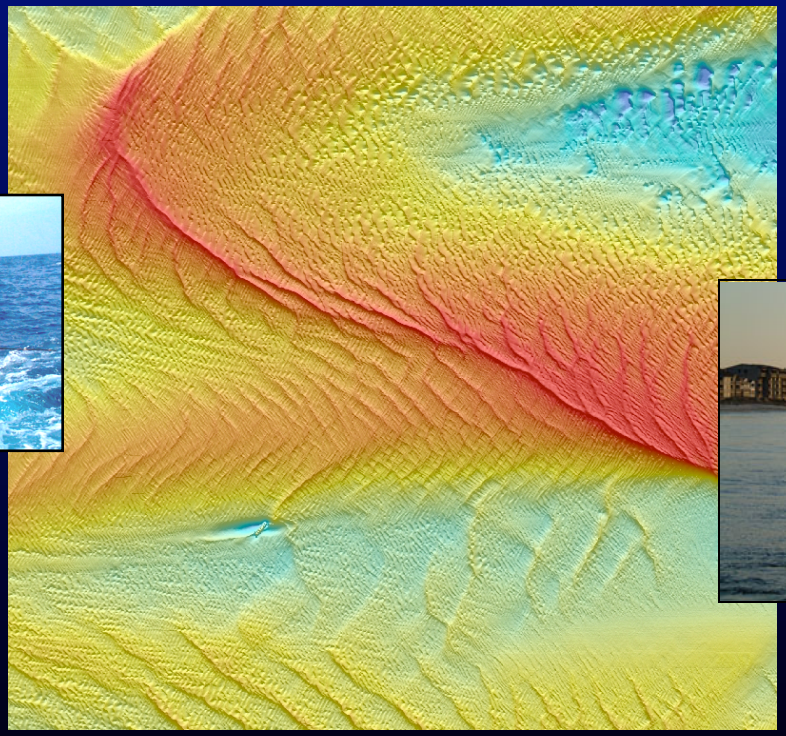
U.S. Geological Survey Woods Hole Field Center

Background, Data & Visualization



Matthew Arsenault
USGS
Woods Hole Science Center

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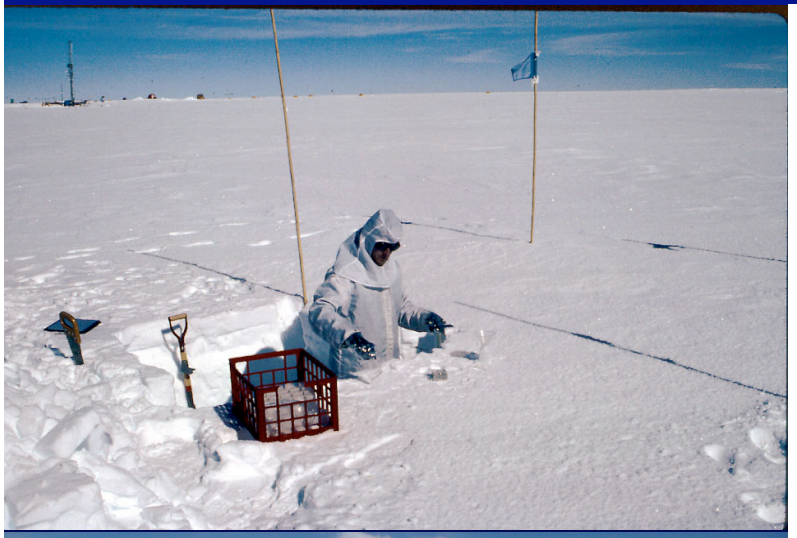

