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COASTAL RESOURCES CENTER
University of Rhode Island

MANAGING FRESHWATER INFLOWS TO ESTUARIES

Samana Bay Rapid Ecological Assessment

Phil Kramer



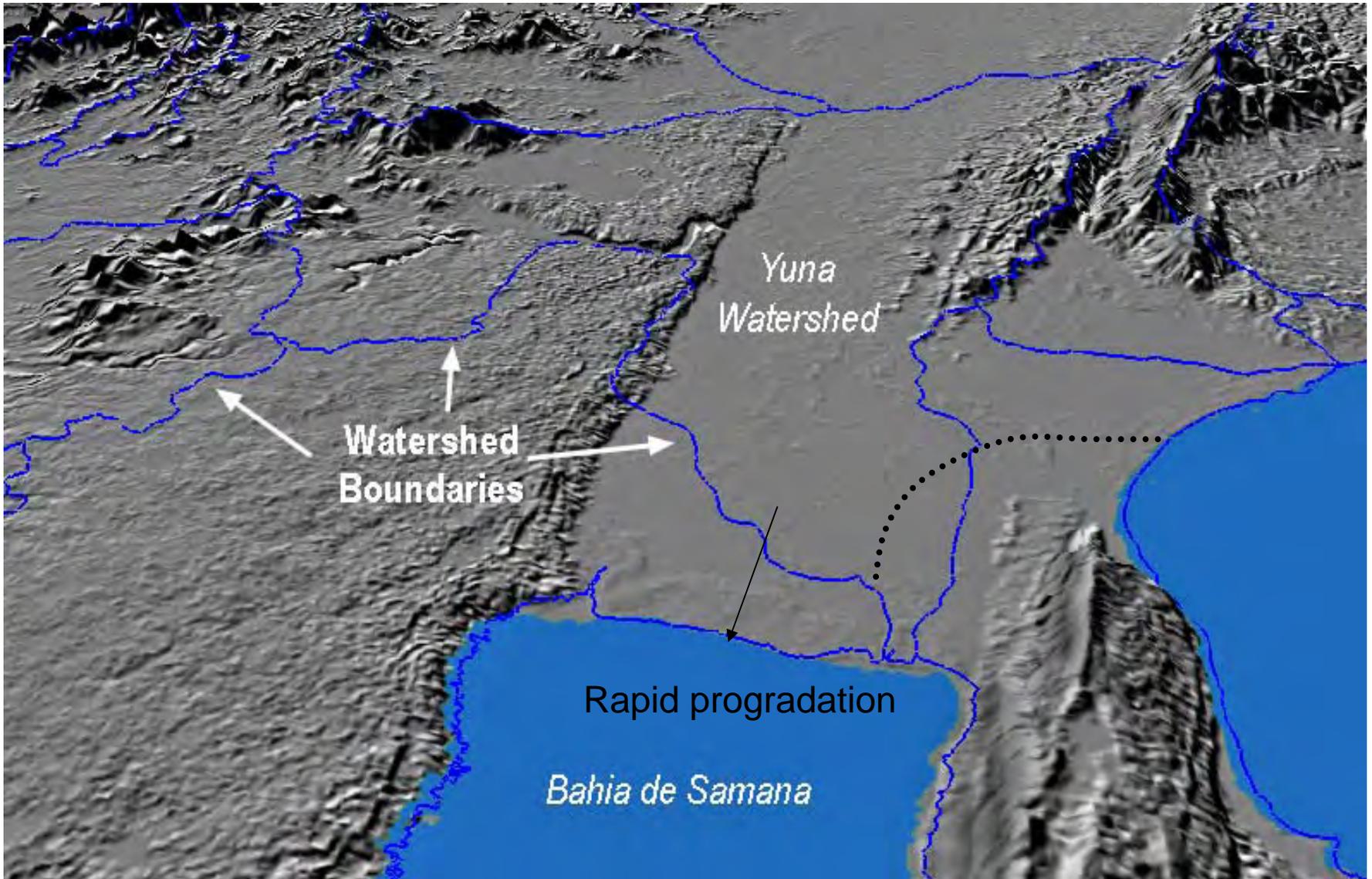
Kramer, P. (2005). Samana Bay Rapid Ecological Assessment. Presented at: The USAID Watersheds Planning Meeting (May 19-20). Washington, DC: The Nature Conservancy.



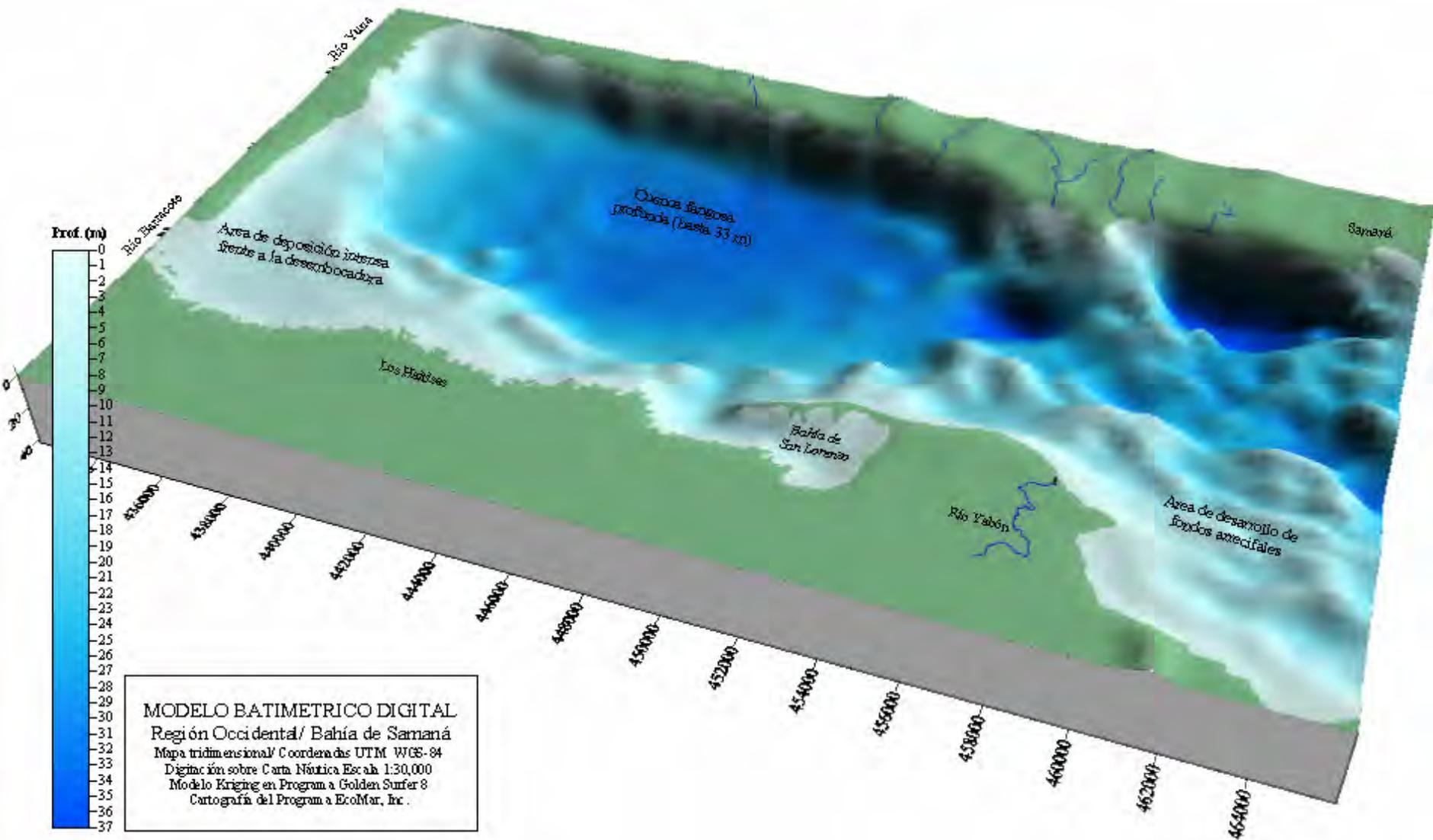
Samana Bay Rapid Ecological Assessment

March 13-22, 2005

Philip Kramer, The Nature Conservancy
USAID watersheds planning meeting
Washington DC, May 19-20, 2005.



