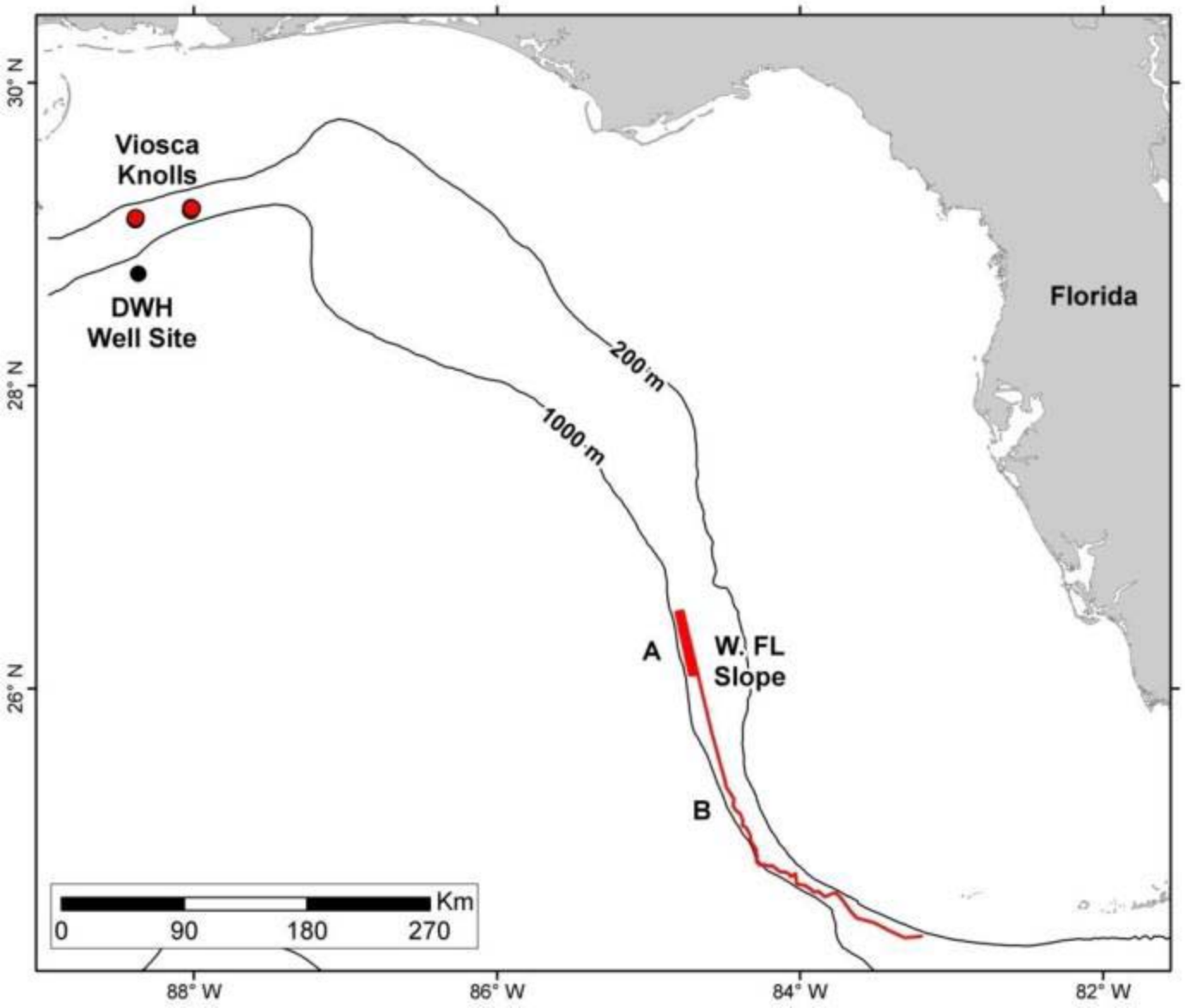
Background



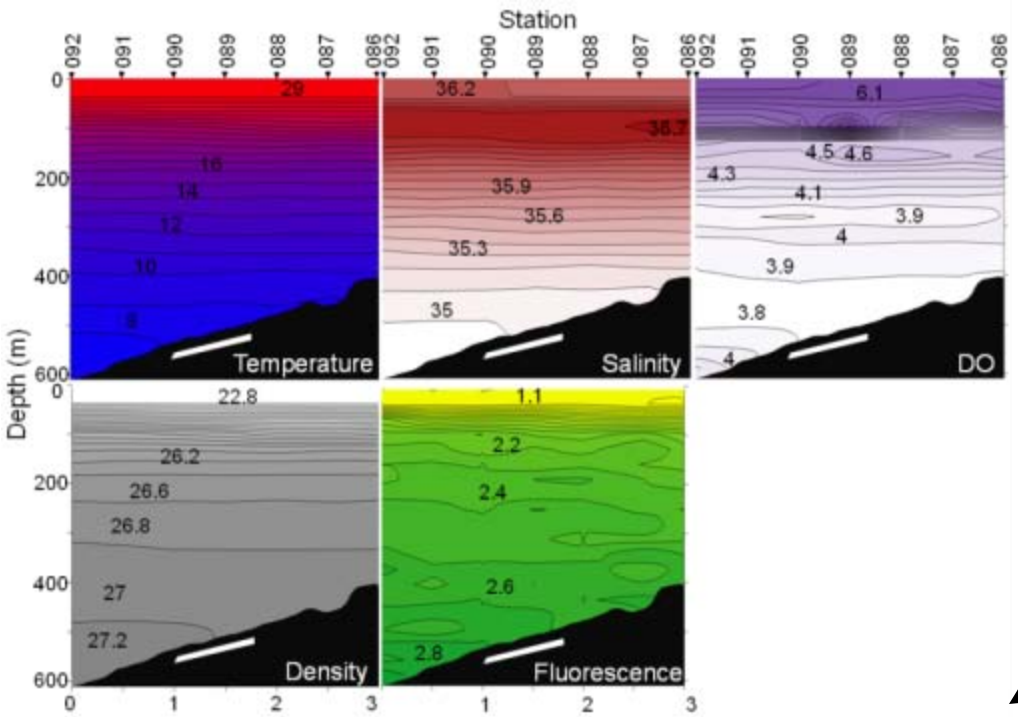
- Viosca Knolls thought to have greatest DSC concentrations in GOM
- WFS is edge of huge carbonate ramp
- Erosional scarp of Miocene aged phosphorite outcrops a major feature