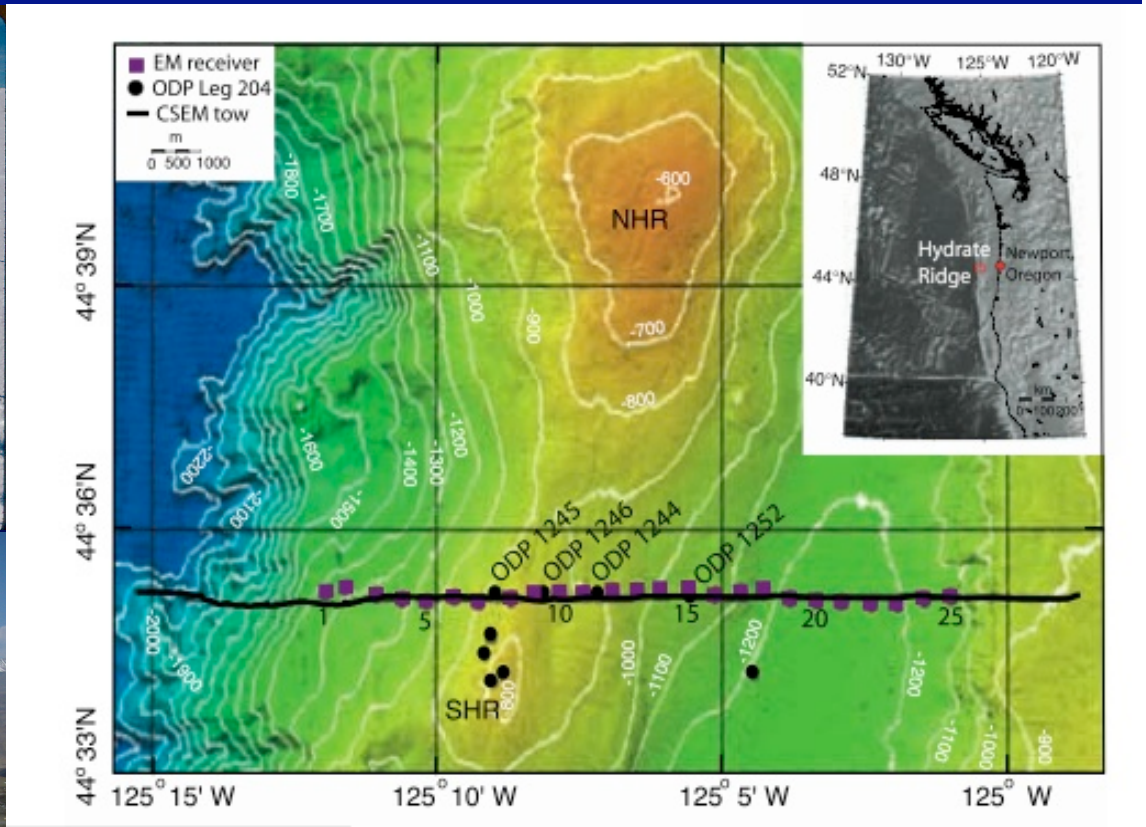

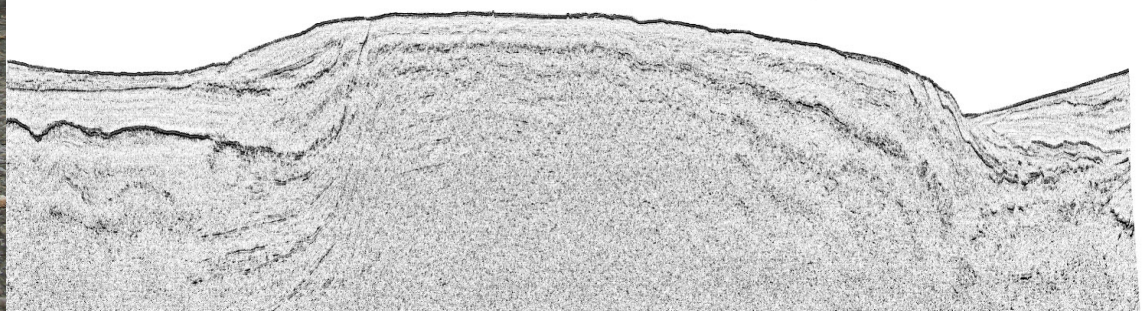

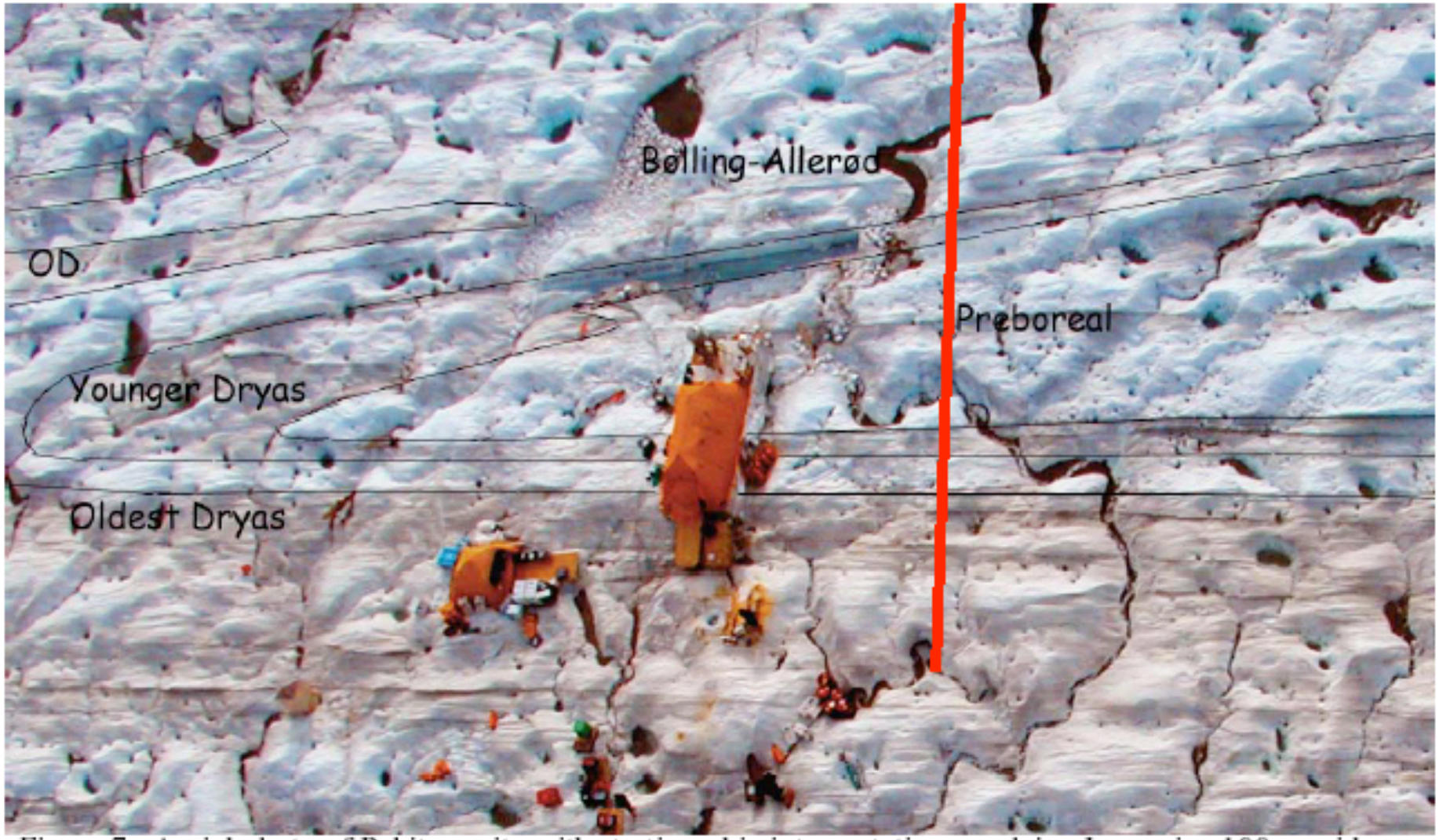

Figure 7. Aerial photo of Pakitsoq site with stratigraphic interpretation overlain. Image is ~100 m wide. East is up, and South is to the right. The orange object in the middle of the photo is the laboratory tent. The large-volume sampling trench is east of the tent. Color saturation has been enhanced digitally. Note the reddish color of the Oldest Dryas and Younger Dryas ice, and the bluish color of the Bølling-Allerød and Preboreal ice. The syncline outcrop pattern is clearly visible, plunging 20° to the right and making a "V". The bold red line shows the location of the profile in Figure 6.

