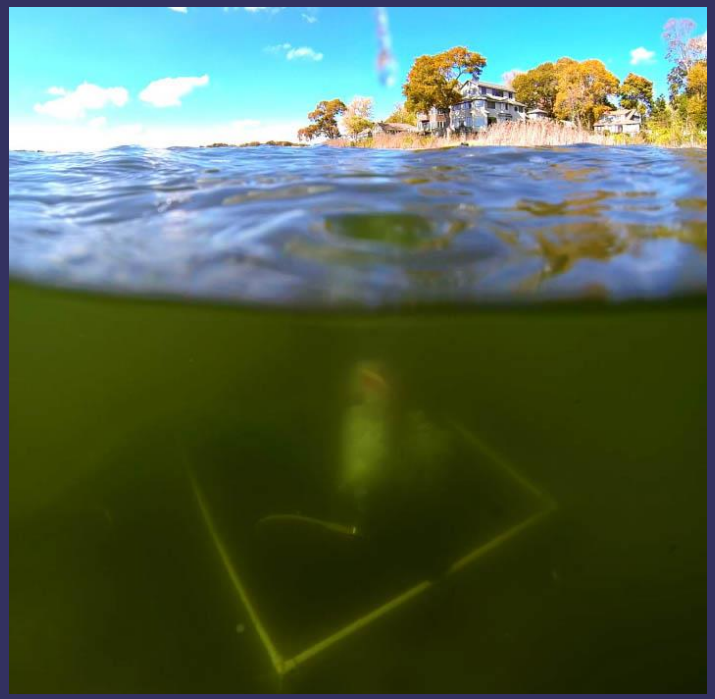
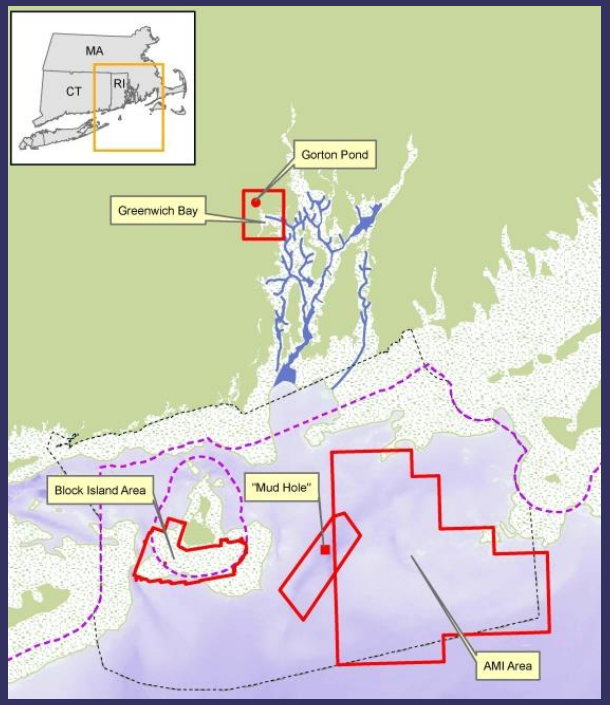
Submerged Paleocultural Landscapes Project

Doug Harris (NITHPO), John King (URI-GSO), and David Robinson (URI-GSO)





GSO

BOEM Bureau of Ocean Energy Management

CRMC Coastal Resources Management Council

NITHPO
Narragansett Indian Tribal Historic Preservation Office

What Evidence Do We Have for Submerged Paleocultural Landscapes?

Narragansett Indian Tribal Oral History

Informs us that more than 15,000 years ago, the ancient villages of the ancestral Narragansett were out where the ocean is now, and that overnight the ocean's waters began to rise and their people had to evacuate their ancient homes.

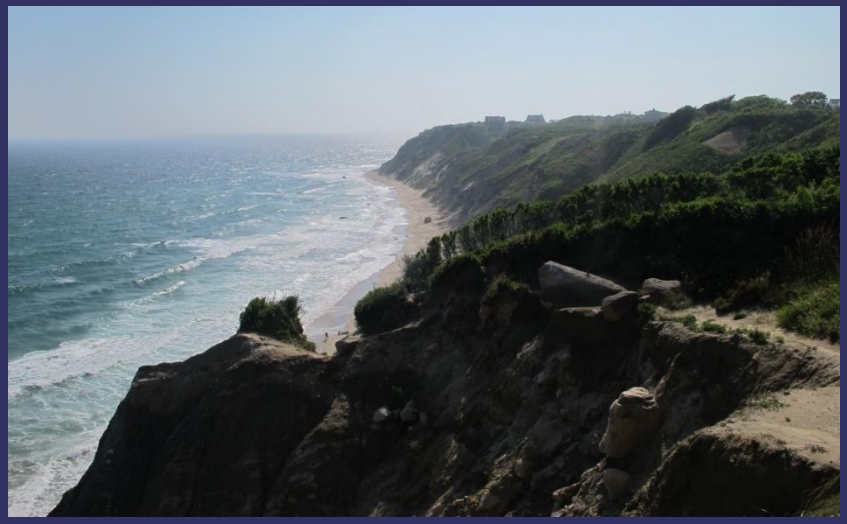
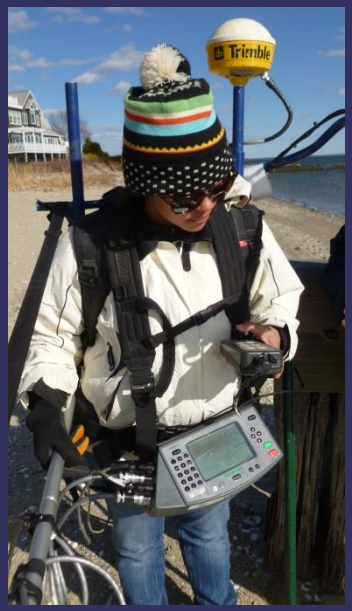
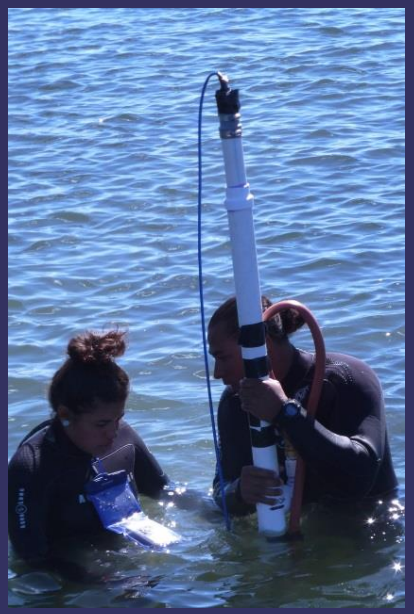