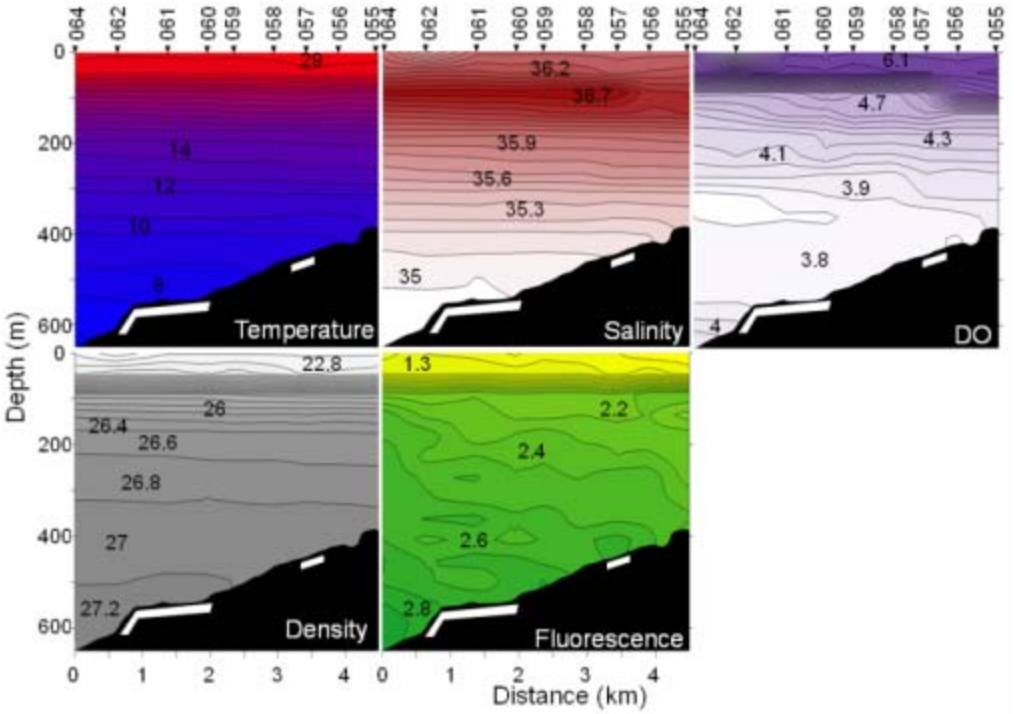
- DSC 1st reported on WFS by Newton et al. (1987) & later Reed et al. (2006) – mostly reported dead DSC
- Live corals reported on WFS (Hübscher et al. 2010)

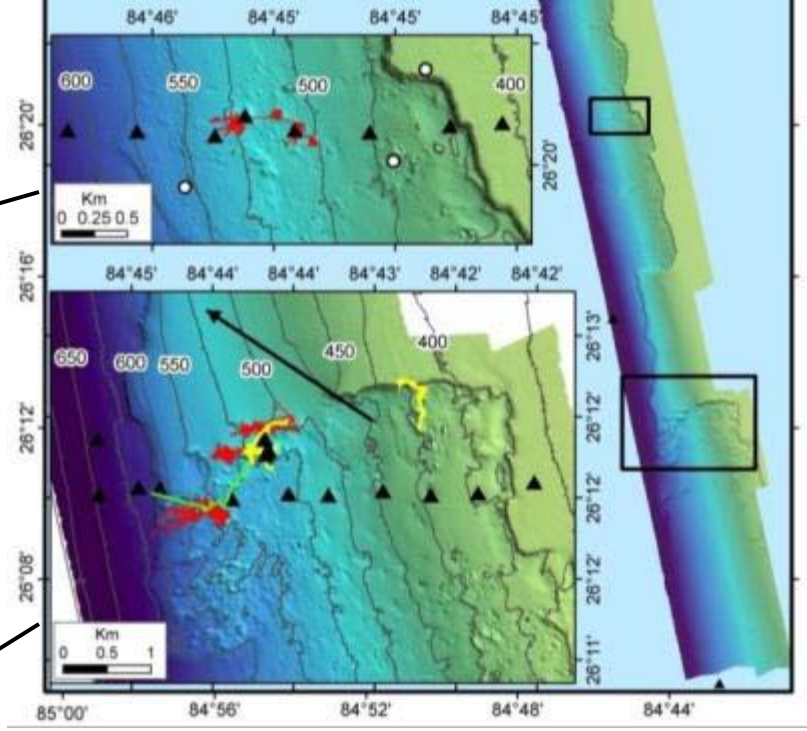


Five cruises visited WFS:

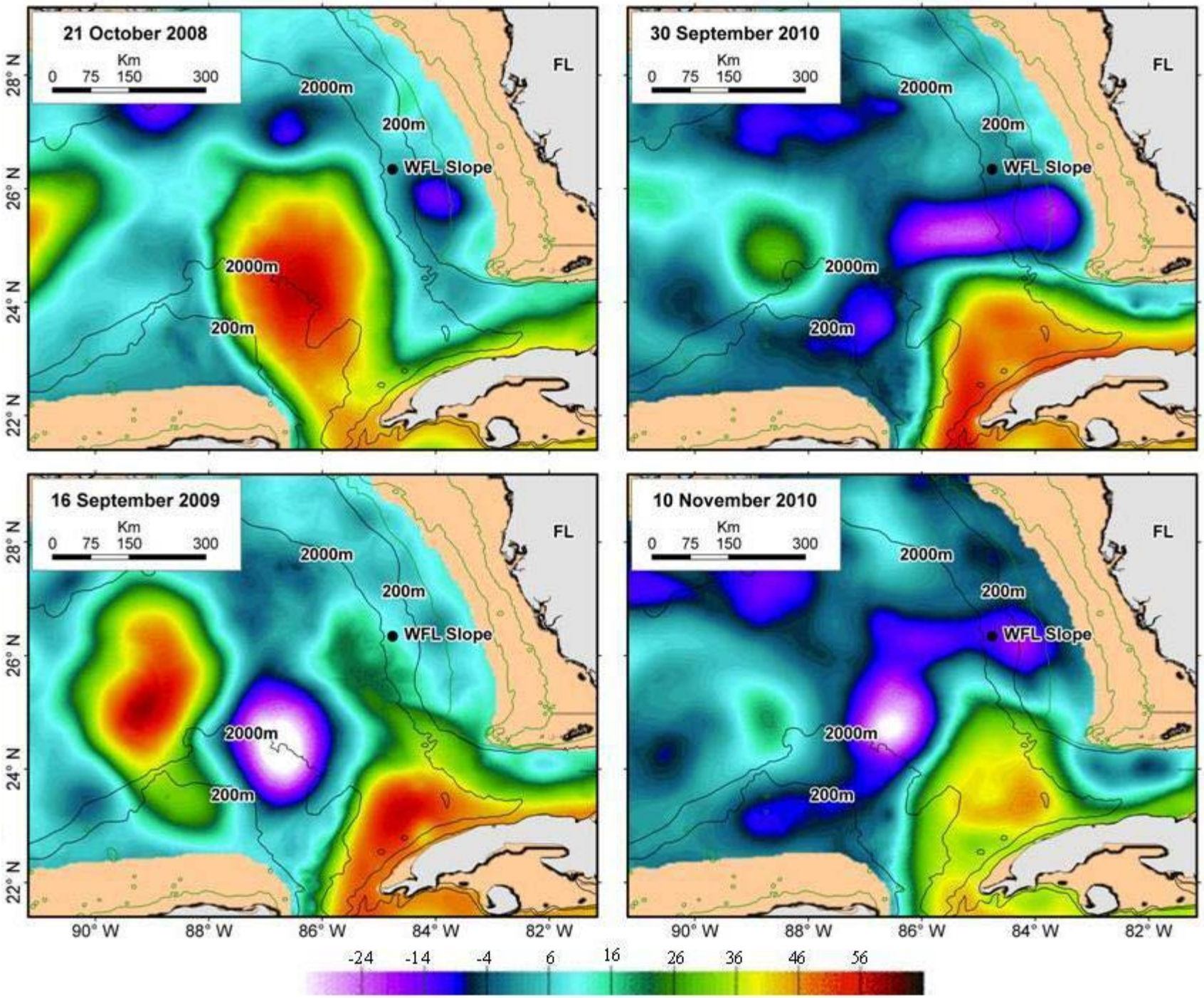
- Two conducted multibeam mapping (A=Oct 2008, B=Nov 2010)
- *JSL* cruise – Sep 2009 (3 dives on WFS)
- *Kraken II* cruise – Sep 2010 (5 dives on WFS)
- *Jason II* cruise – Nov 2010 (1 dive on WFS)