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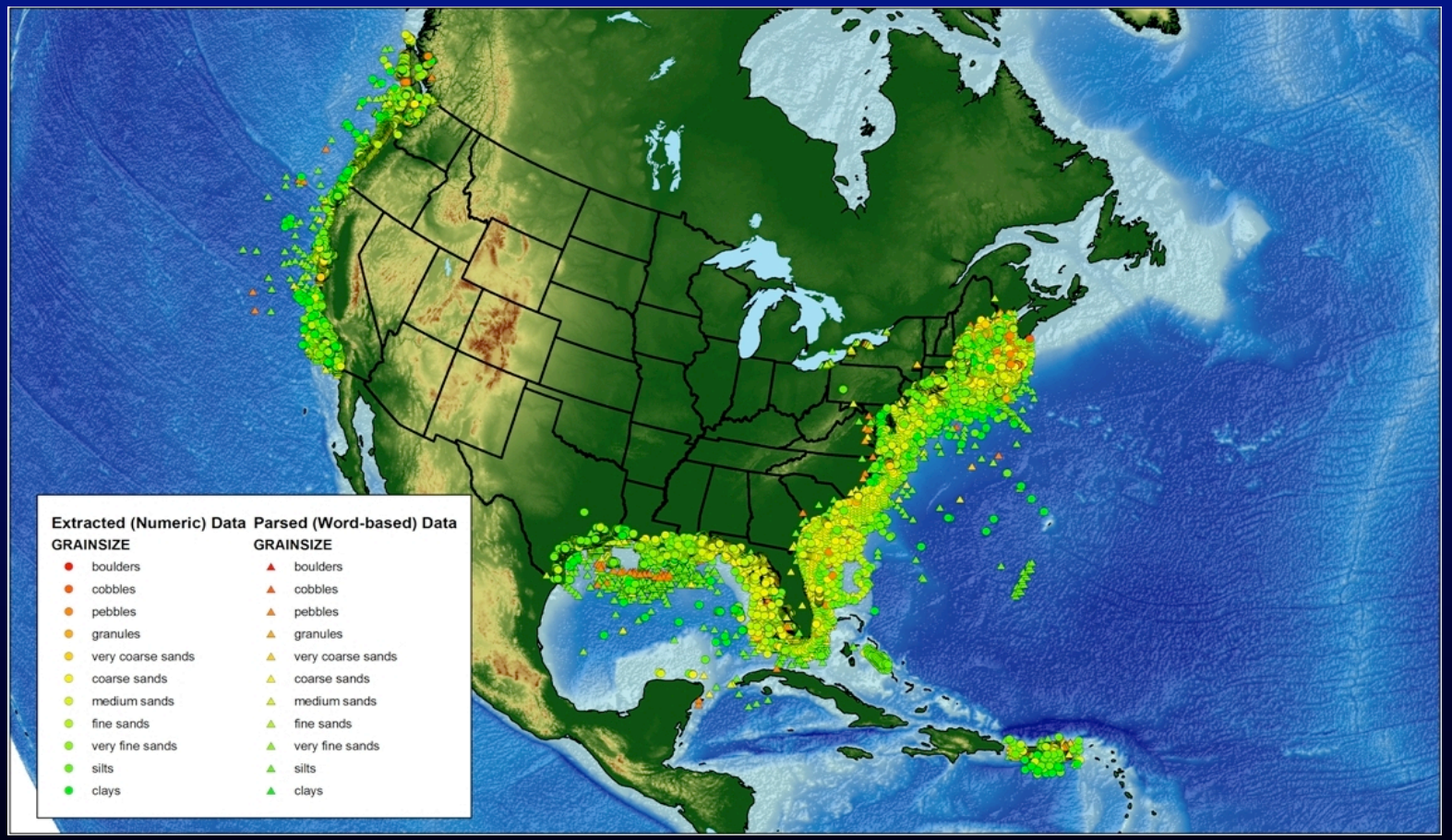
Coastal & Marine Geology Program (CMGP)

Publications: usSEABED Sediment Database



Current usSEABED data coverage (~340,000 data pts) and sediment mean grain size

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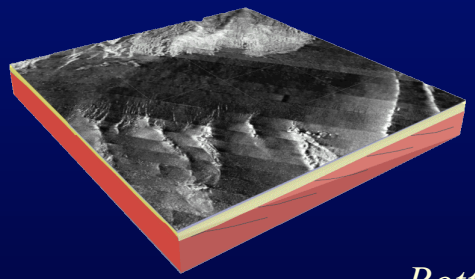
WHSC Sea Floor Mapping