Image courtesy of Deepwater Wind

BOEM/URI-GSO/NITHPO Research Partnership

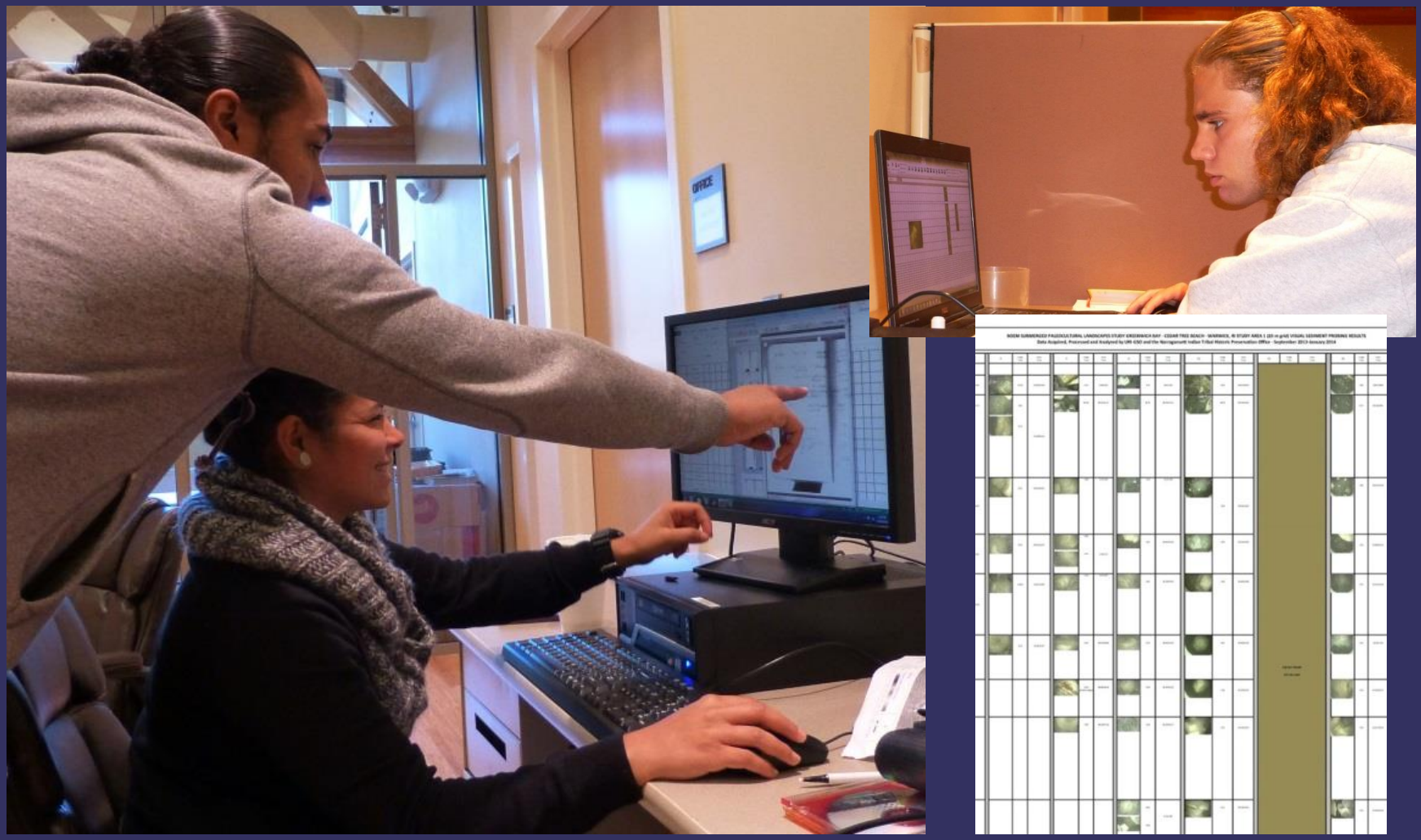






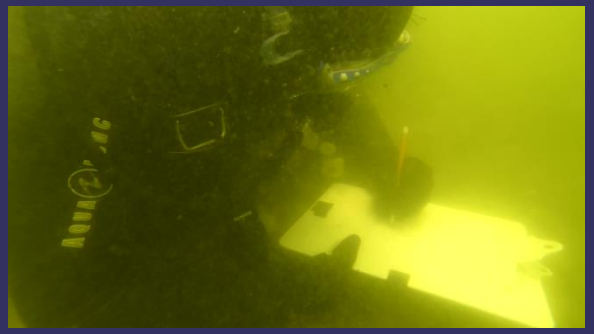

NITHPO in the Field (Y1): Remote Sensing Surveys & Scientific Diver Training

BOEM/URI-GSO/NITHPO Research Partnership



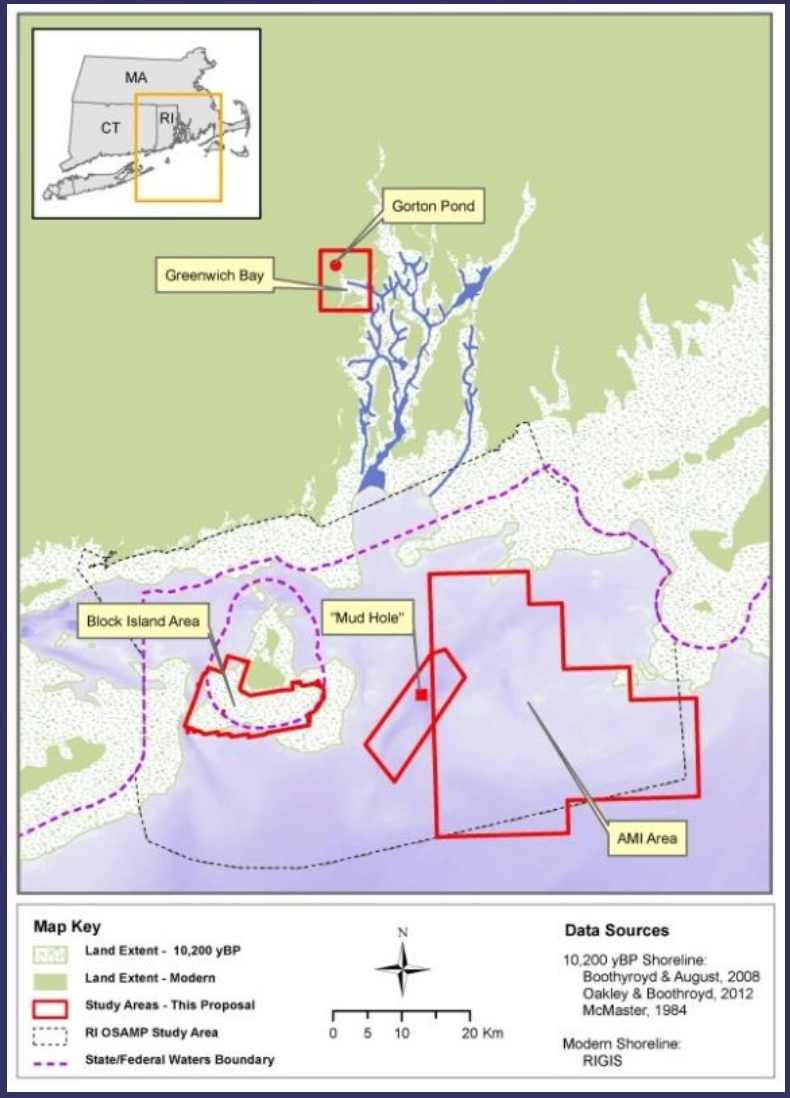
NITHPO in the NIT Long House Computer Lab (Y1): Remote Sensing Data Analysis