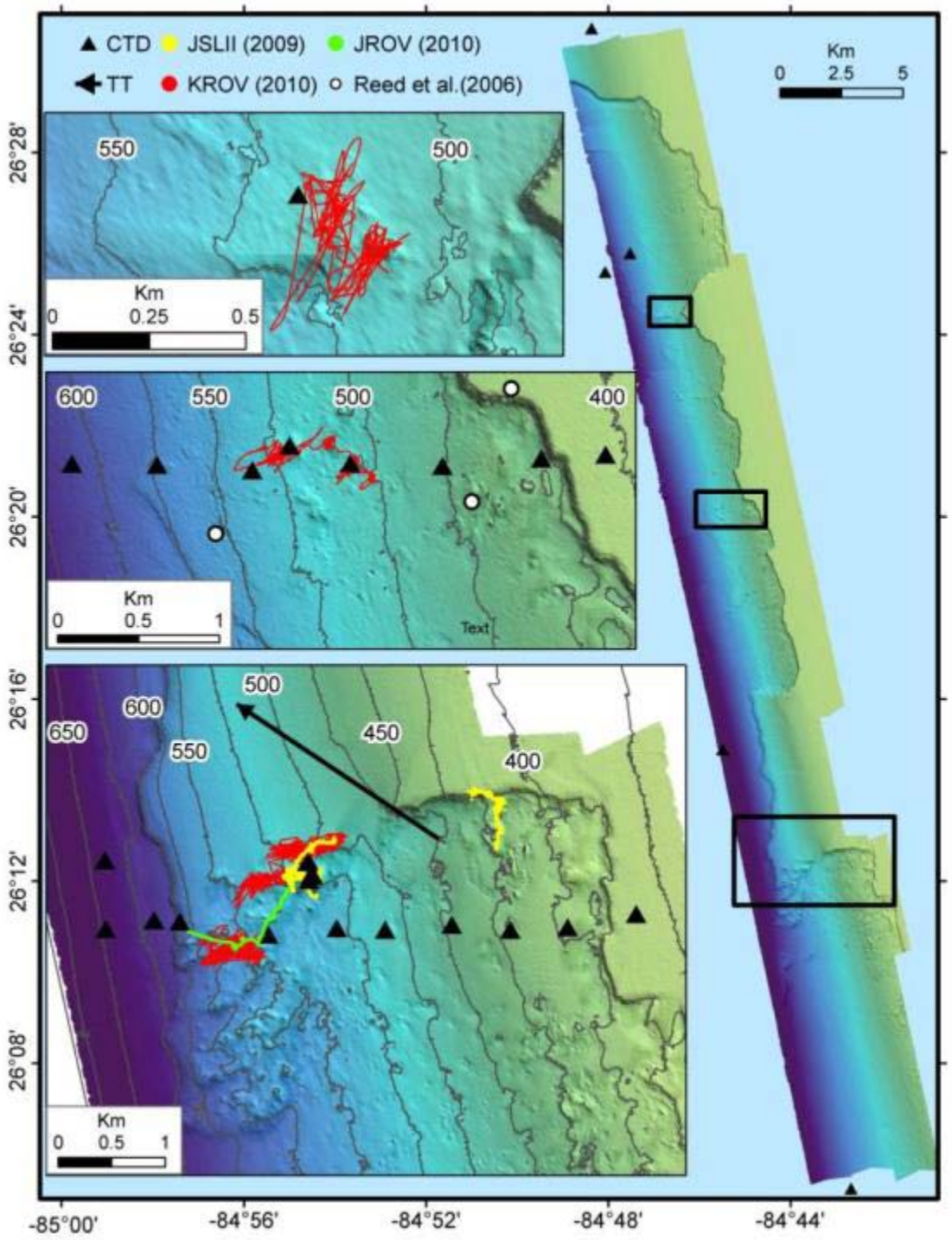






- Little change in water characteristics across transects, most changes with depth
- Change in water mass characteristics around 60 – 100 m
- High salinity signature around 100 m
- Thick DO minimum (3.8 mg/l) in the depth range of DSCs
- Shallow end T=9.7-11 C and deep end T=7-6.9 C, coral area T=7-9.9 C (410-620 m)