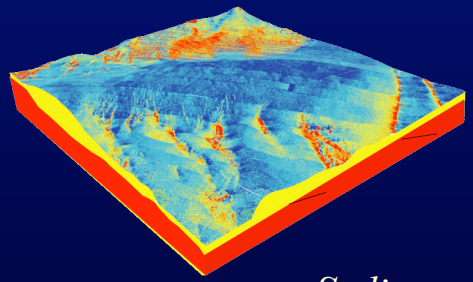
Geologic Mapping of the Sea Floor

Integration of surficial & sub-bottom geophysical data, sediment grab, core, video, and photographic data

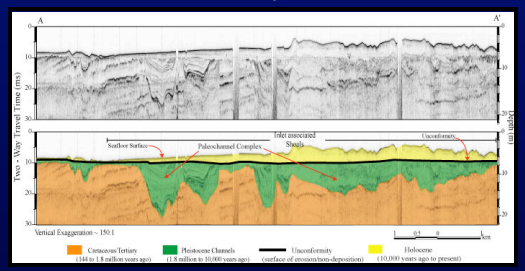
Sidescan Sonar



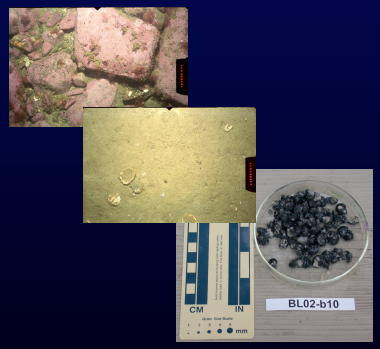
Swath Bathymetry