BOEM/URI-GSO/NITHPO Research Partnership



NITHPO in the Field (Y2): Focused Underwater Excavation

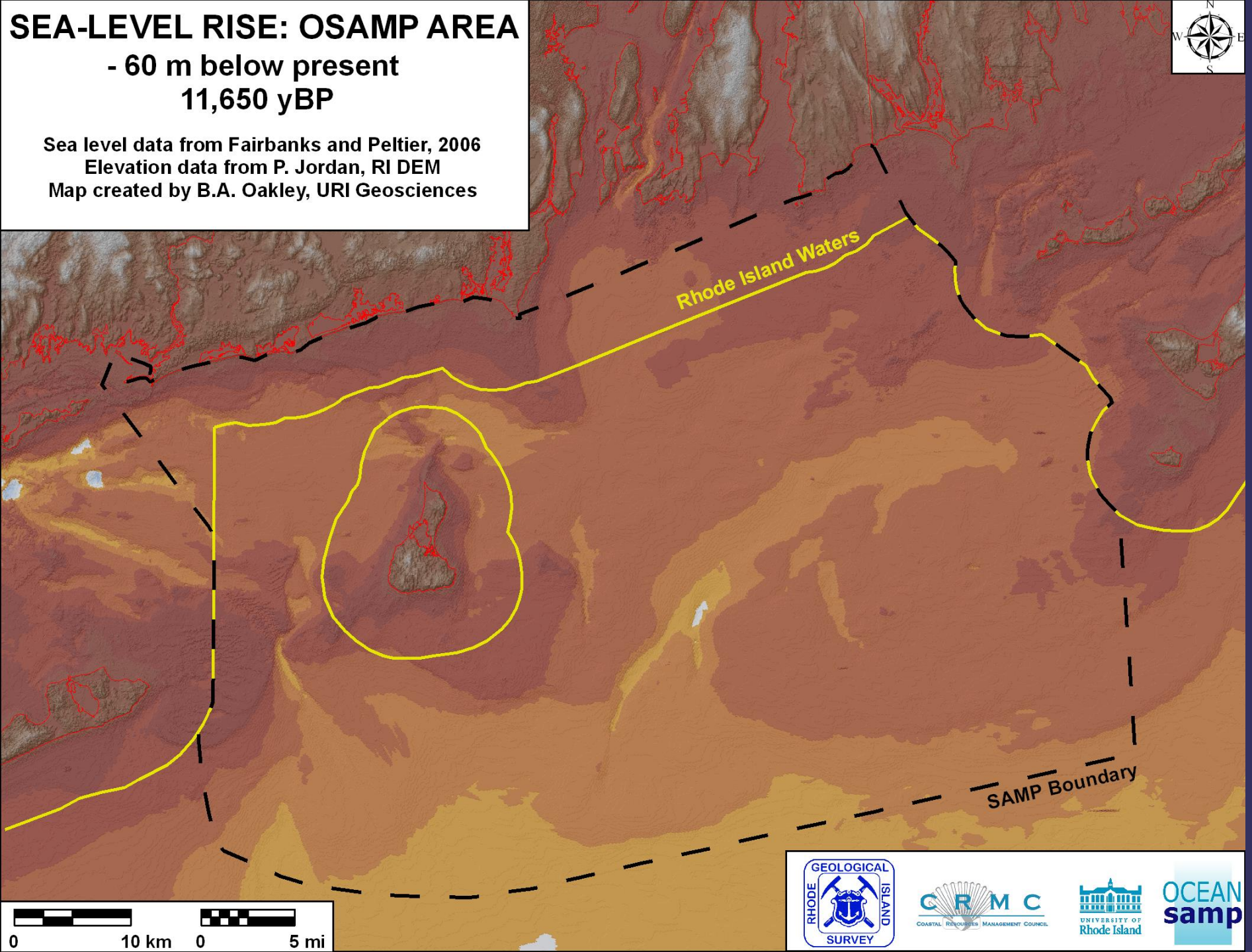
Project Study Areas



SEA-LEVEL RISE: OSAMP AREA

- 60 m below present
11,650 yBP

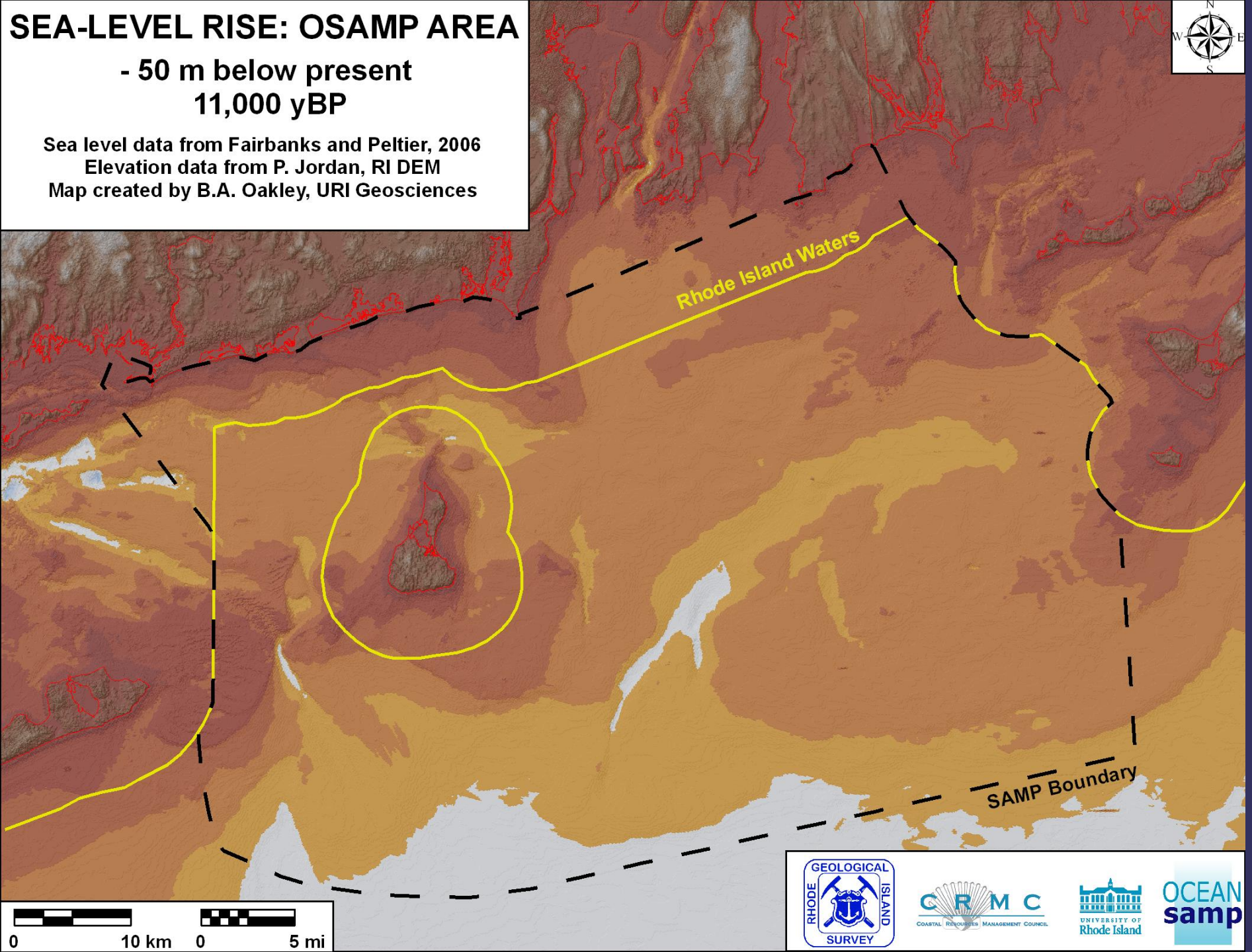
Sea level data from Fairbanks and Peltier, 2006
Elevation data from P. Jordan, RI DEM
Map created by B.A. Oakley, URI Geosciences



SEA-LEVEL RISE: OSAMP AREA

- 50 m below present
11,000 yBP

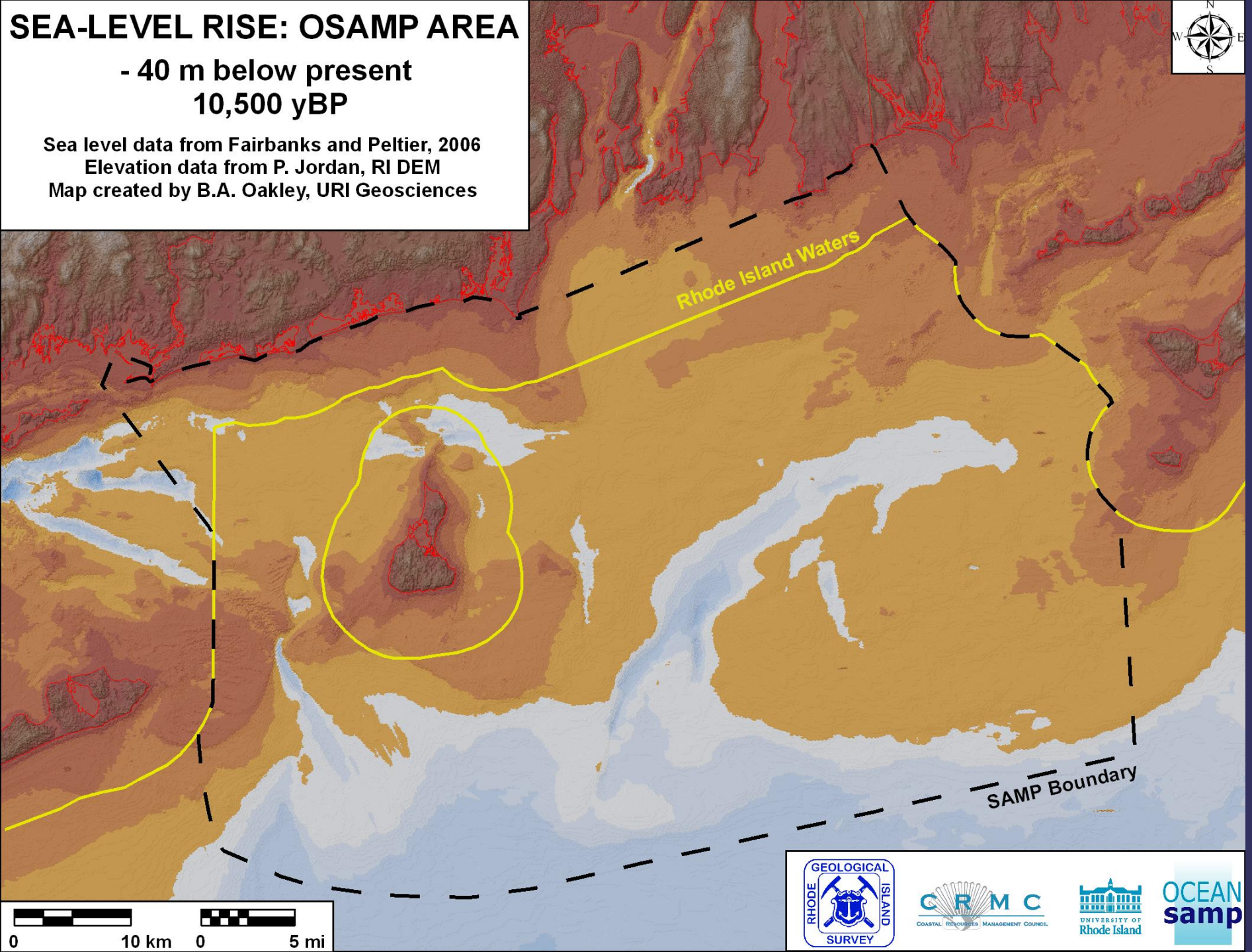
Sea level data from Fairbanks and Peltier, 2006
Elevation data from P. Jordan, RI DEM
Map created by B.A. Oakley, URI Geosciences



SEA-LEVEL RISE: OSAMP AREA

- 40 m below present
10,500 yBP

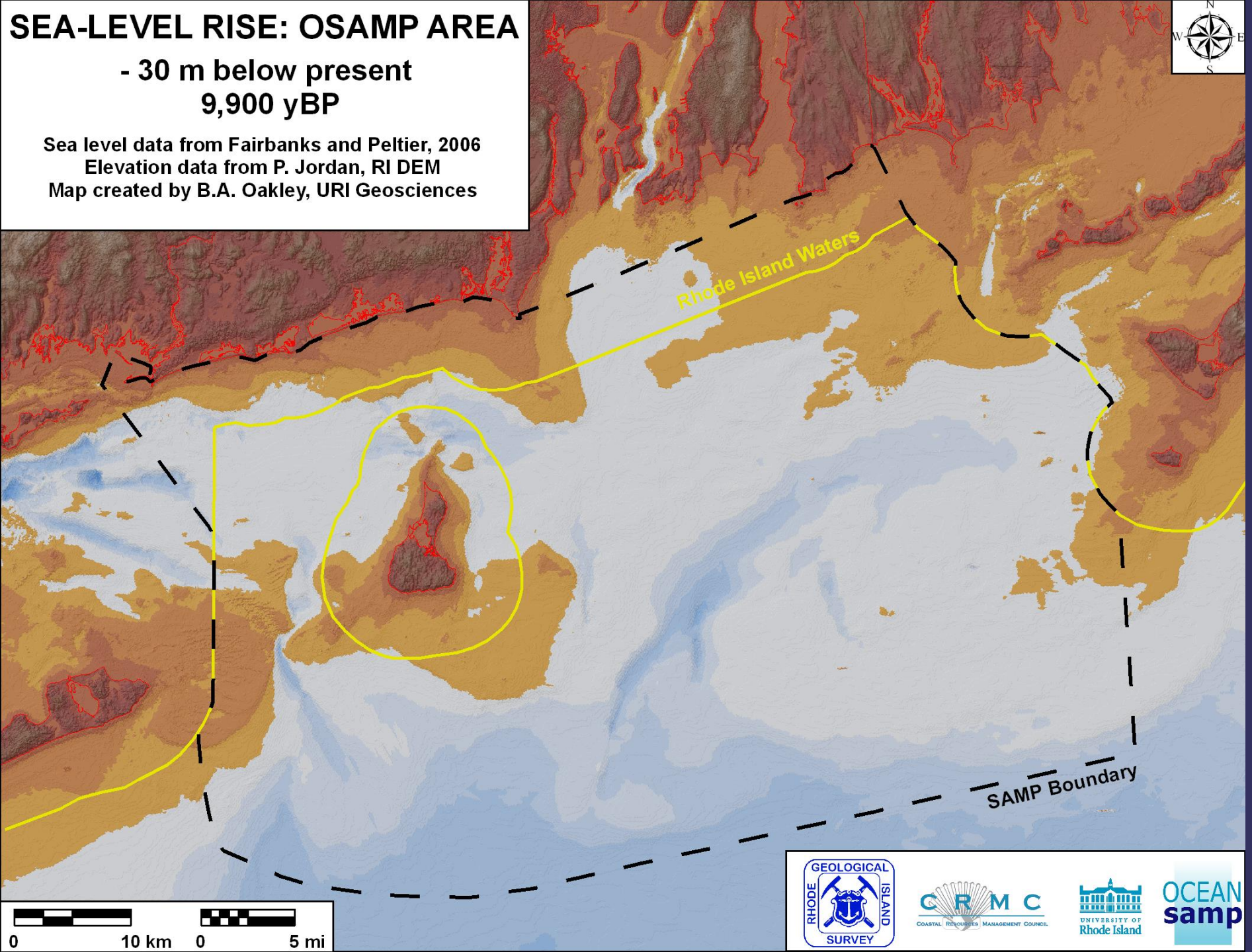
Sea level data from Fairbanks and Peltier, 2006
Elevation data from P. Jordan, RI DEM
Map created by B.A. Oakley, URI Geosciences