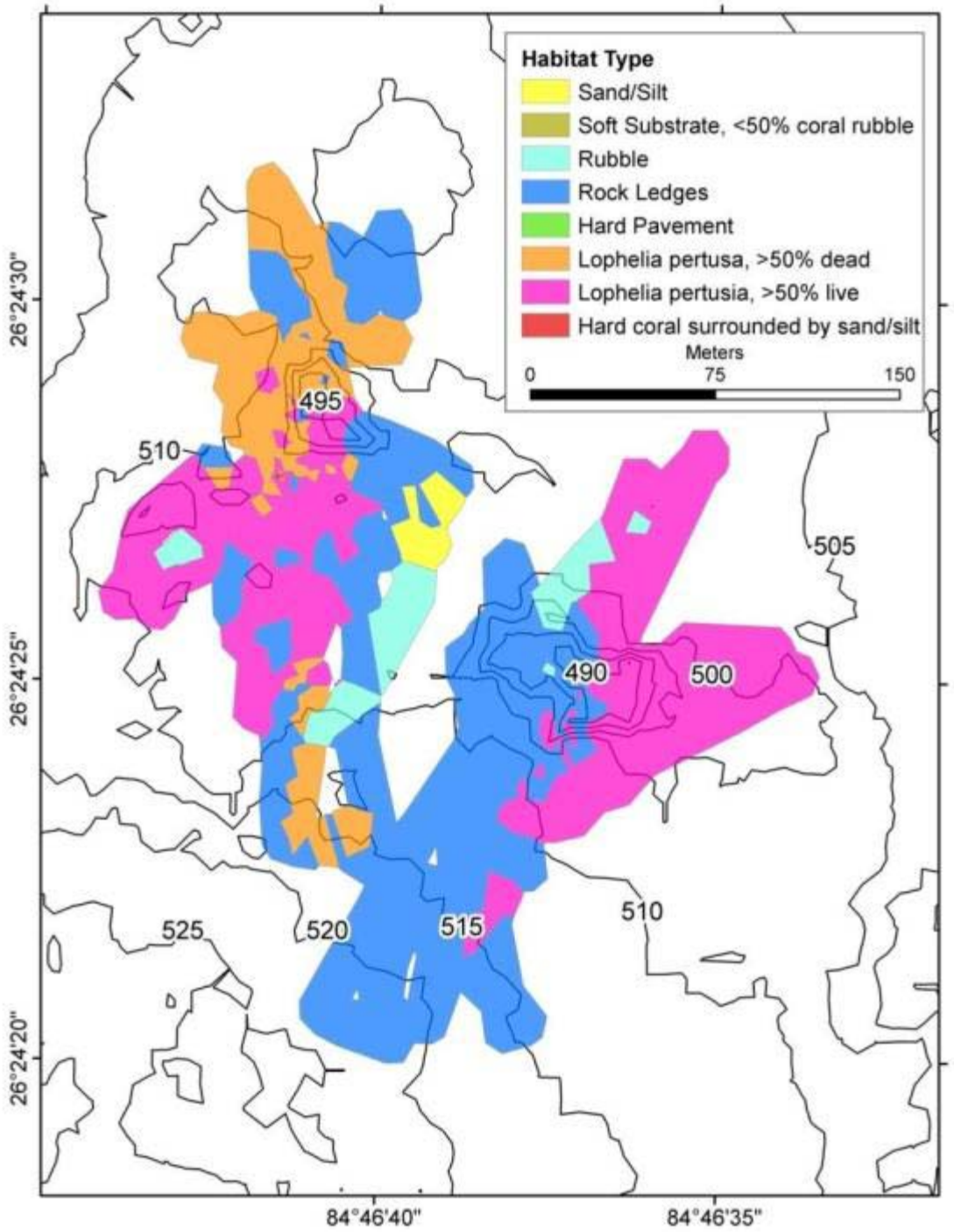

21 October 2008
30 September 2010
16 September 2009
10 November 2010
Km
0 75 150 300
FL
2000m
200m
WFL Slope
28° N
26° N
24° N
22° N
90° W
88° W
86° W
84° W
82° W
-24 -14 -4 6 16 26 36 46 56



BENTHIC DATA

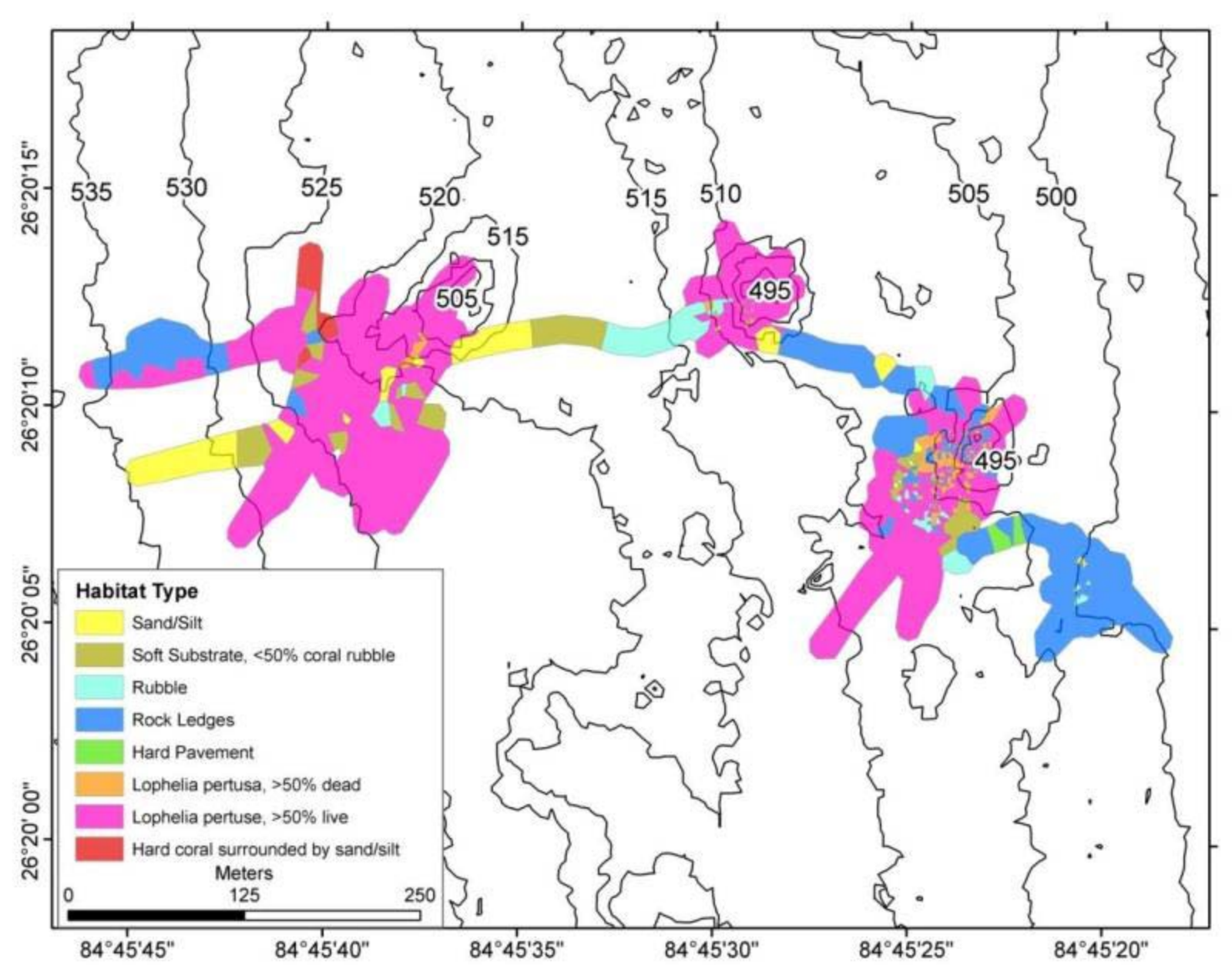
About 222 km^2 mapped with multibeam sonar, 2008 cruise.
31 CTD point or transect stations.
9 *JSL* and ROV dives