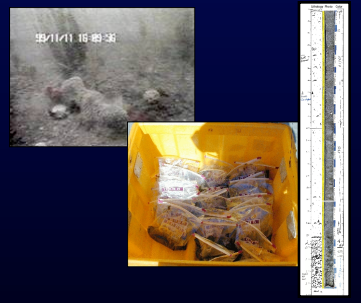
Seismic Reflection

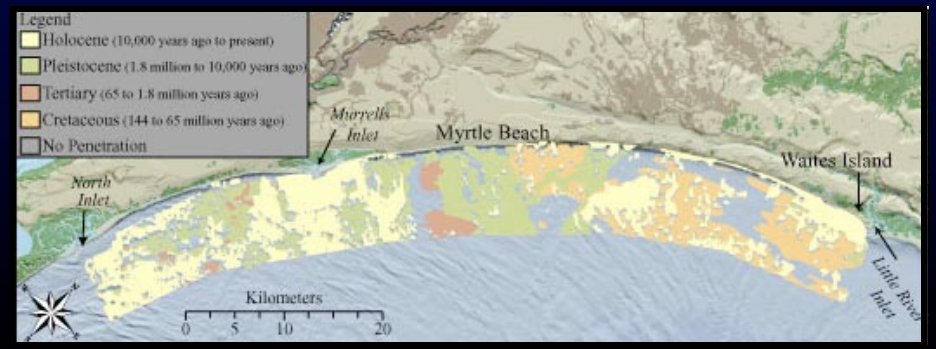


Bottom Video and Photographs Samples



Sediment Core and Grab Samples

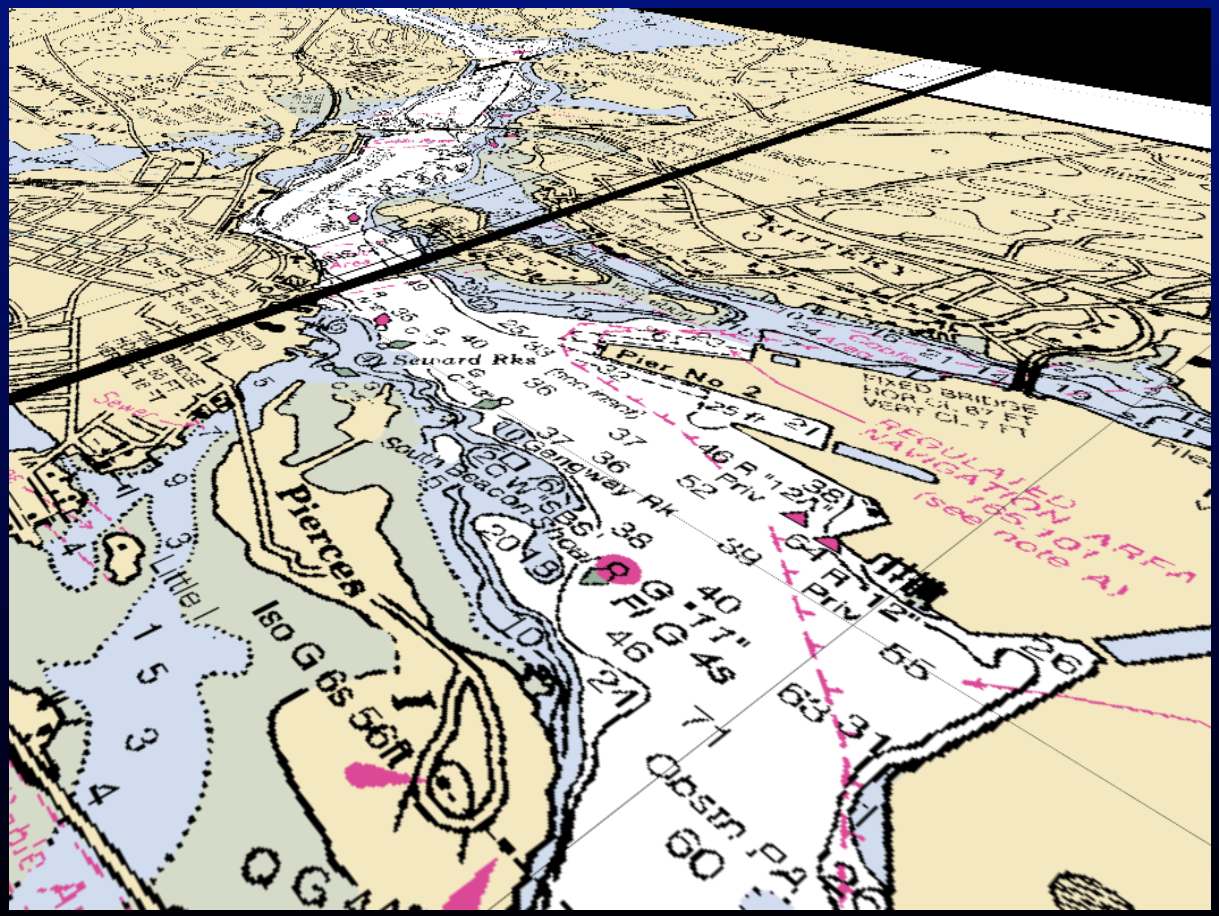




USGS Coastal & Marine Geology Program

Why Visualization?

- Just a few years ago…we were still here in "flat mapland"