SEA-LEVEL RISE: OSAMP AREA

- 30 m below present
9,900 yBP

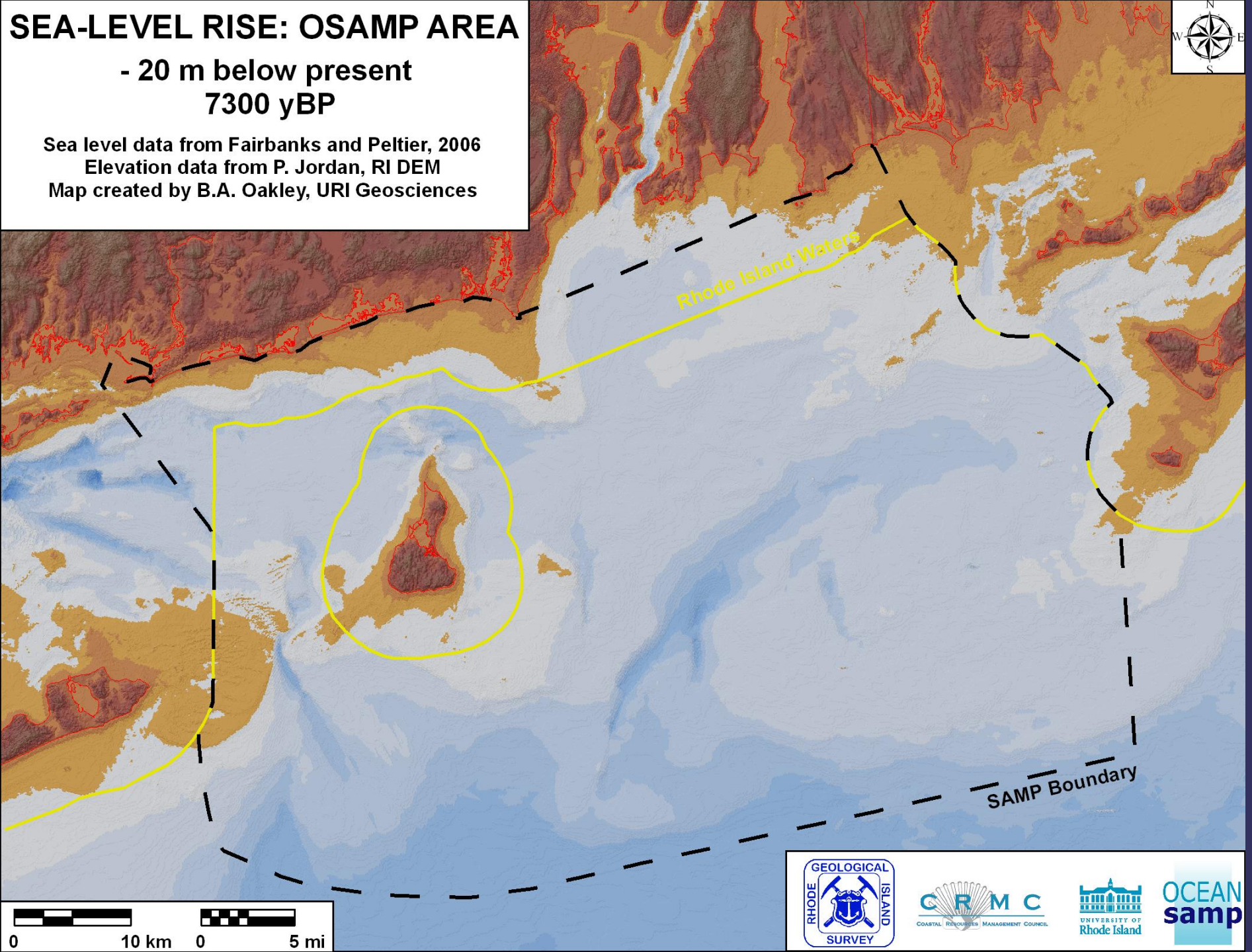
Sea level data from Fairbanks and Peltier, 2006
Elevation data from P. Jordan, RI DEM
Map created by B.A. Oakley, URI Geosciences



SEA-LEVEL RISE: OSAMP AREA

- 20 m below present
7300 yBP

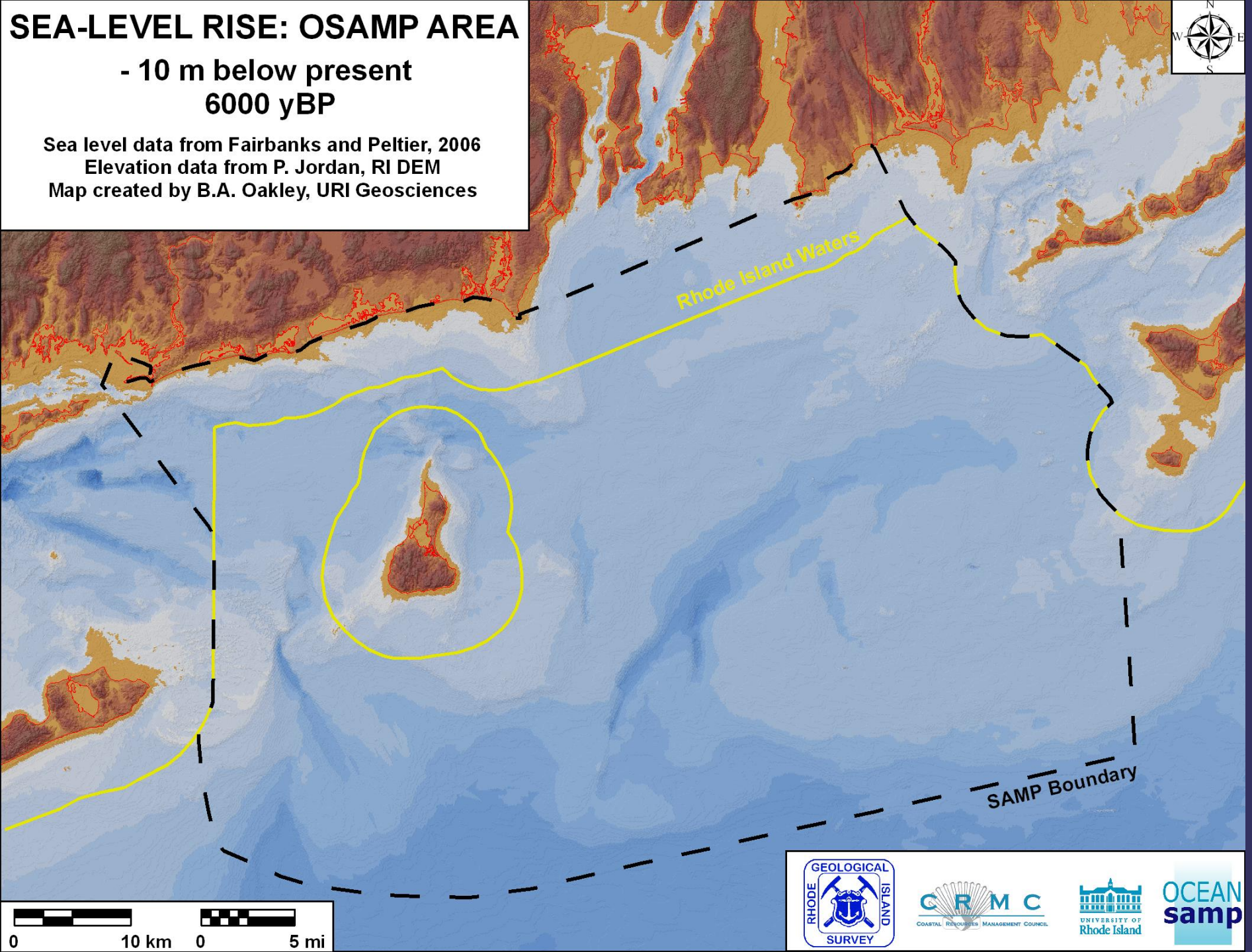
Sea level data from Fairbanks and Peltier, 2006
Elevation data from P. Jordan, RI DEM
Map created by B.A. Oakley, URI Geosciences