Tectonic Estuary (e.g., San Francisco Bay, Gulf of California)
Relative sea level is FALLING as uplift takes place (still-stand notches in limestone Cliffs).

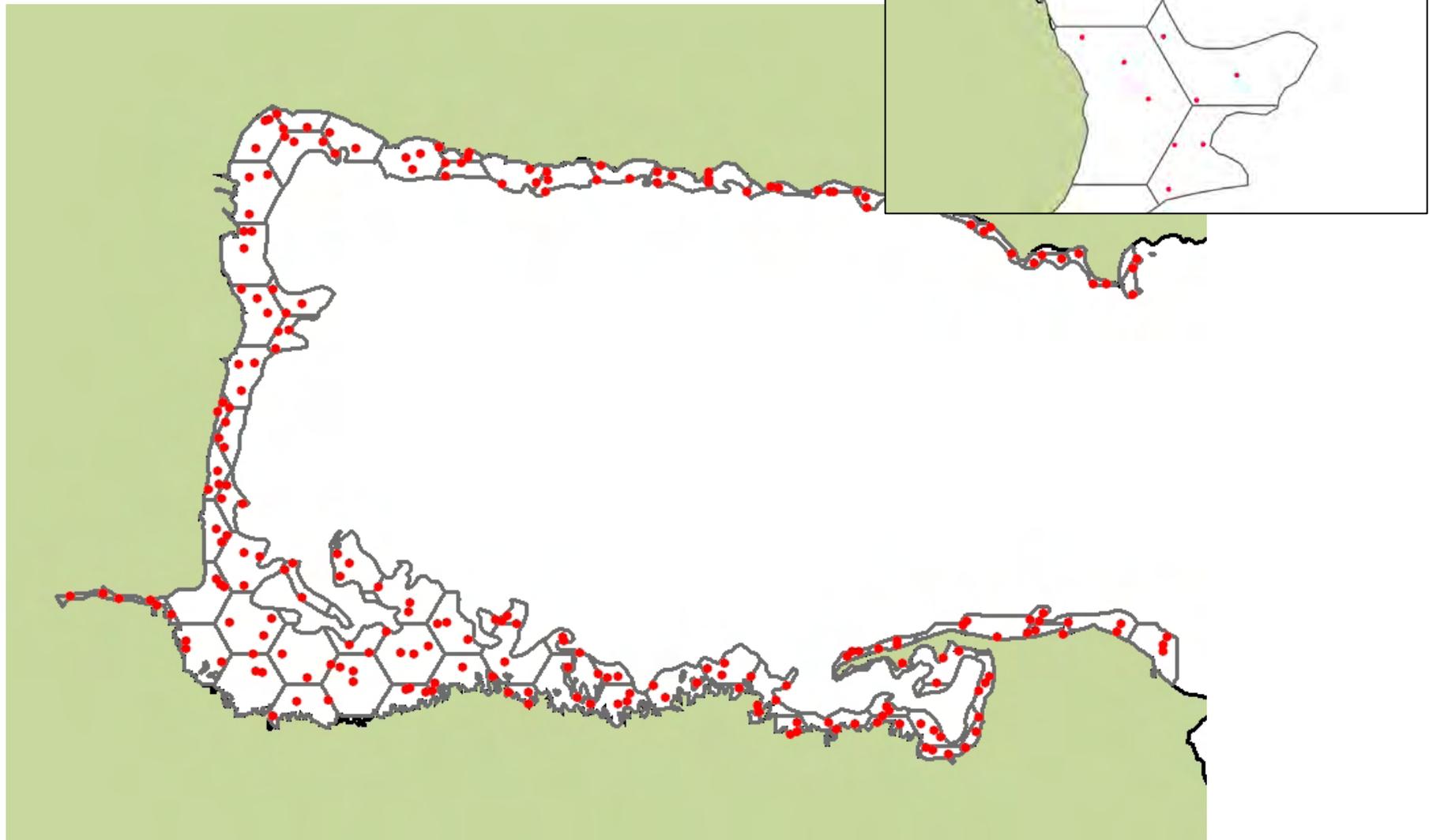


MODELO BATIMETRICO DIGITAL
 Región Occidental/ Bahía de Samaná
 Mapa tridimensional/ Coordenadas UTM WGS-84
 Digitación sobre Carta Náutica Escala 1:30,000
 Modelo Kriging en Programa Golden Surfer 8
 Cartografía del Programa EcoMar, Inc.





SAMPLING DESIGN FOR BENTHIC ASSESSMENT (grts)