Habitats along *JSL*/ROV transects classified – 8 general categories

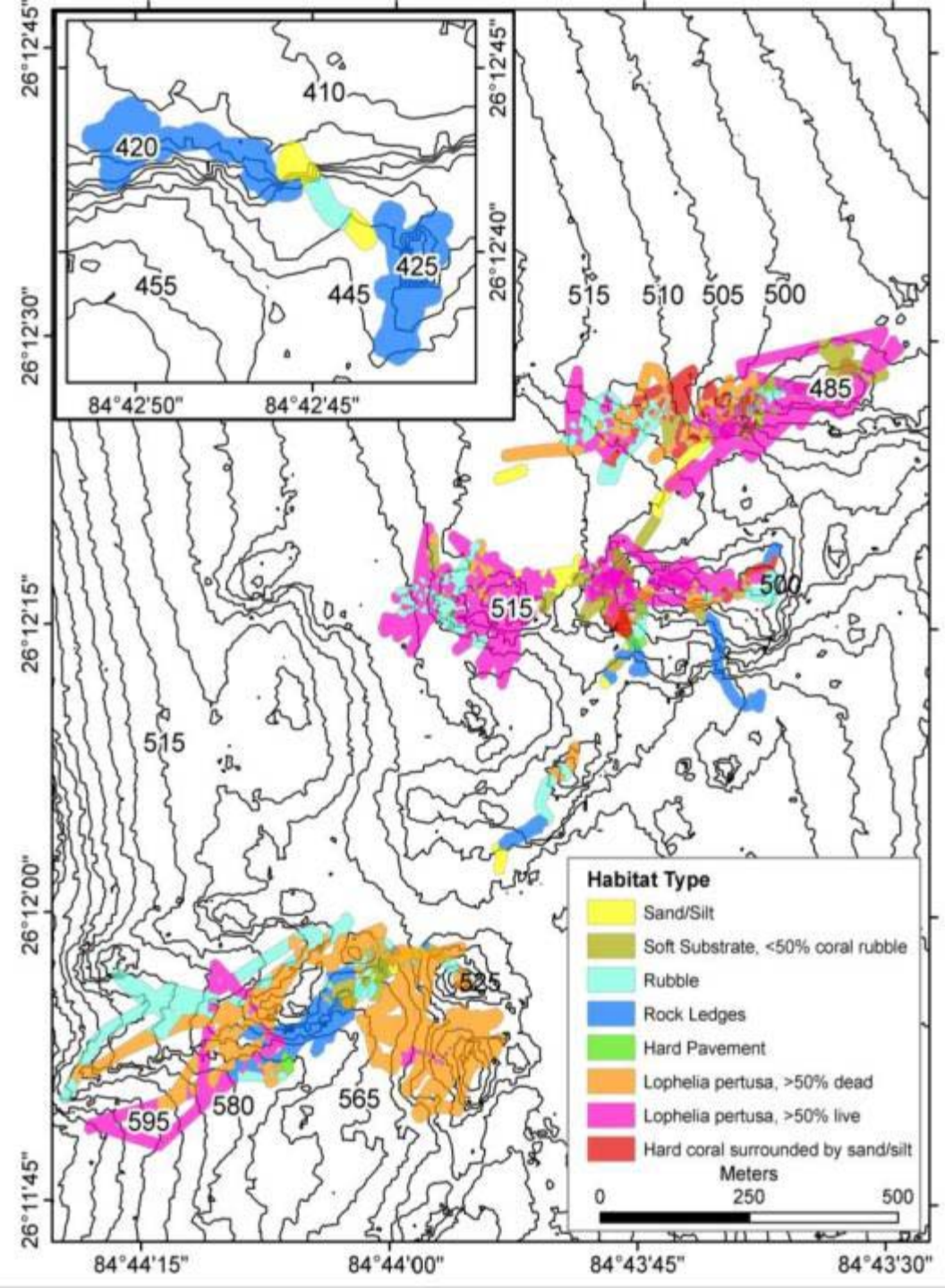


All but one of following dives are W of rocky scarp

Northern Dive


535
530
525
520
515
510
505
500
515
505
495
495
26°20'15"
26°20'10"
26°20'05"
26°20'00"
84°45'45"
84°45'40"
84°45'35"
84°45'30"
84°45'25"
84°45'20"
Habitat Type
Sand/Silt
Soft Substrate, <50% coral rubble
Rubble
Rock Ledges
Hard Pavement
Lophelia pertusa, >50% dead
Lophelia pertuse, >50% live
Hard coral surrounded by sand/silt
Meters
0
125
250