SEA-LEVEL RISE: OSAMP AREA

- 10 m below present
6000 yBP

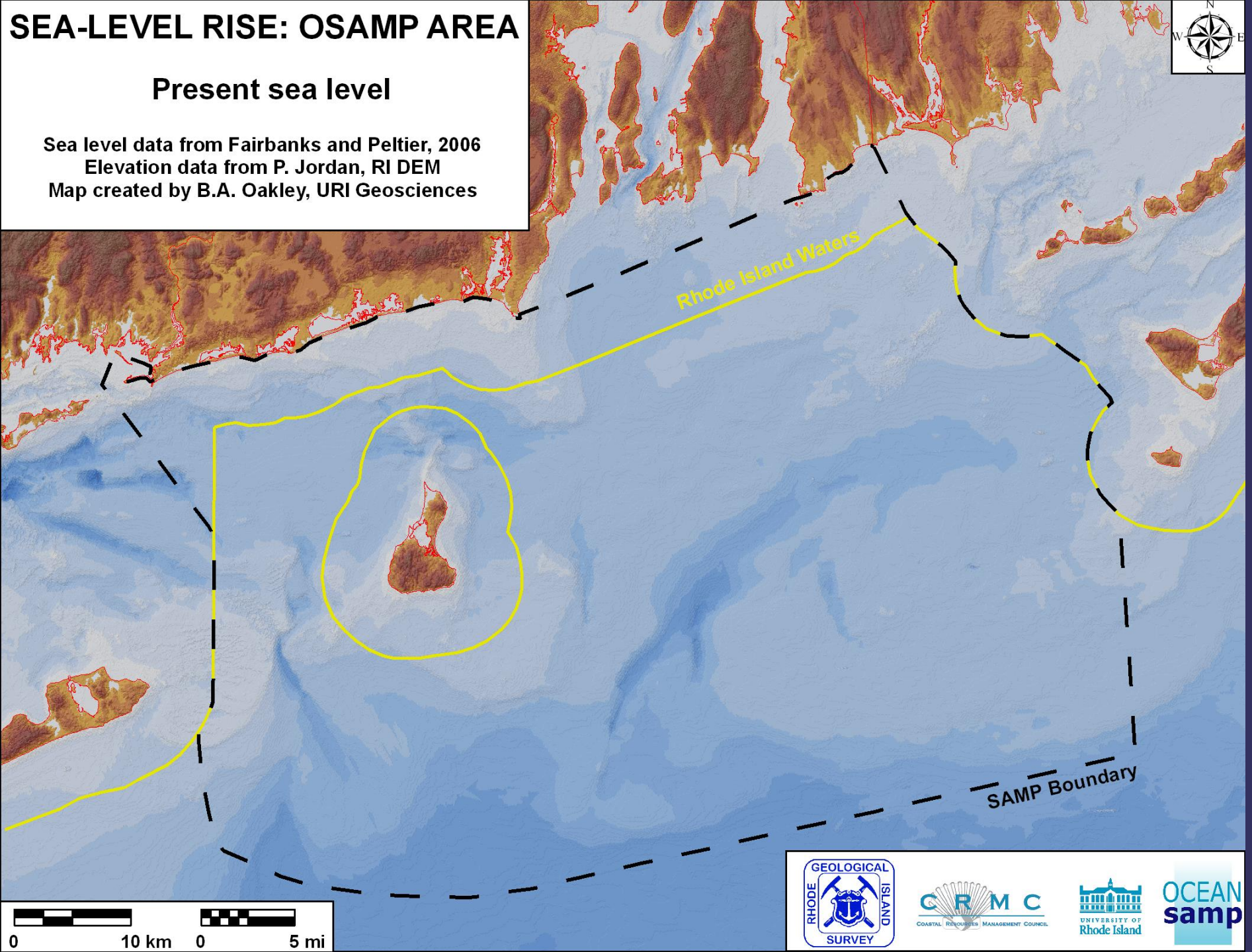
Sea level data from Fairbanks and Peltier, 2006
Elevation data from P. Jordan, RI DEM
Map created by B.A. Oakley, URI Geosciences



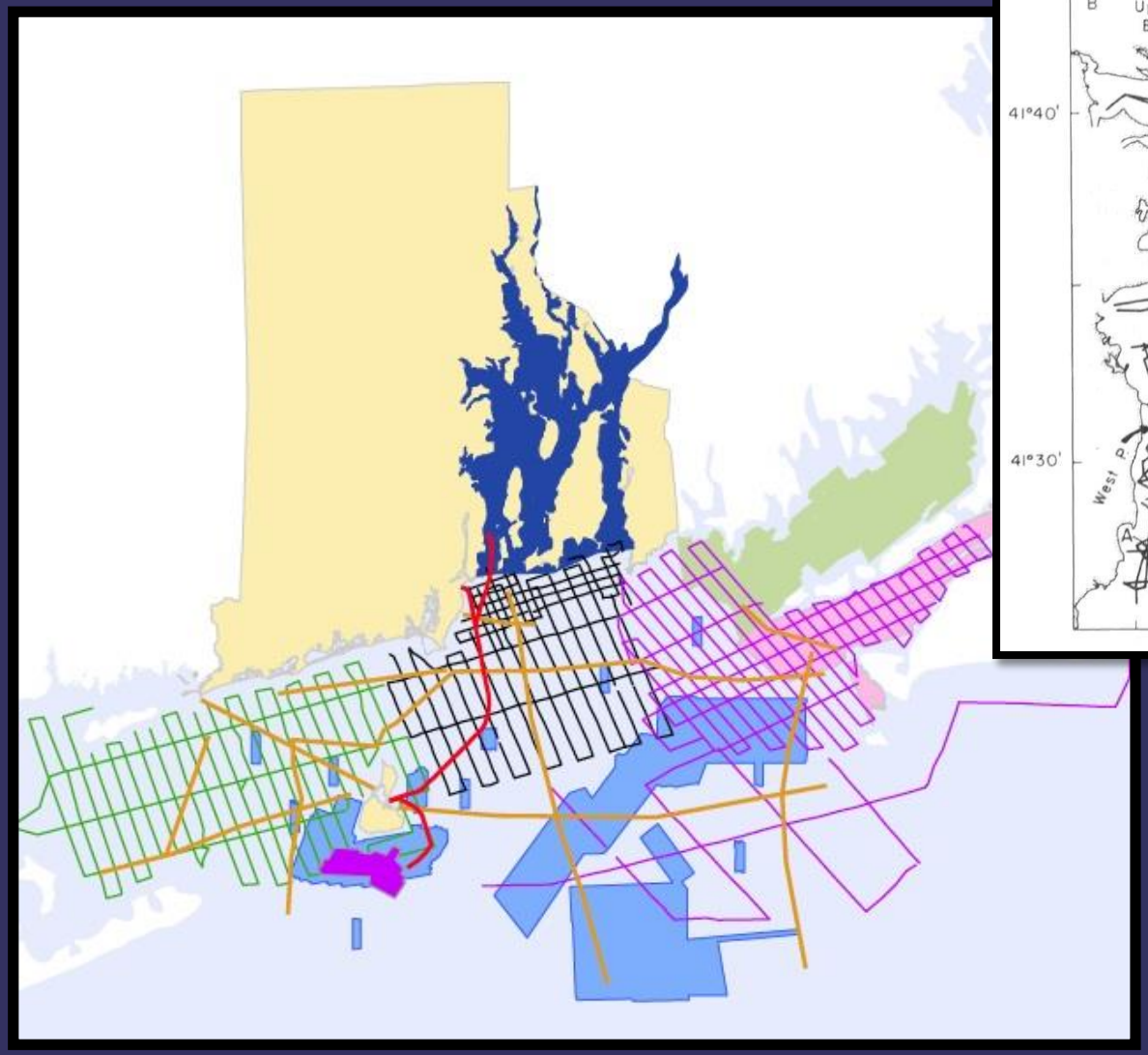
SEA-LEVEL RISE: OSAMP AREA

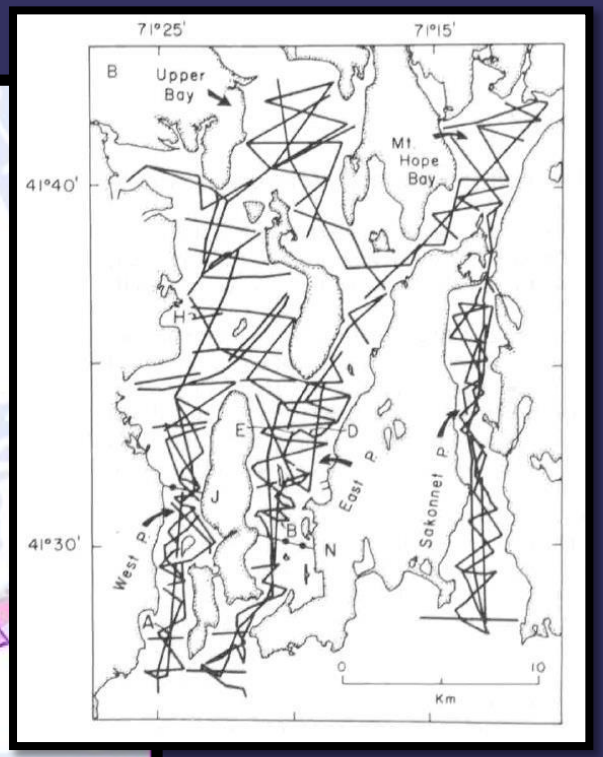
Present sea level

Sea level data from Fairbanks and Peltier, 2006
Elevation data from P. Jordan, RI DEM
Map created by B.A. Oakley, URI Geosciences