SAMANA BAY RAPID ASSESSMENT MARCH 14-19, 2005

 CORE LOCATIONS

 BENTHIC STATIONS

WATER STATION SURFACE SALINITY

 0 - 20

 20 - 25

 25 - 30

 30 - 33

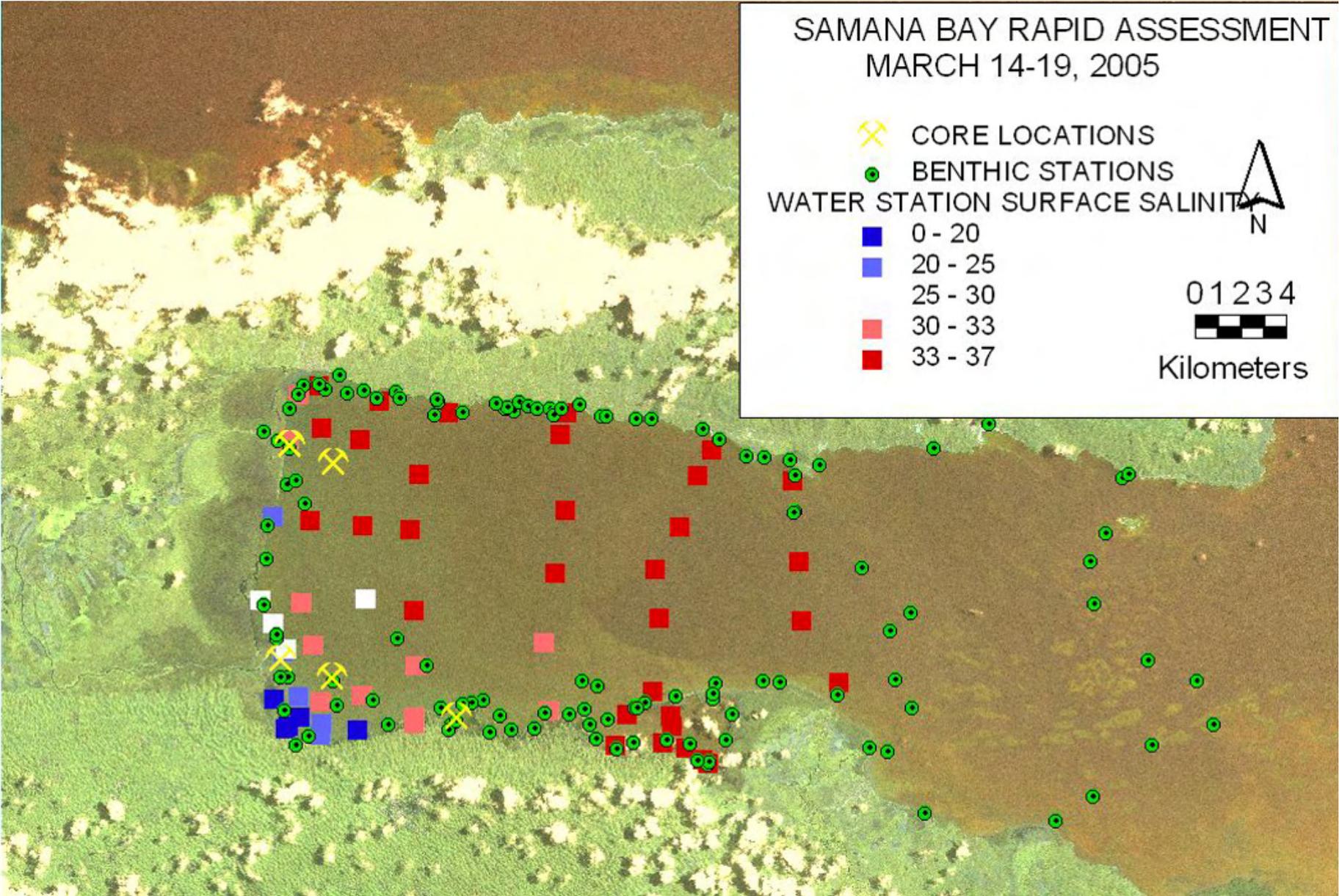
 33 - 37



0 1 2 3 4

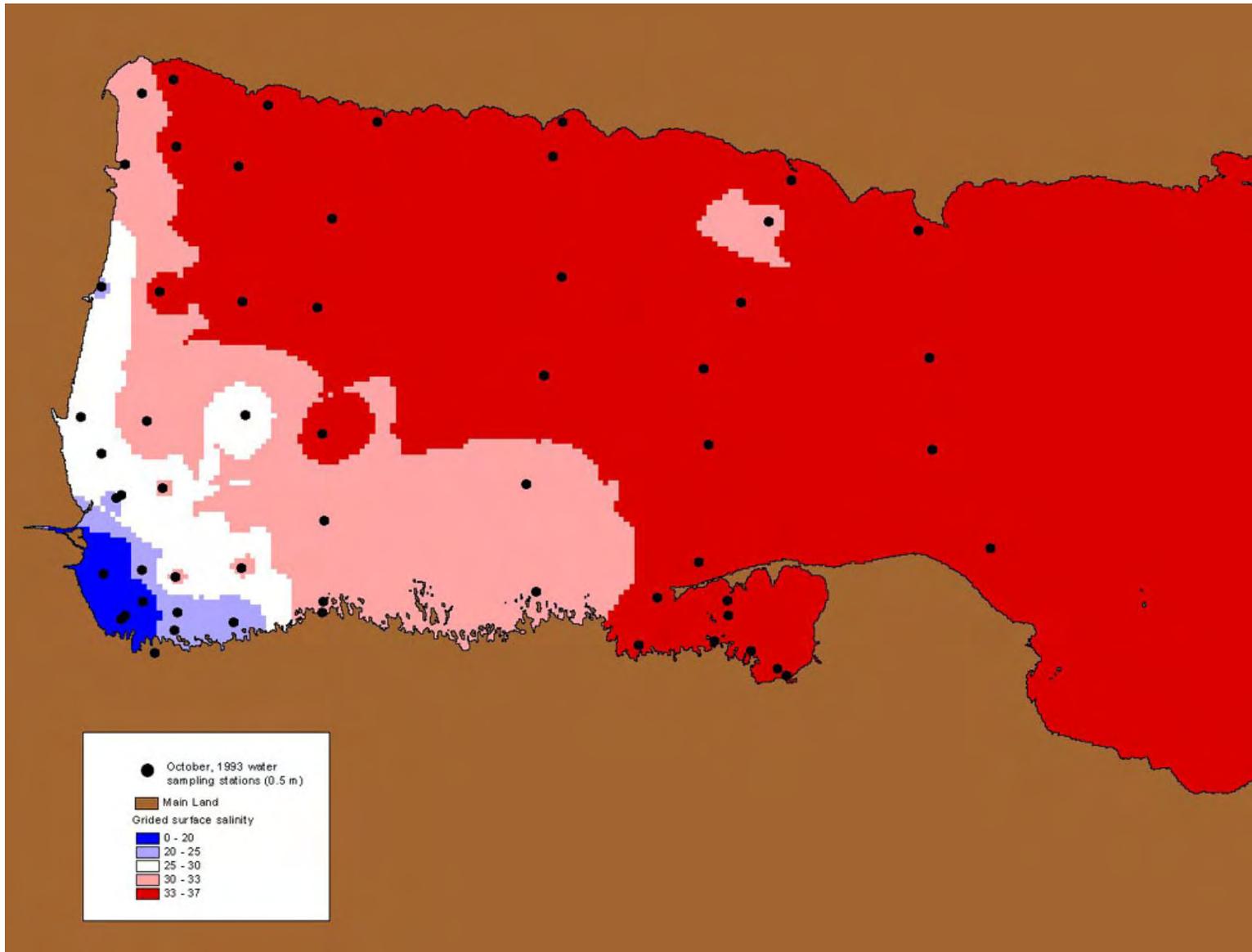