Middle Dive

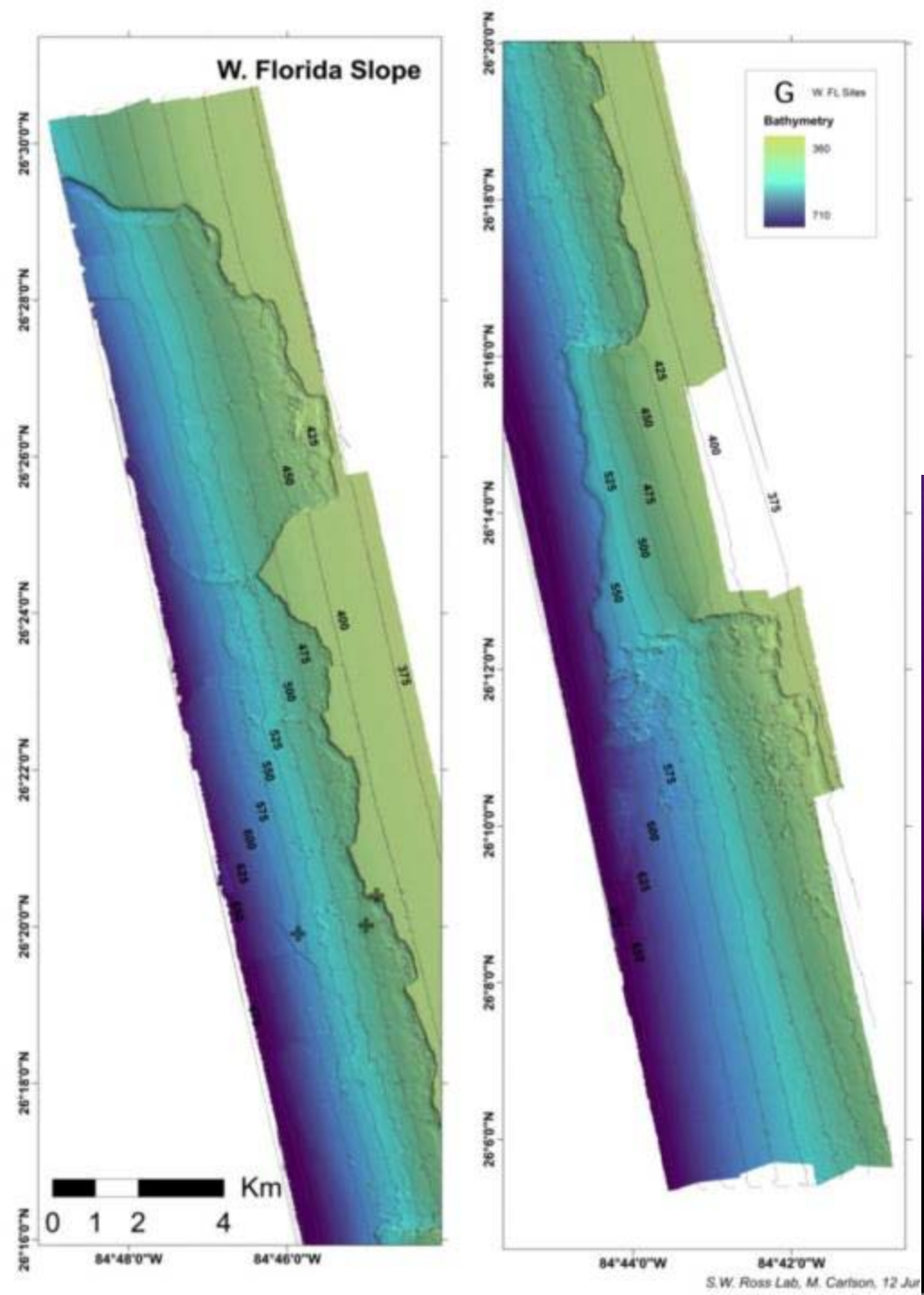


Southern Dives (n=7)

HABITAT SUMMARY – all dives

	%
Sand/silt	5.37
Soft with rubble	9.74
Rubble	13.67
Rock ledges	11.62
Hard pavement	4.05
Lophelia >50% dead	30.85
Lophelia >50% live	20.37
Lophelia isolated colonies	4.34

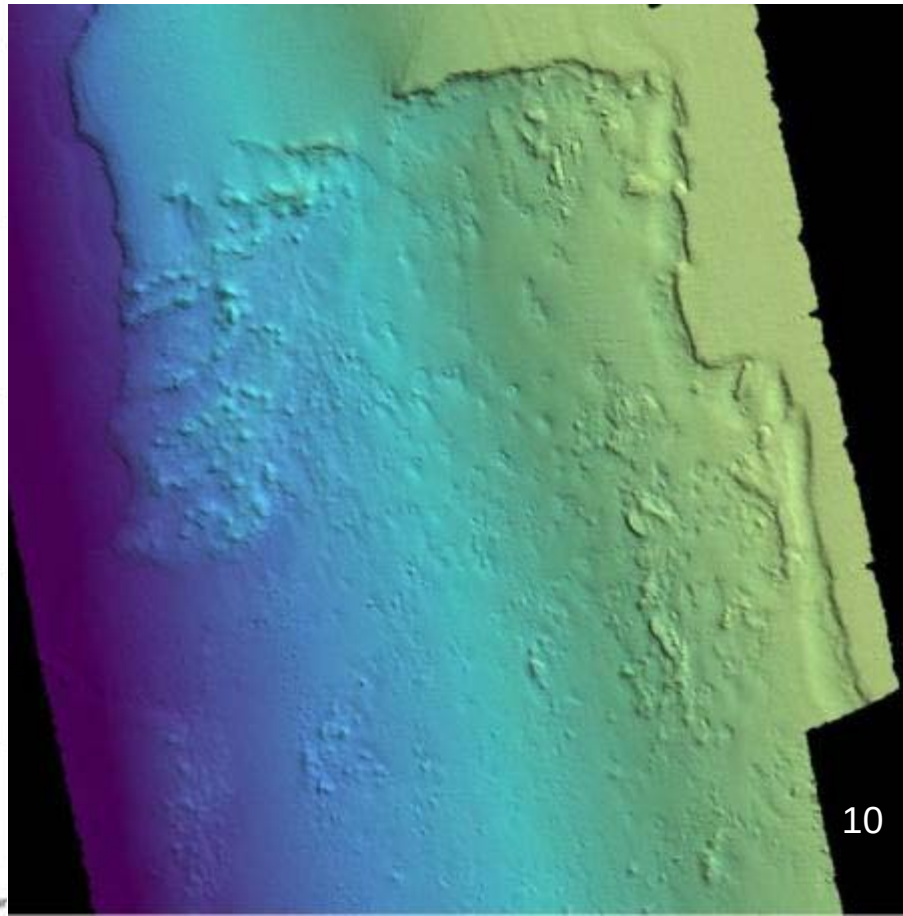
Most of the dead coral was at deeper depths and on the sides of mounds & ridges. Most live coral was on top of mounds & ridges.