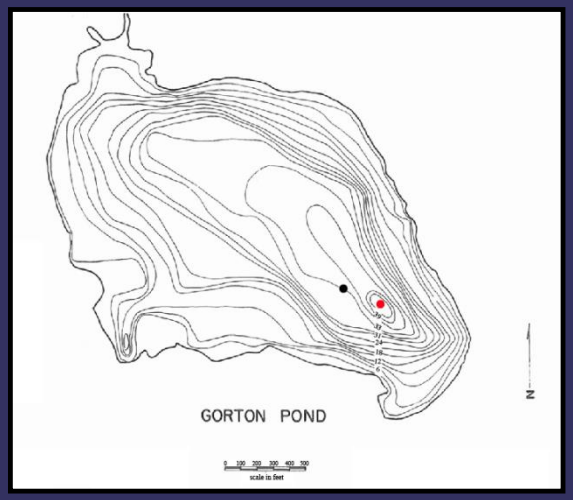


Identifying the Paleocultural Landscape





Gorton Pond: Paleo-Environmental Reconstruction



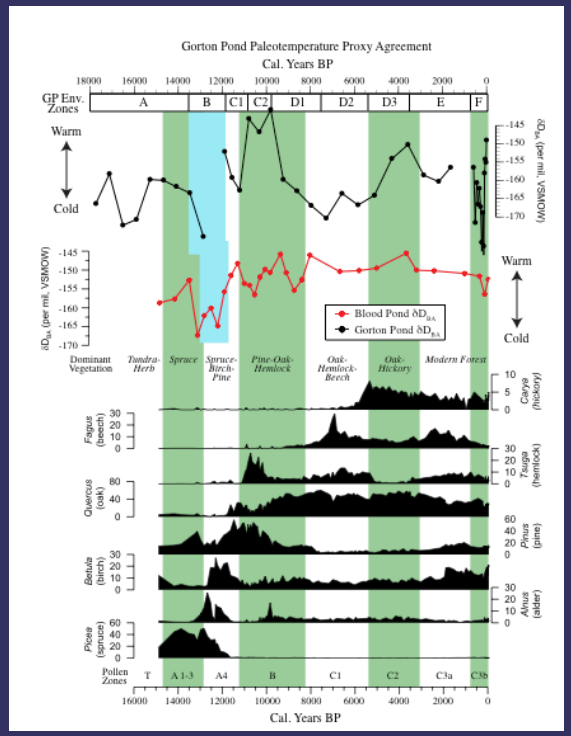
AMS Radiocarbon Dates

Leaf (3.35 mbs) = 7,160-6,940 cal BP

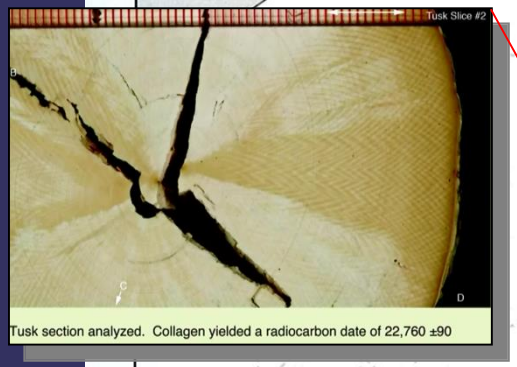
Twig (4.48 mbs) = 11,120-10,730 cal BP

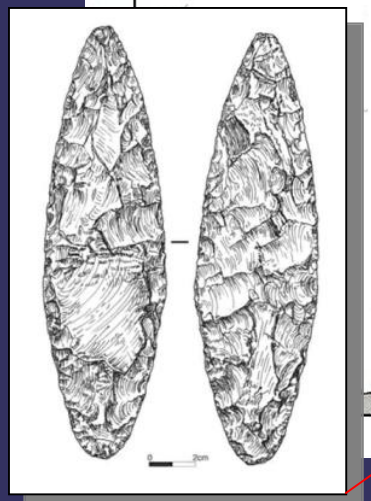
Spruce cone (5.07 mbs) = 12,380-12,350 cal BP

Core Bottom (6.5 mbs)



Prey - Species Locations on the Continental Shelf

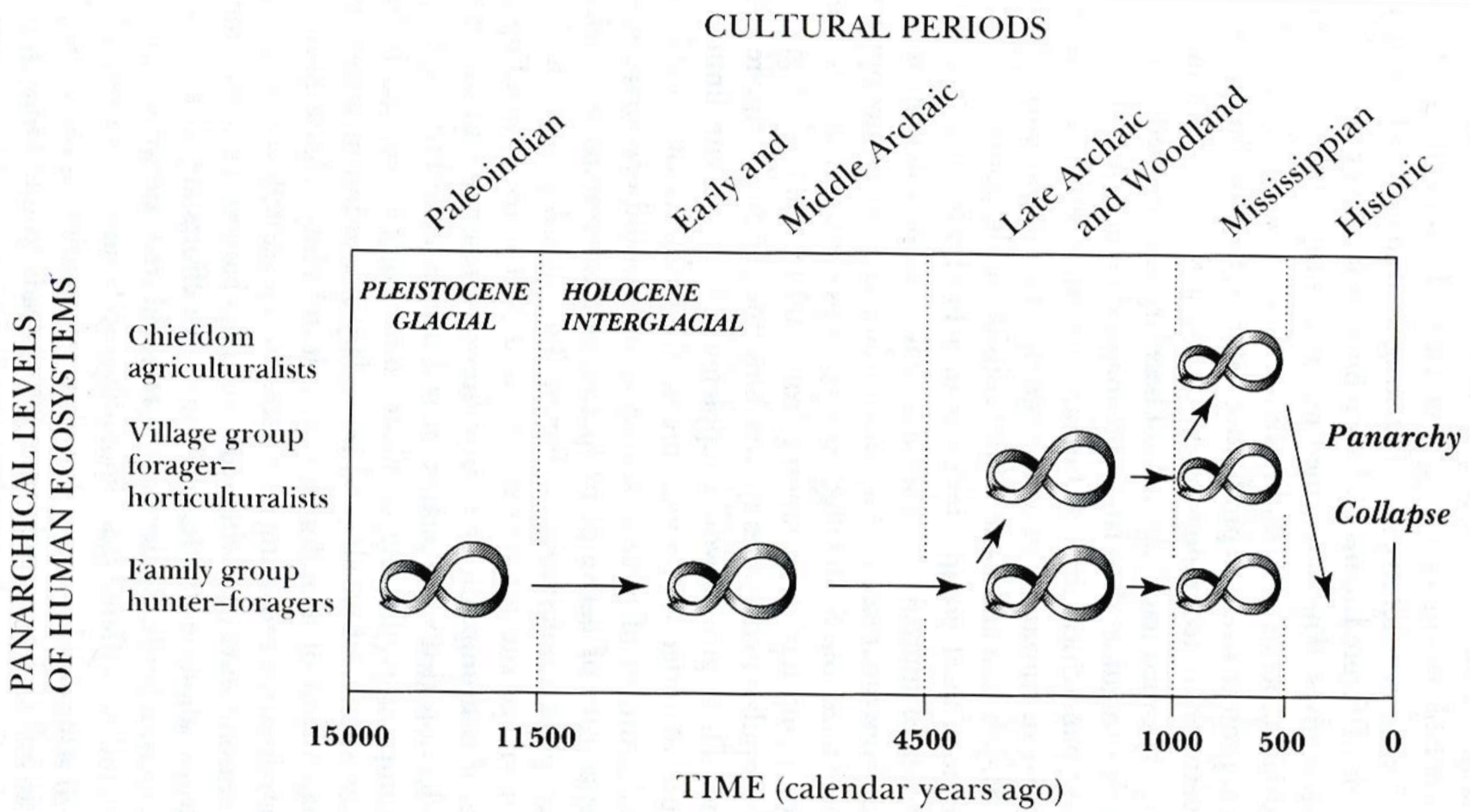




Boston
New York
Washington, DC
Miles Point
1
2 Cinmar Site
GEORGES BANK
0 100 200 km
LGM continental shelf land mass
Mastodon
Mammoth