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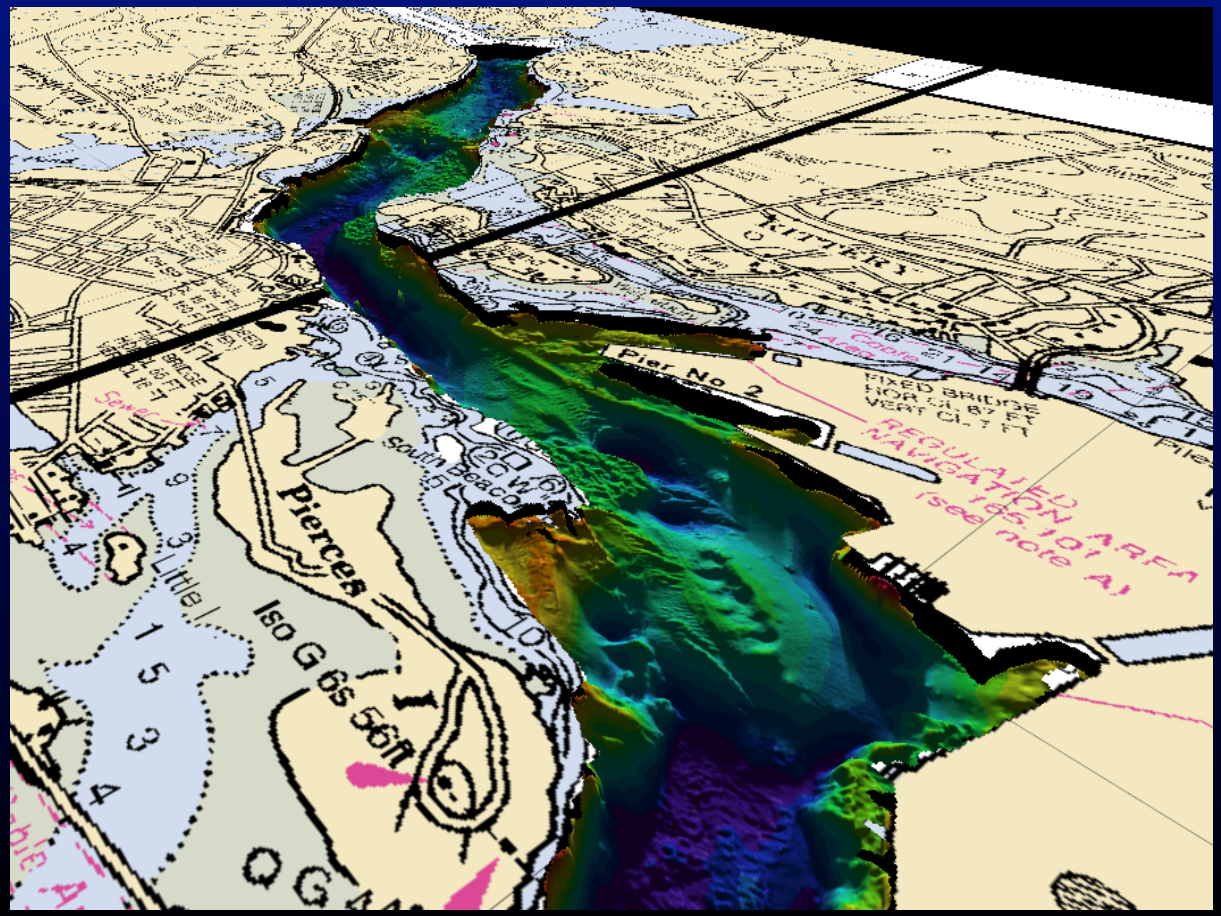
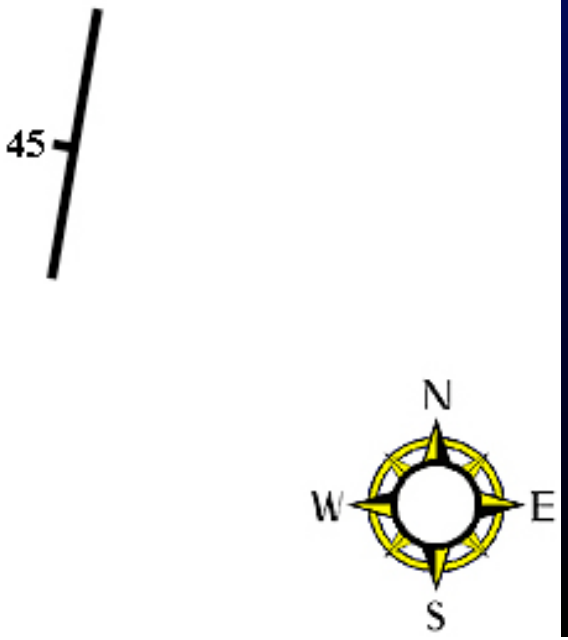


USGS Coastal & Marine Geology Program

Why Visualization?

Cognitive learning studies show that geologists & earth scientists self-select to be able to understand the relationship between 2D maps and the 3D world.