Kilometers

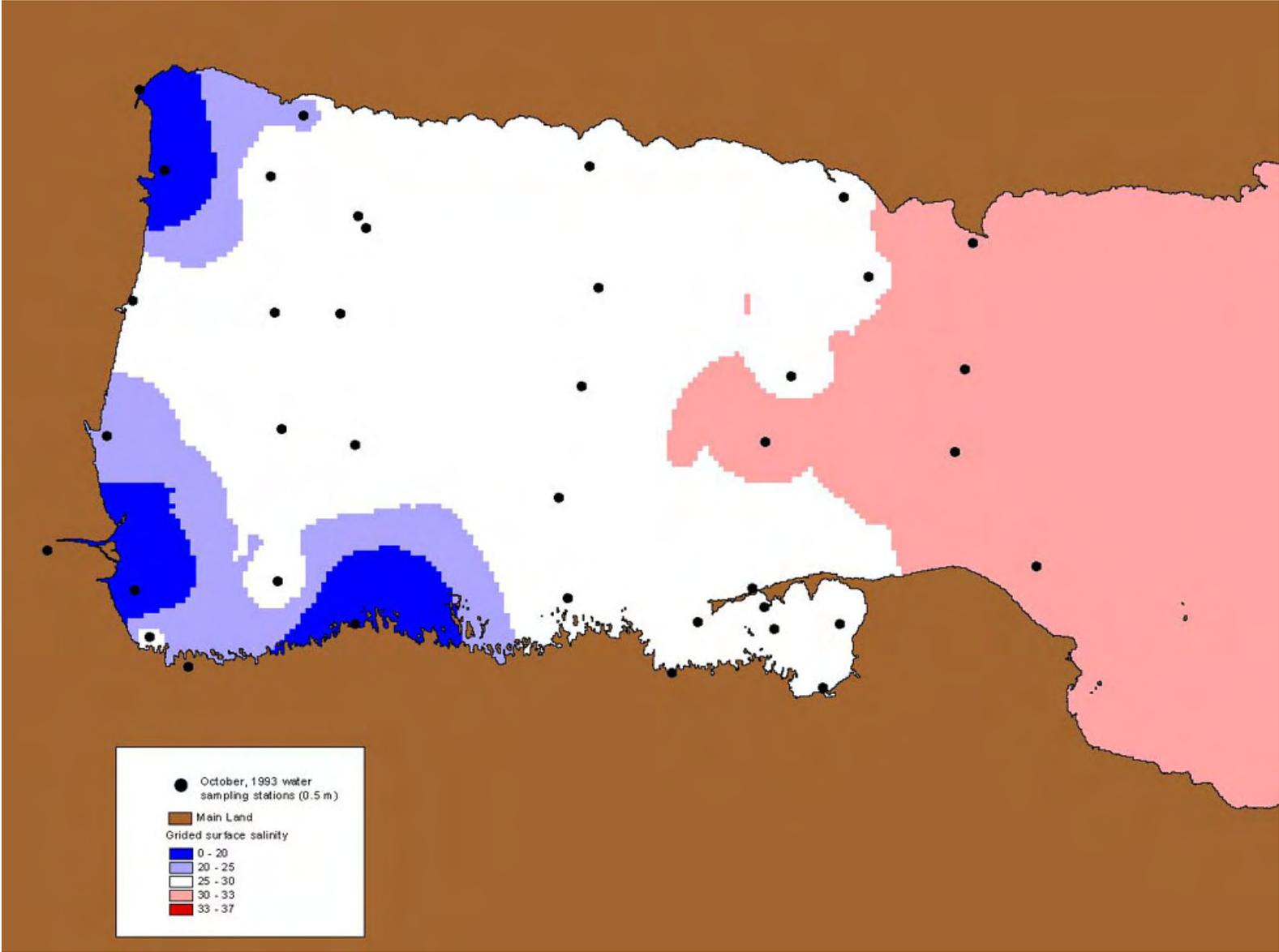


Hydrography results

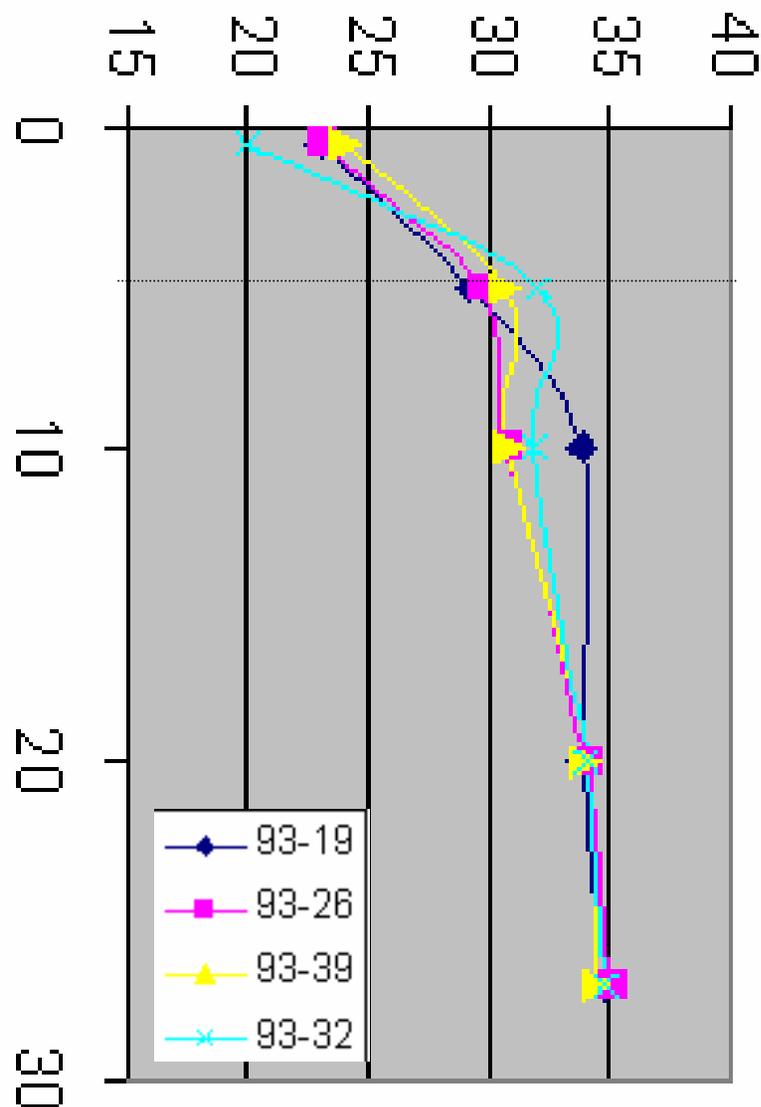




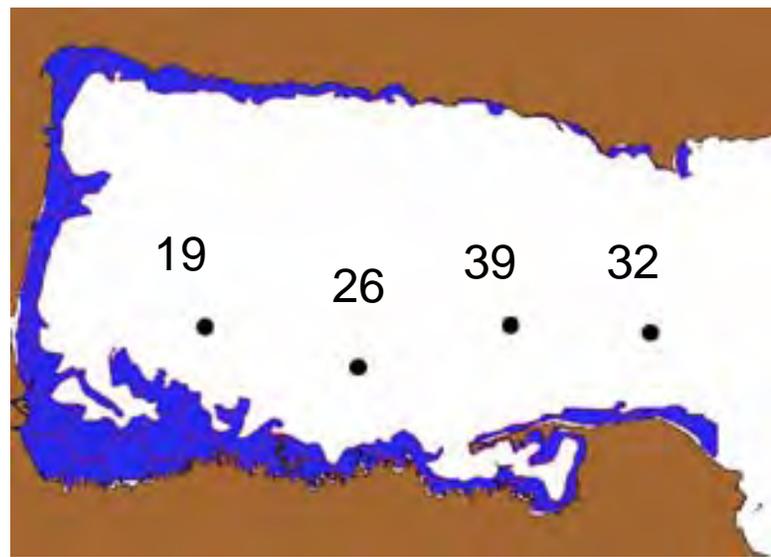
October, 1993 Water Sampling effort (wet season conditions)