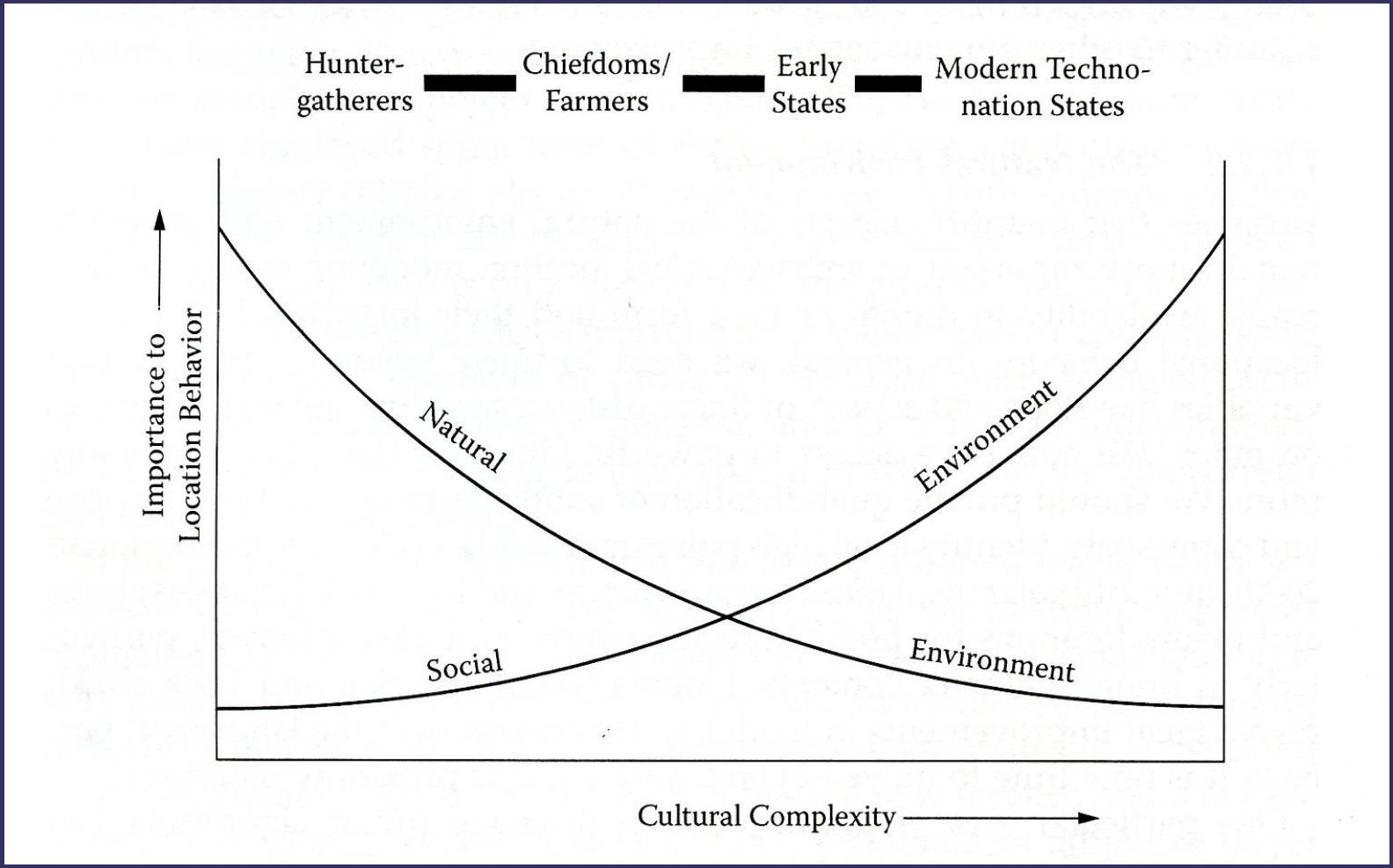
Image courtesy of Dennis Stanford

Cultural Periods



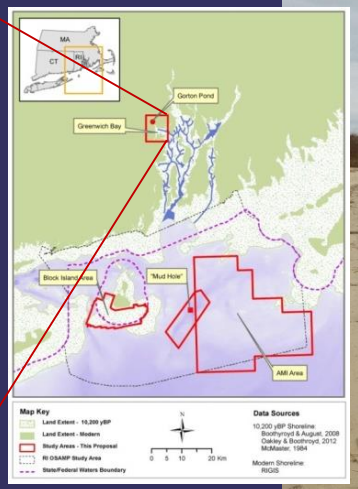
Delcourt & Delcourt, 2008

Modeling Locational Behavior

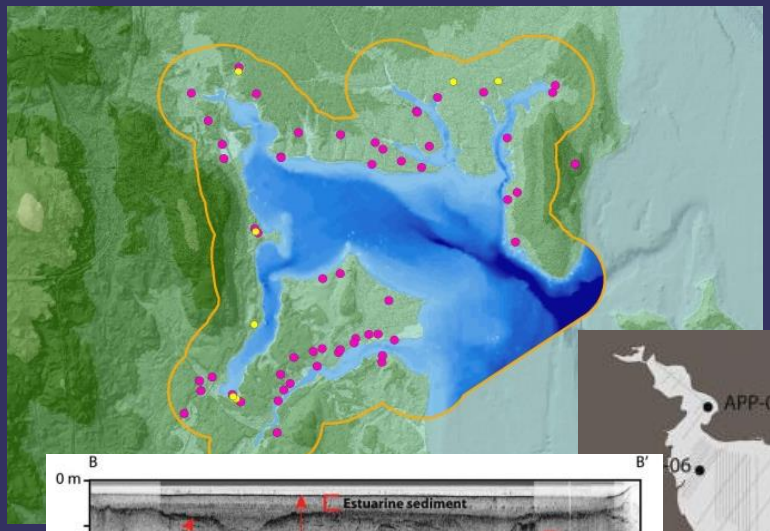


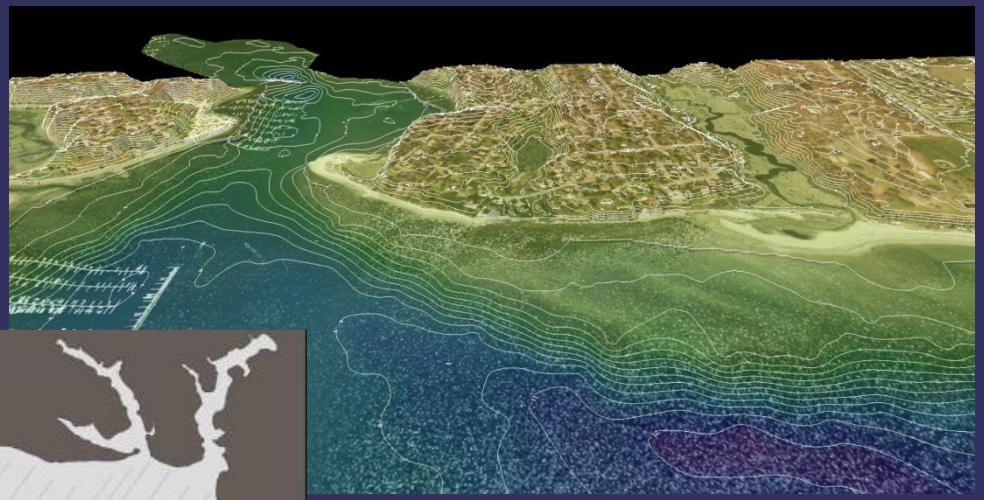
Kvamme, 2006

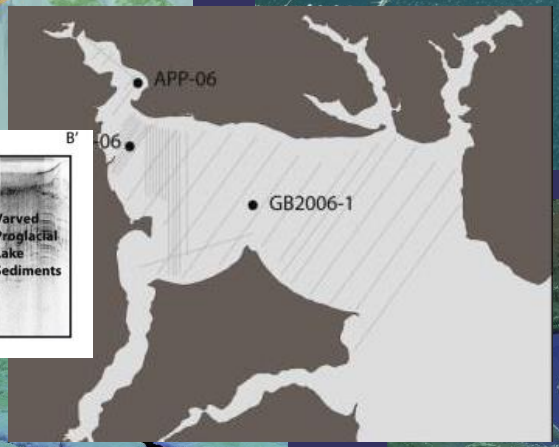
Greenwich Bay: 10,000+ Years of Human History