Rocky scarp (5 – 20 m tall) runs N-S

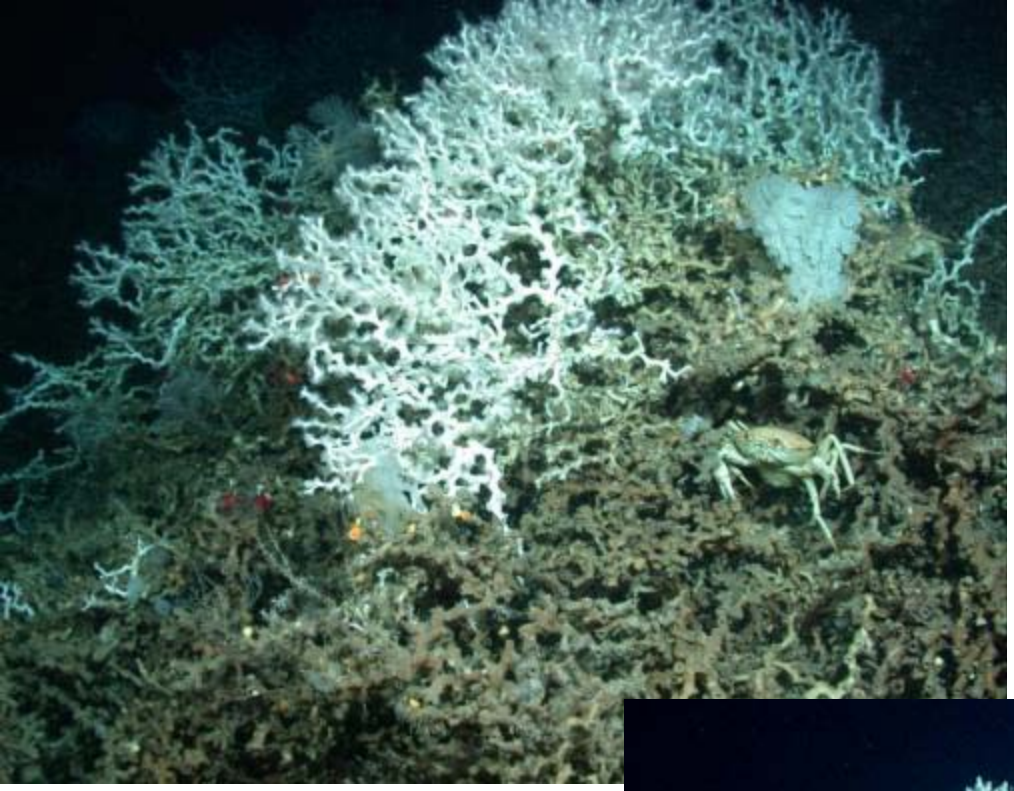
Rock and coral mounds & ridges to West of scarp