Salinity



Select sampling stations – Oct, 1992

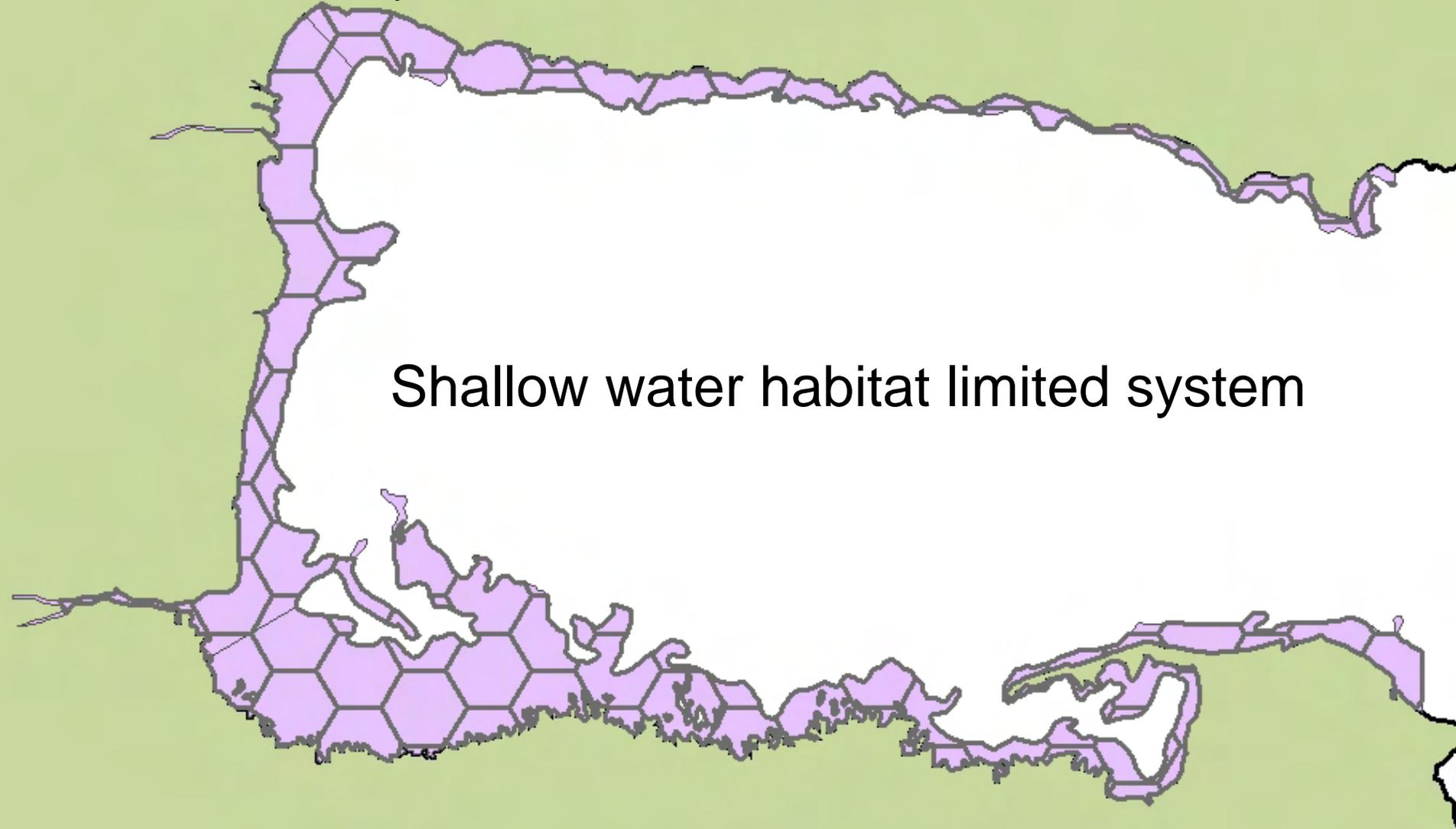




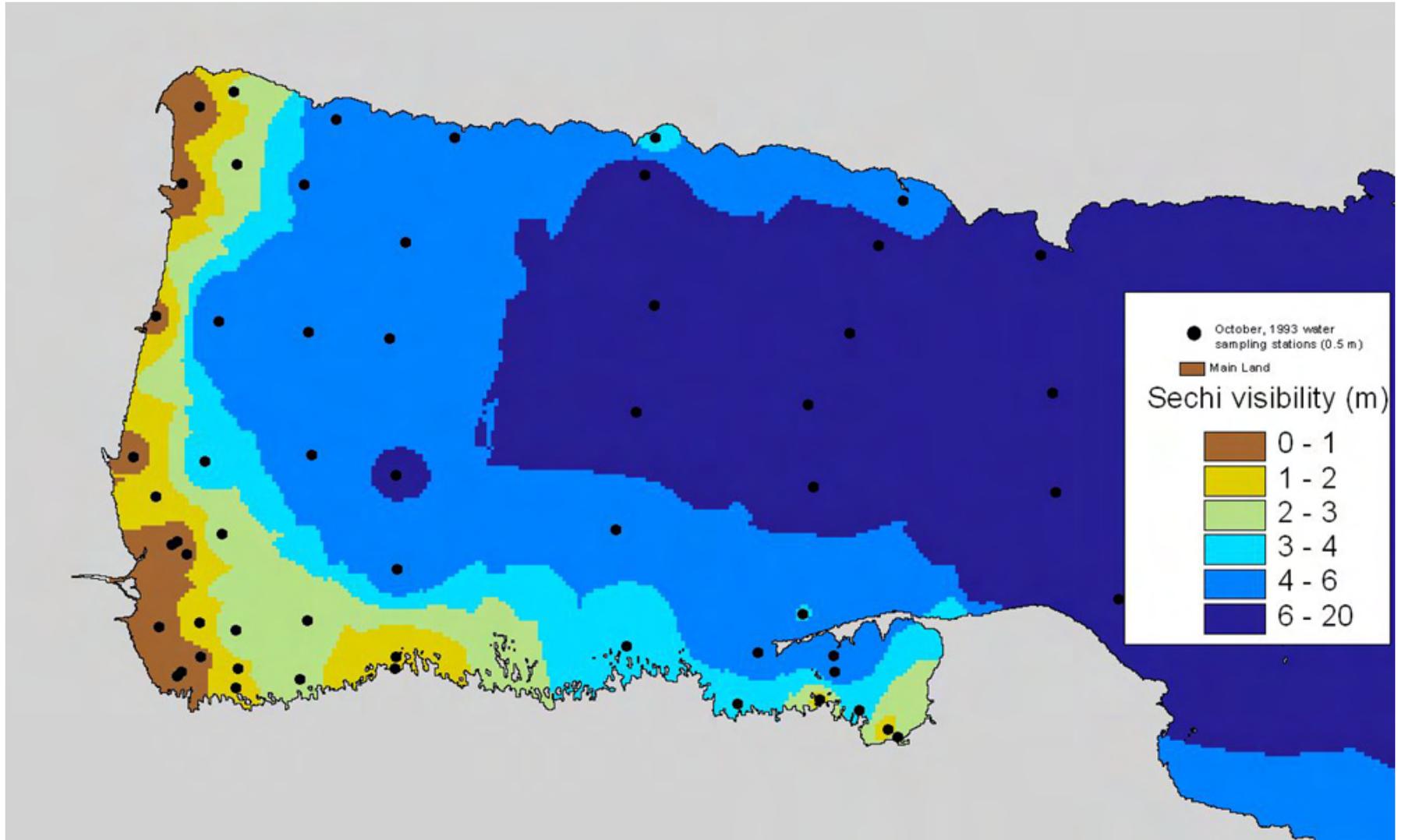
Shallow area: 300 km²

Shallow mixed layer Volume: 1.3 Km³

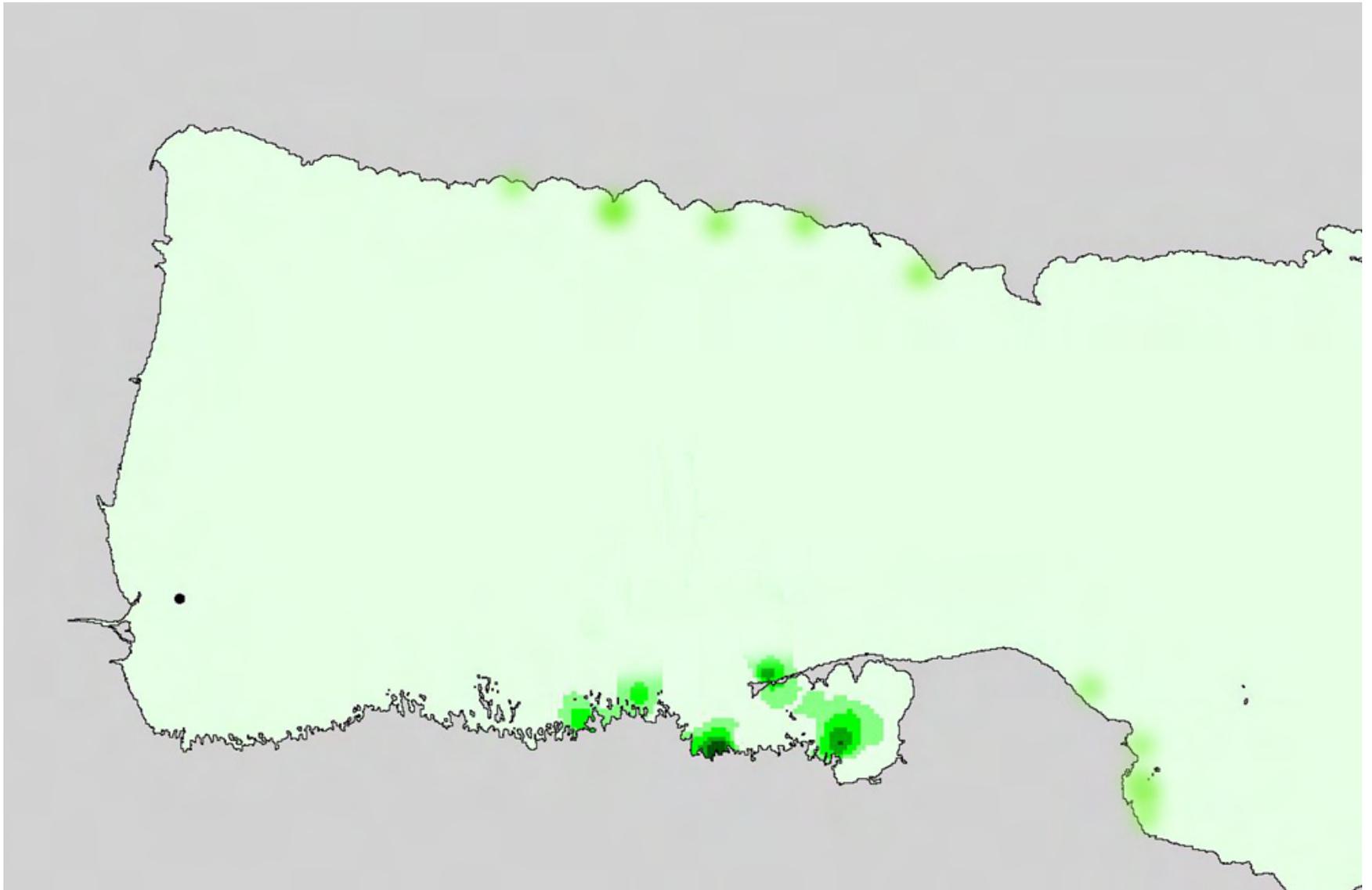
Shallow water habitat limited system



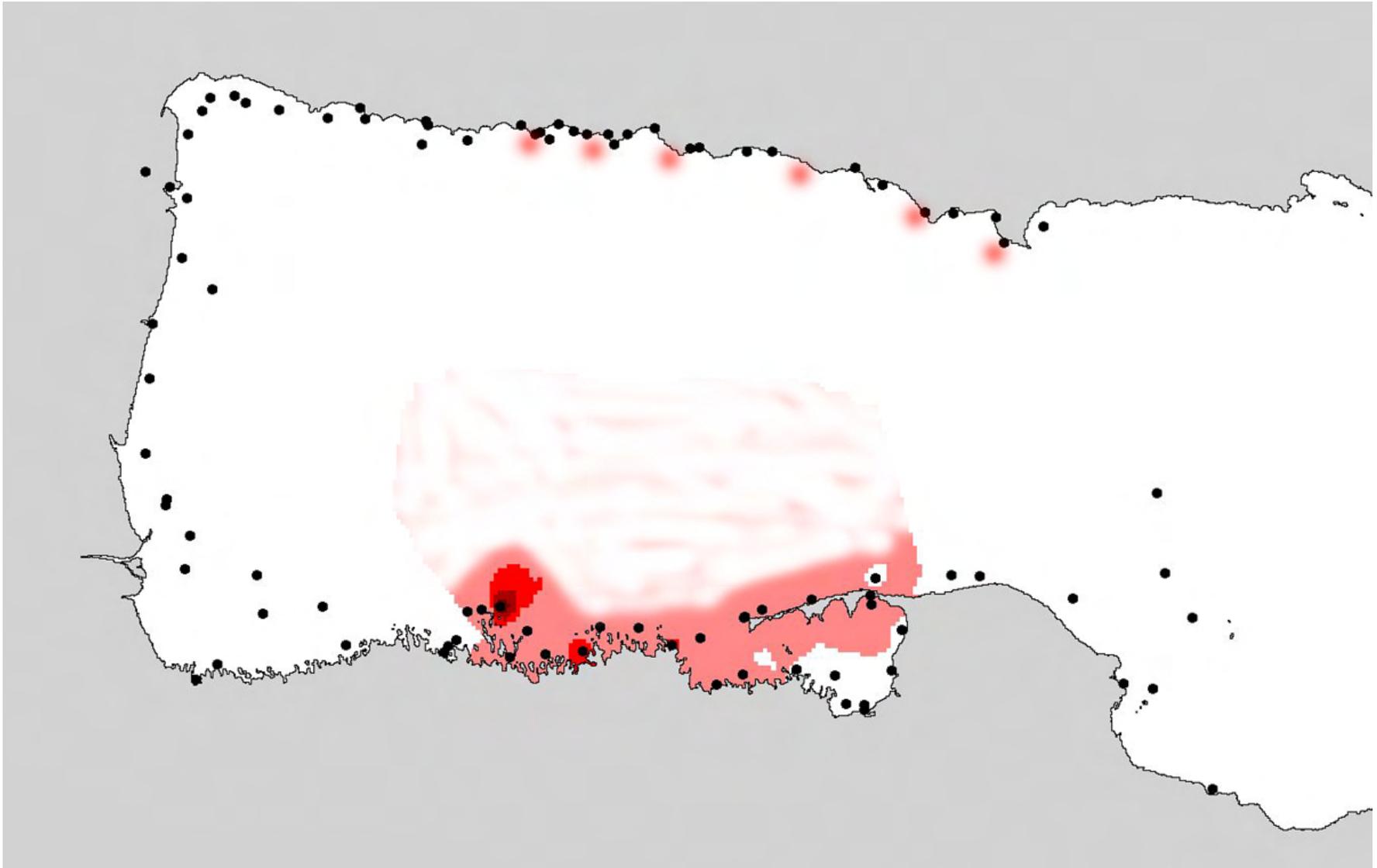