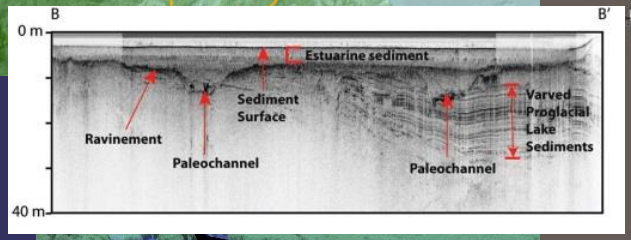


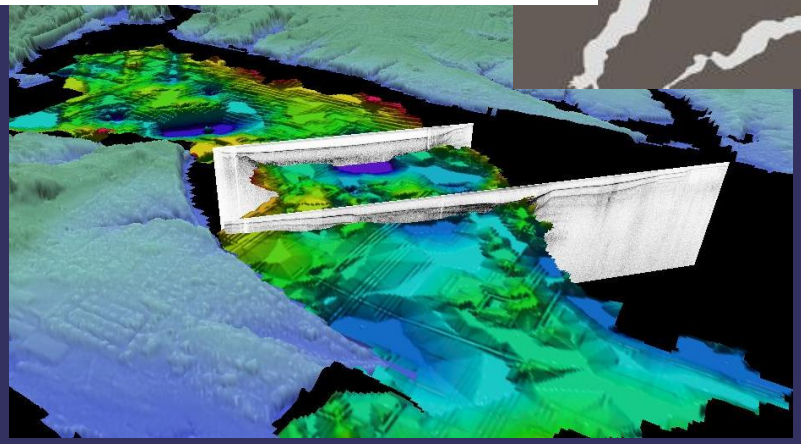
Greenwich Bay: Paleocultural Landscape

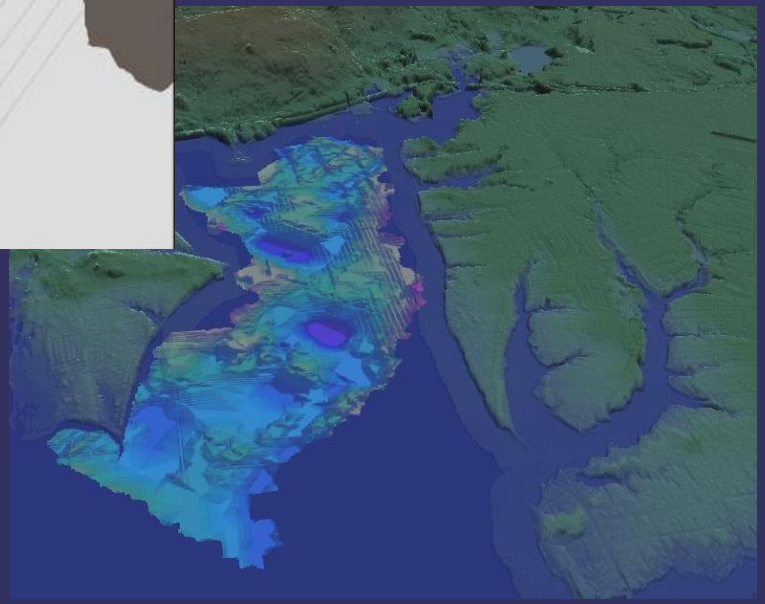






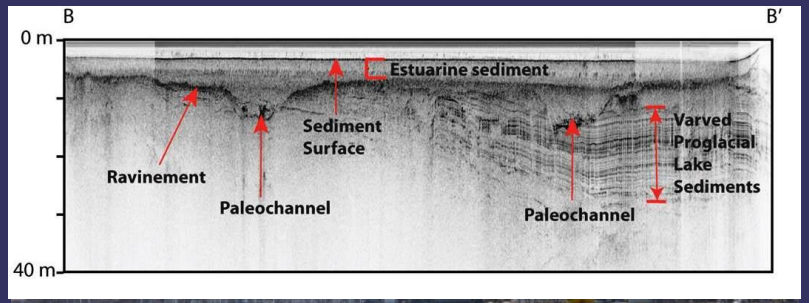


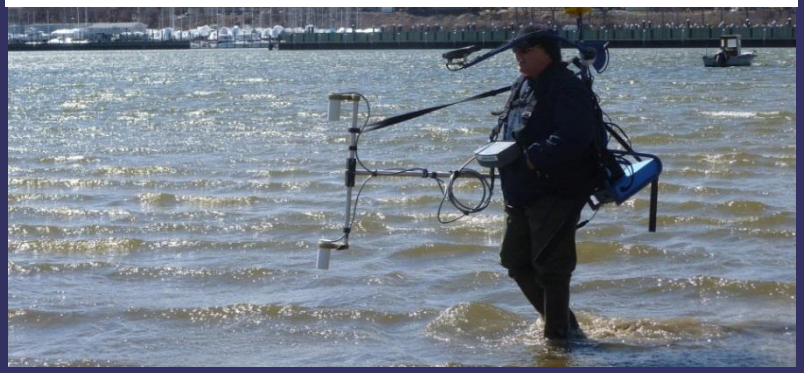


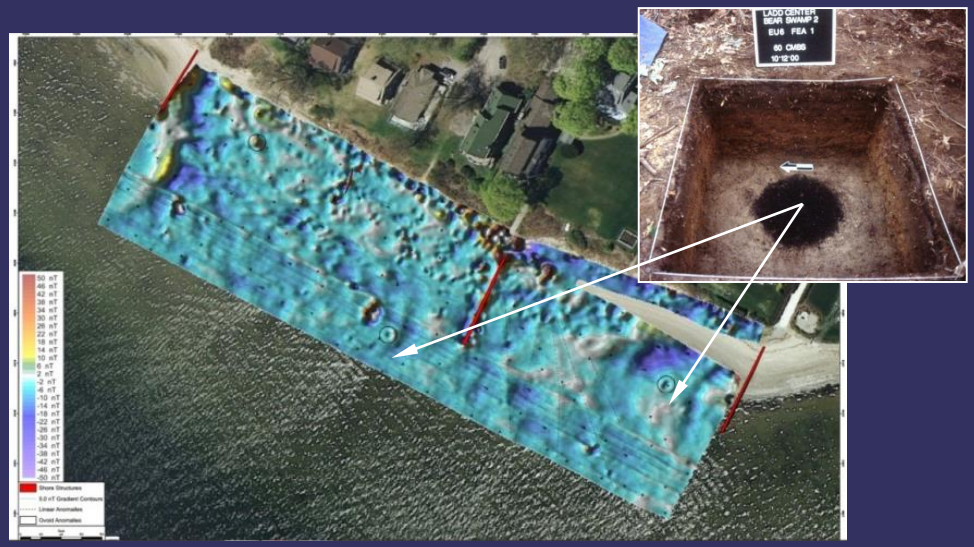


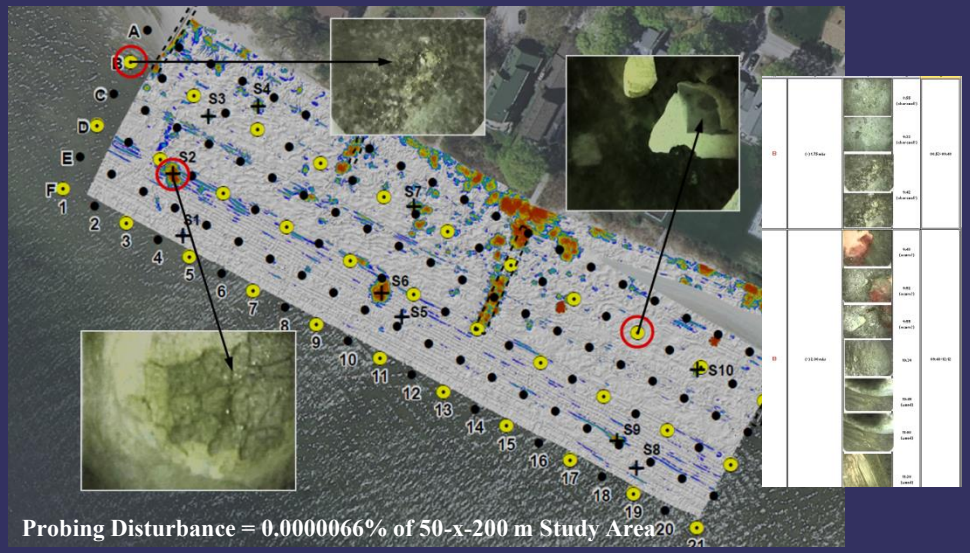
<u>Non-Disturbance</u> Remote Sensing (sub-bottom profiler) Survey & Interpretation

Greenwich Bay: Detailed Remote Sensing Surveys





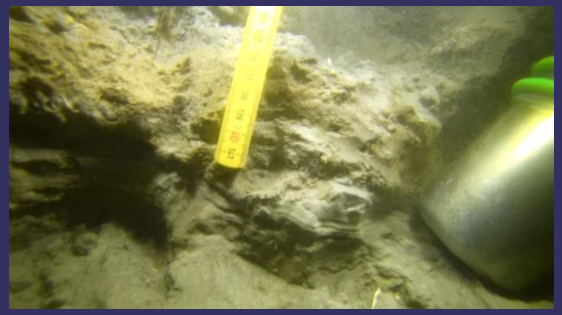


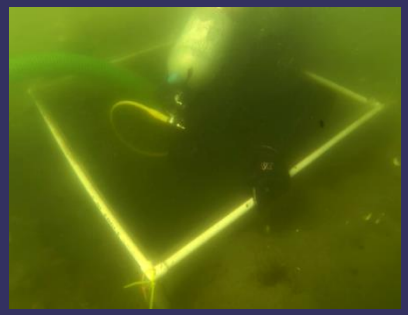


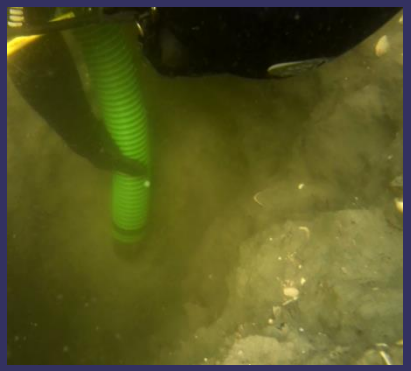
<u>Non-Disturbance/Minimal-Disturbance</u> Sub-Surface Survey & Interpretation

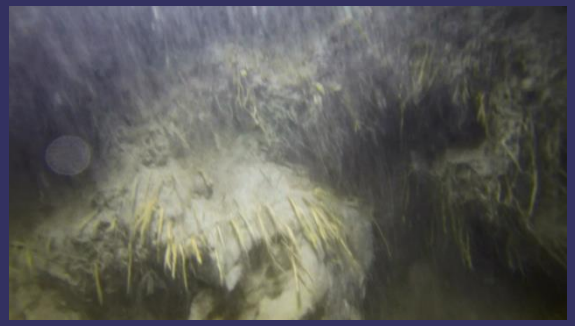
(magnetometer and visual sediment probe)

Greenwich Bay: Focused Sub-Surface Sampling









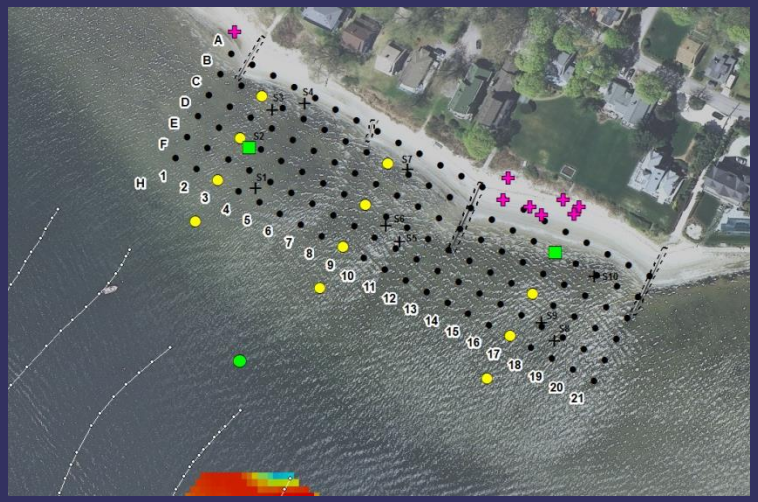
Intact Formerly Exposed Strata
(approx. 1.25-1.45 mbs)

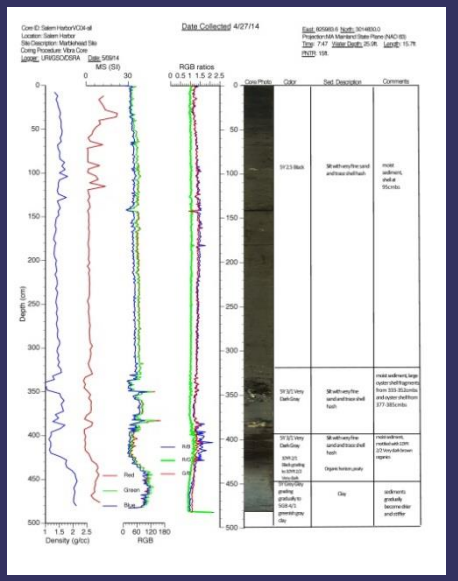
- quartz chipping debris
- charcoal, twigs, bark, seeds (acorn, grape, goosefoot, pond weed)
- vegetative mat (original growth position)

Focused Excavation Disturbance = 0.00066% of 50-x-200 m Study Area

Minimal-Disturbance Focused Sub-Surface Sampling and Investigation
(1-x-1 m dredge test unit excavation)

Greenwich Bay: Focused Sub-Surface Sampling





<u>Minimal-Disturbance</u> Focused Sub-Surface Sampling and Investigation
(vibracoring: approx. 20 samples; 3 m long-x-10 cm diameter)