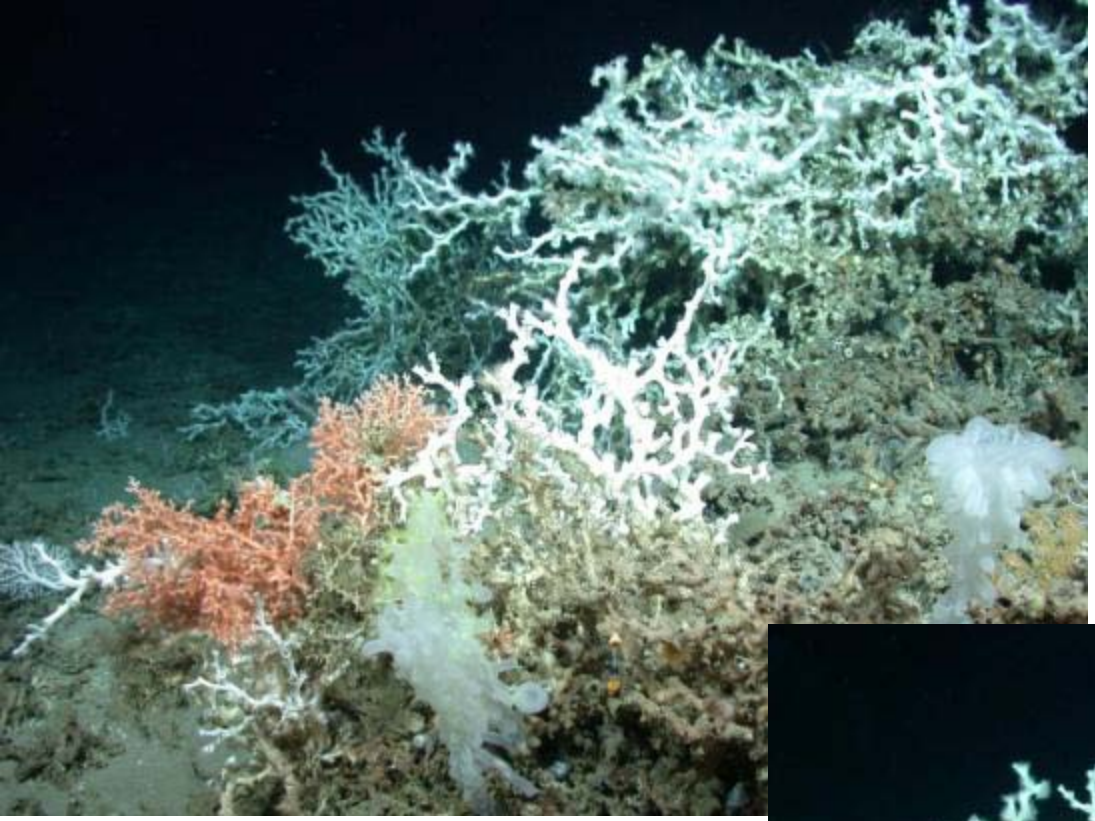
Rocky foundations for typical bioherms

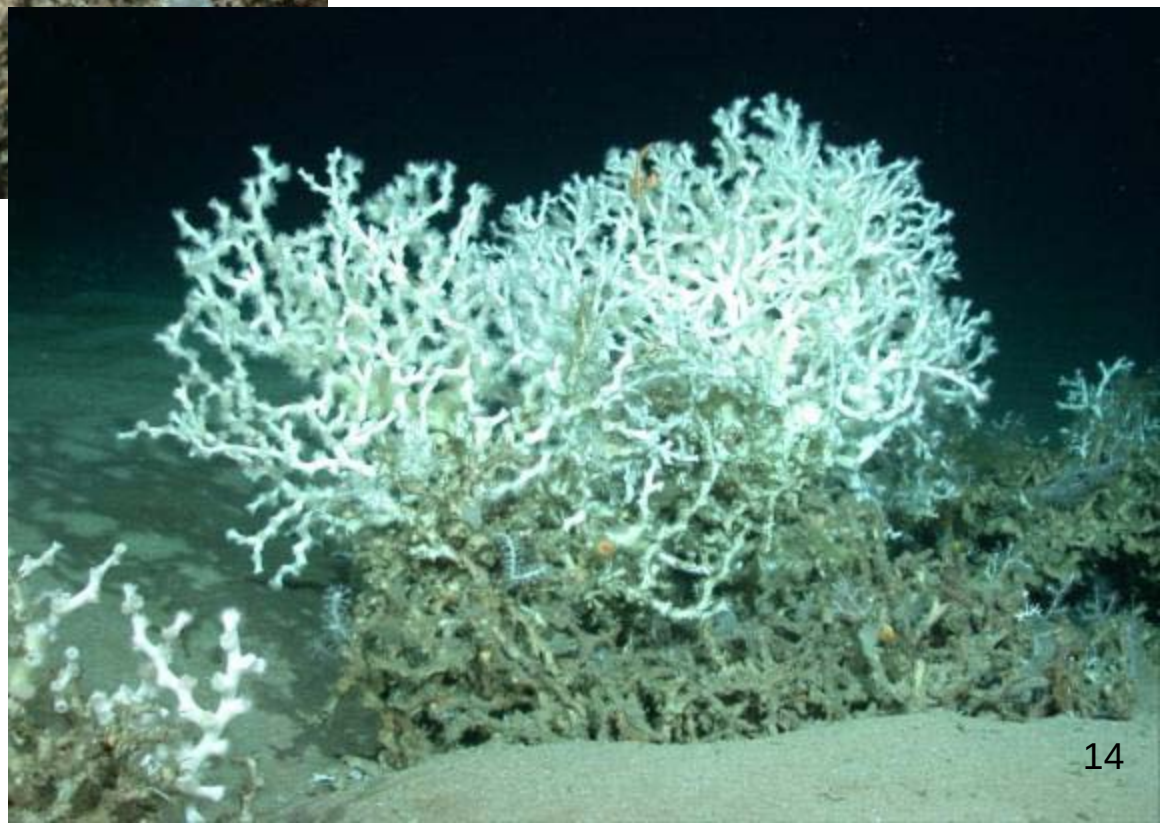


Faunal Observations

- At least 71 taxa of invertebrates observed
- Coral dominated by *L. pertusa*; *M. oculata* more common than other areas
- Black corals common on rocky habitats
- Comatulid crinoids abundant
- Golden crabs abundant, use DSC for mating
- 49 fish spp. identified, 29 spp. only on reefs
- 6 fish spp. new range extensions into GOM
- Mid-water fauna impacts reefs

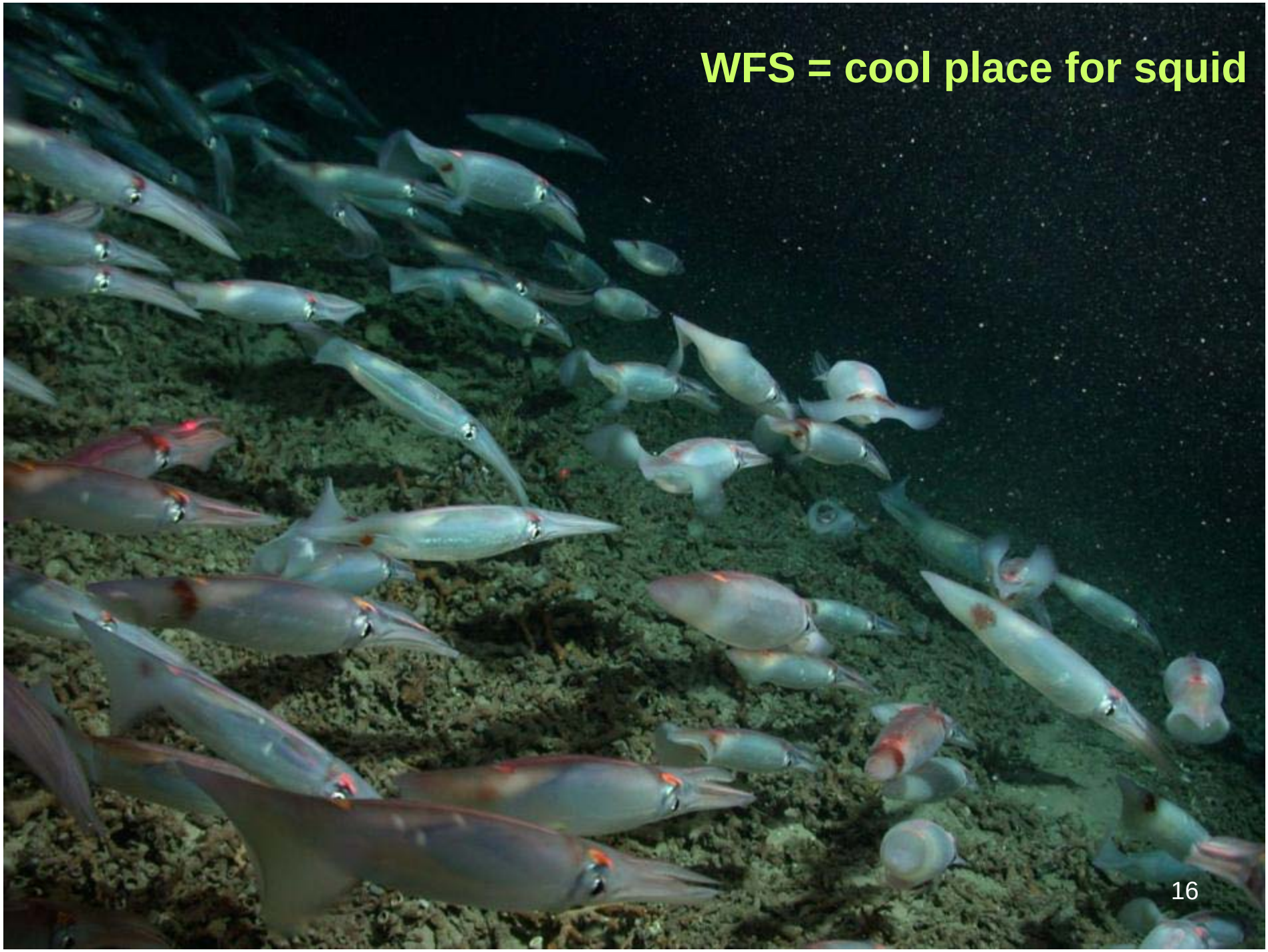






Conclusions/Observations

- WFS macrofauna has similarity to both SEUS & north-central GOM faunas
- WFS seems to have more living & non-living coral habitat than elsewhere in GOM
- As off SEUS new species & new records common, suggesting strong habitat association
- Currents + spawning time may help explain some of the isolation of *L. pertusa* from rest of W. Atlantic


WFS = cool place for squid

References

Hübscher, C., C. Dullo, S. Flögel, J. Titschack and J. Schönfeld. 2010. Contouirite drift evolution and related coral growth in the eastern Gulf of Mexico and its gateways. International Journal of Earth Science 99:191–206.

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Reed, J.K., D.C. Weaver and S.A. Pomponi. 2006. Habitat and fauna of deep-water *Lophelia pertusa* coral reefs off the southeastern U.S.: Blake Plateau, Straits of Florida, and Gulf of Mexico. Bulletin of Marine Science 78:343–375.