Water Clarity (turbidity)- March, 2005



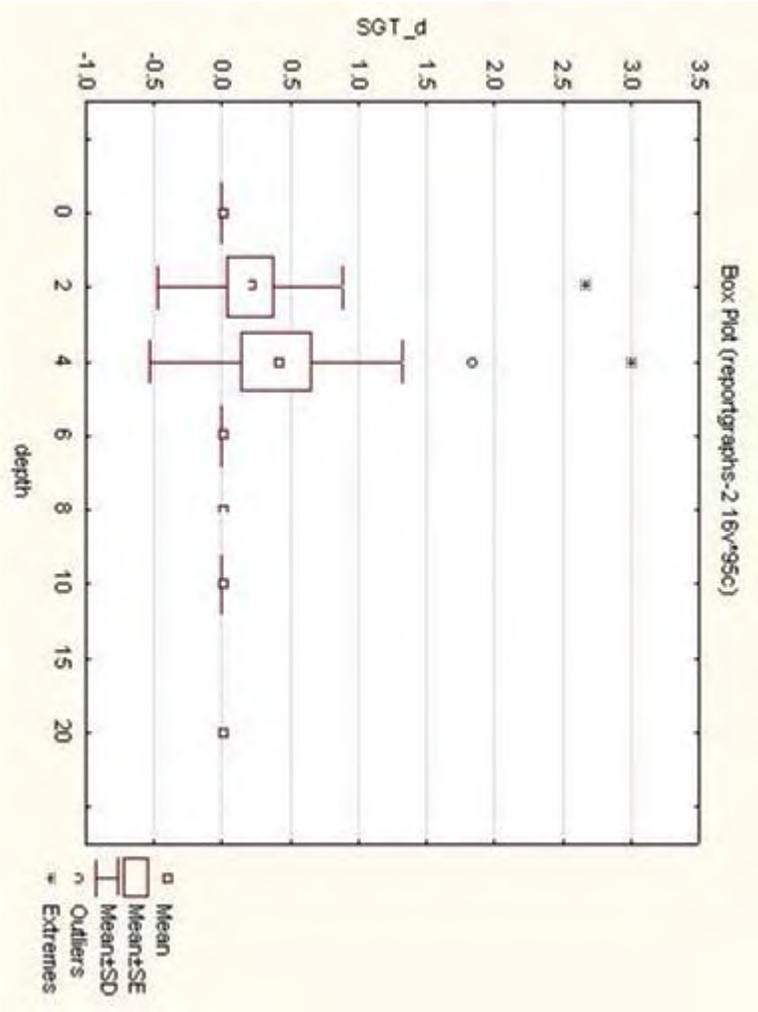
SEAGRASS DISTRIBUTION



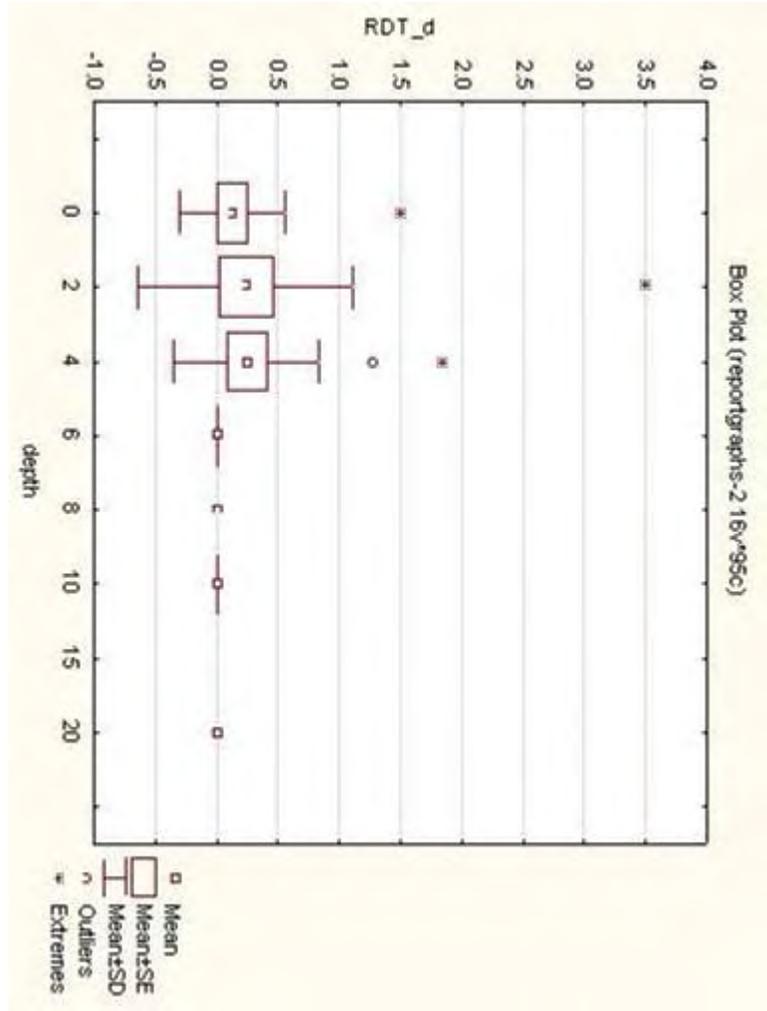
Red fleshy algae DISTRIBUTION



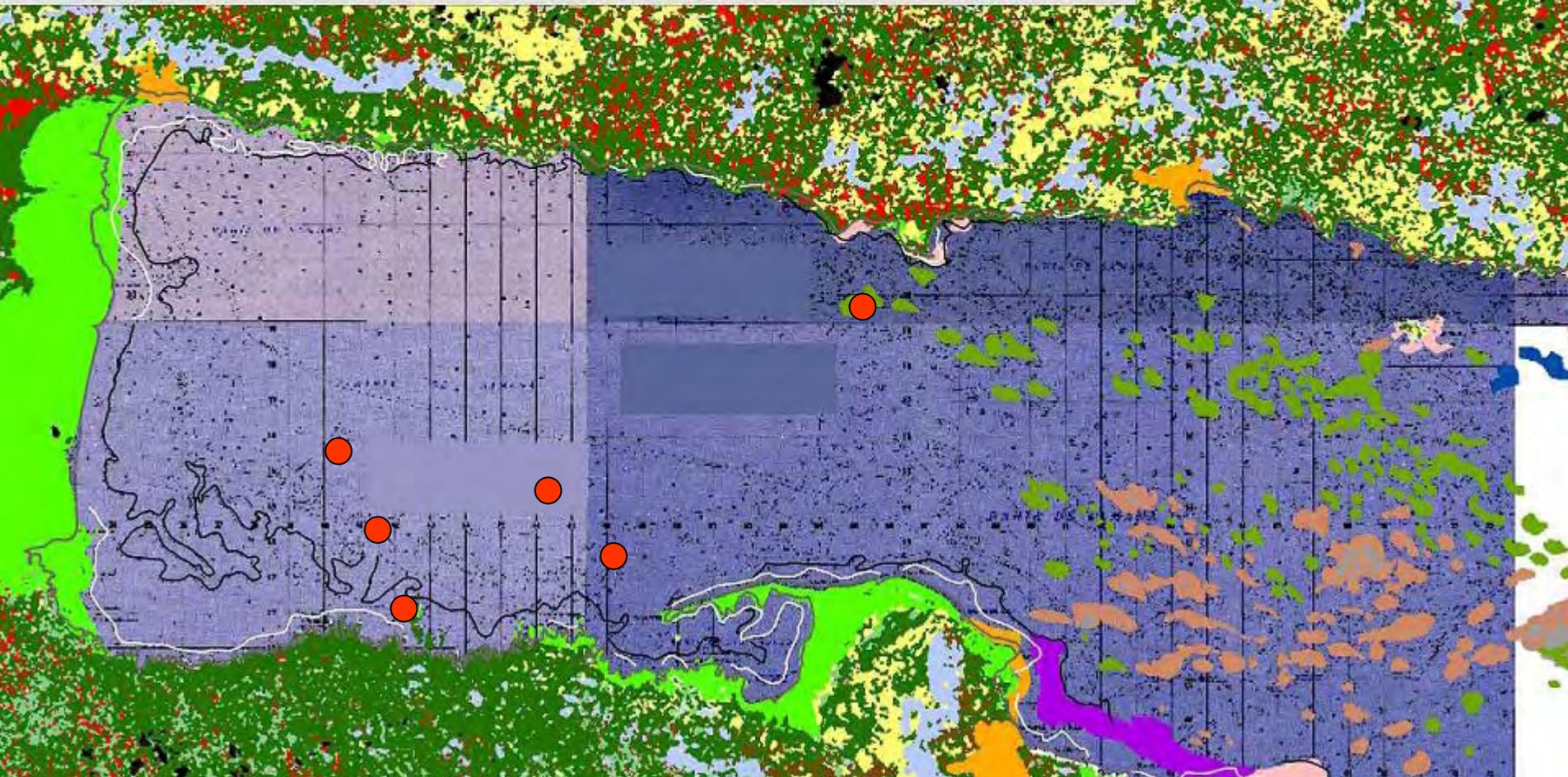
Seagrass



Red Algae

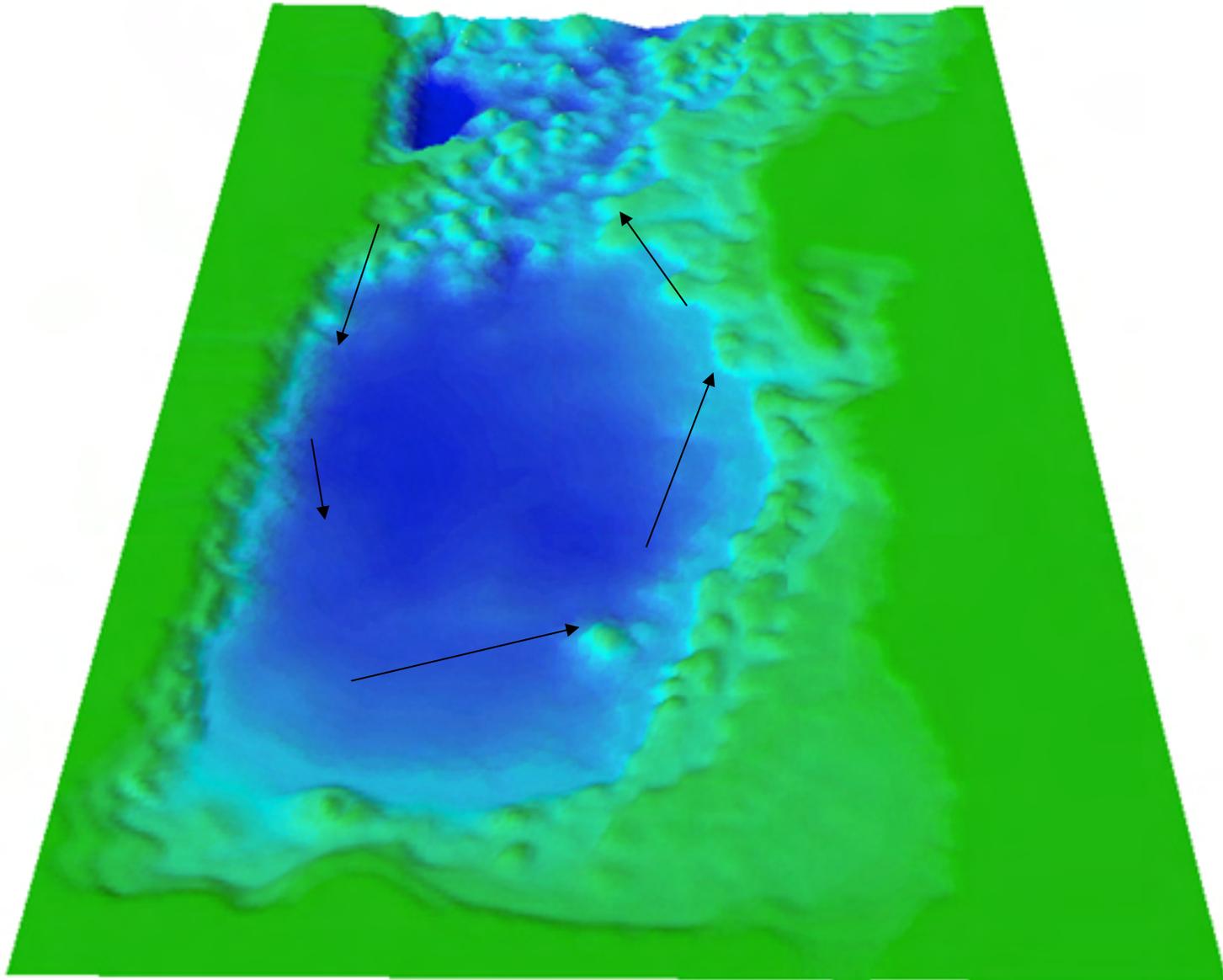








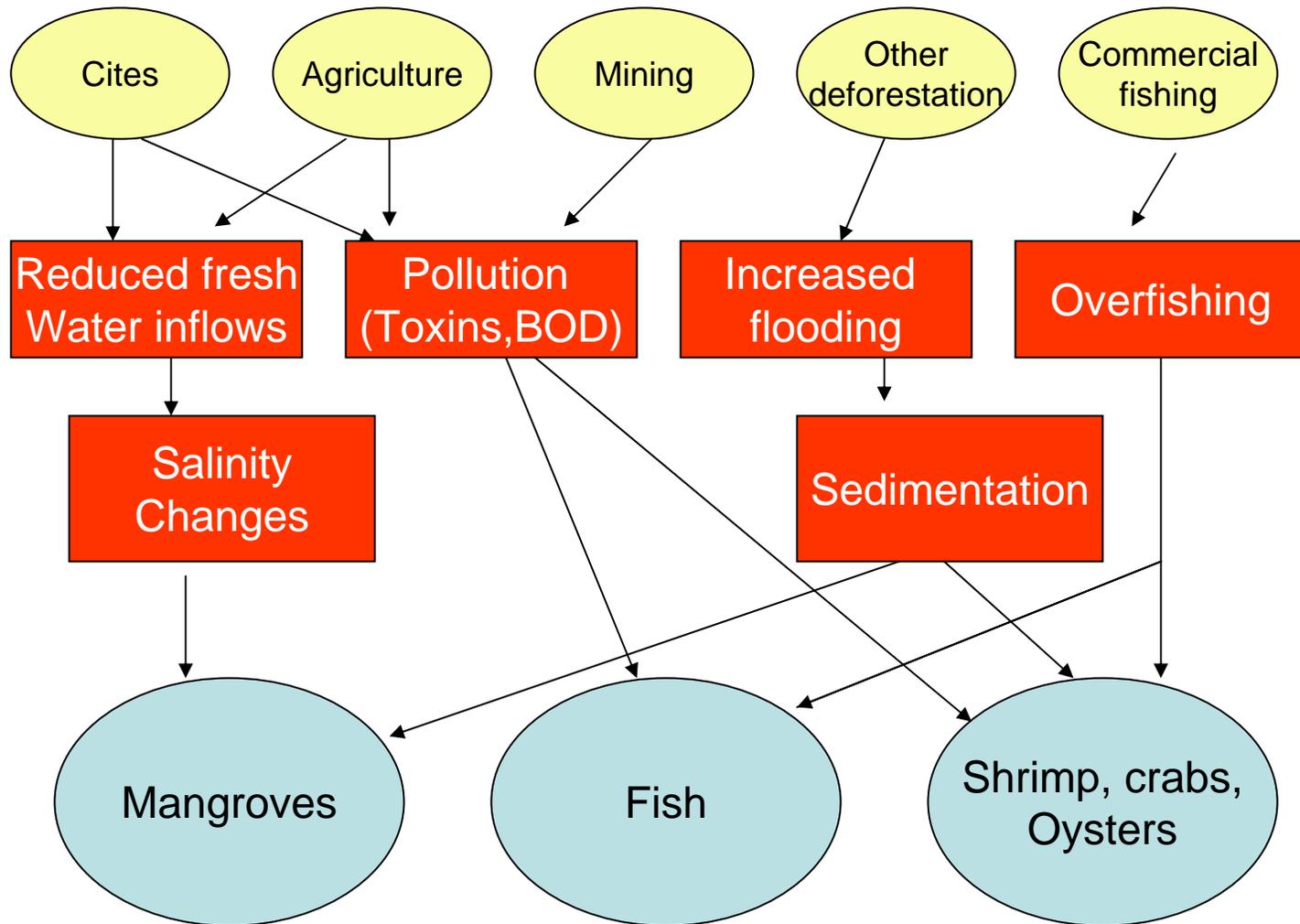
Perspective looking east of Samana Bay



Conclusions

- Fresh water flows (salinity, nutrients) mainly tied to Shrimp and estuarine fish production.
- Fresh water flows (sedimentation) probably do limit seagrass, macroalgae, oysters in the bay by affecting turbidity, depth and substrate factors (more flow = less SAV).
- Linkages strongly influenced by longer-term underlying geological process taking place in the bay.
- Water levels in lower flood plain may be an important factor for productivity of bay (research need)
- .Freshwater flows in excess for avail habitat??

SAMANA BAY MODEL OF STRESSORS (FROM SITE PROFILE)



SUGGESTED CHANGES BASED ON REA)