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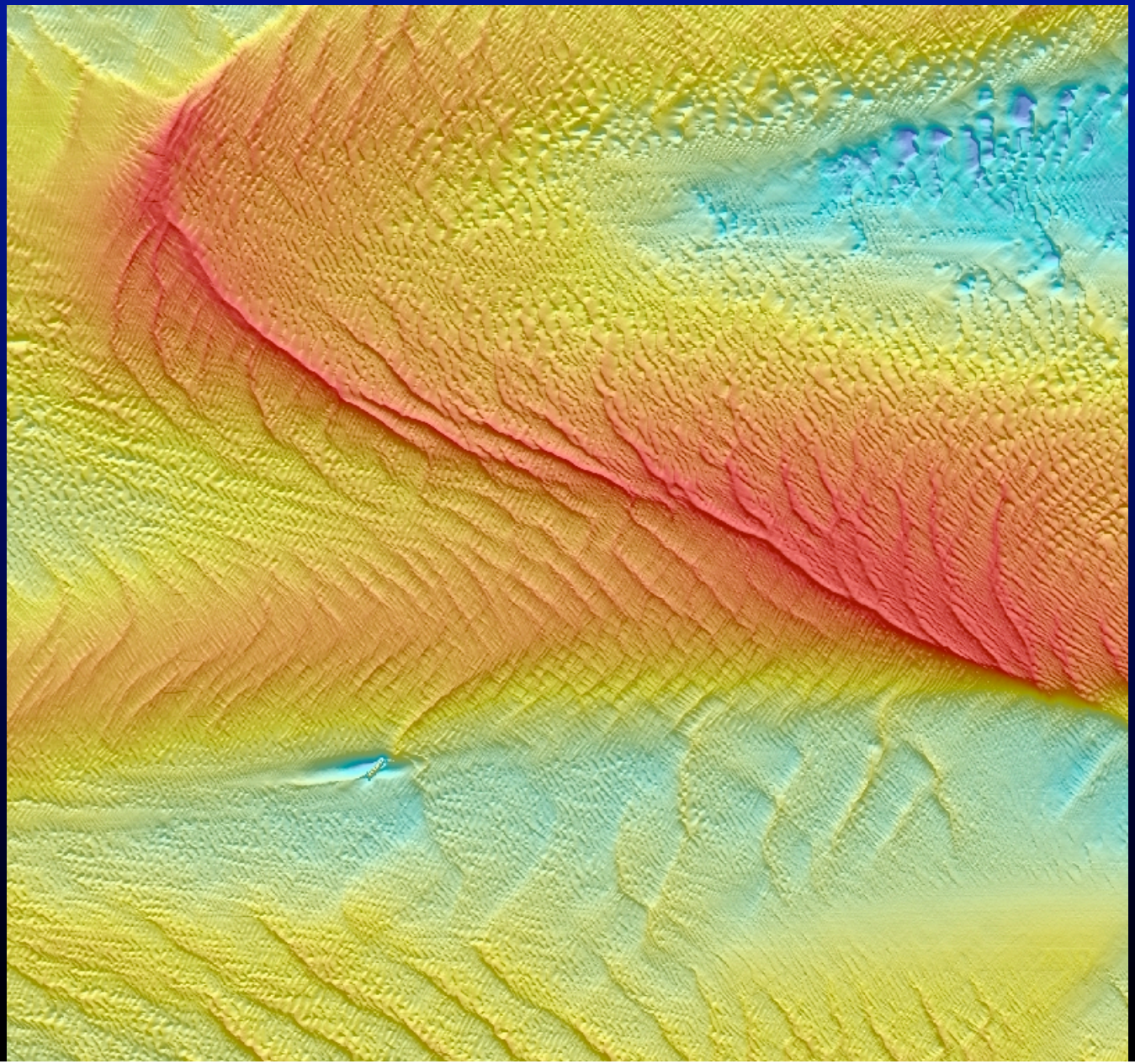

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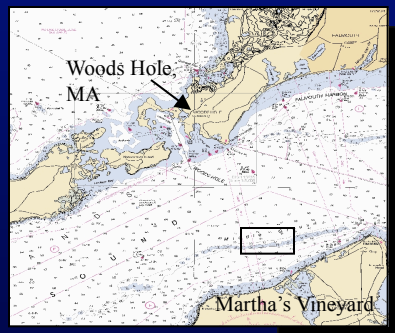
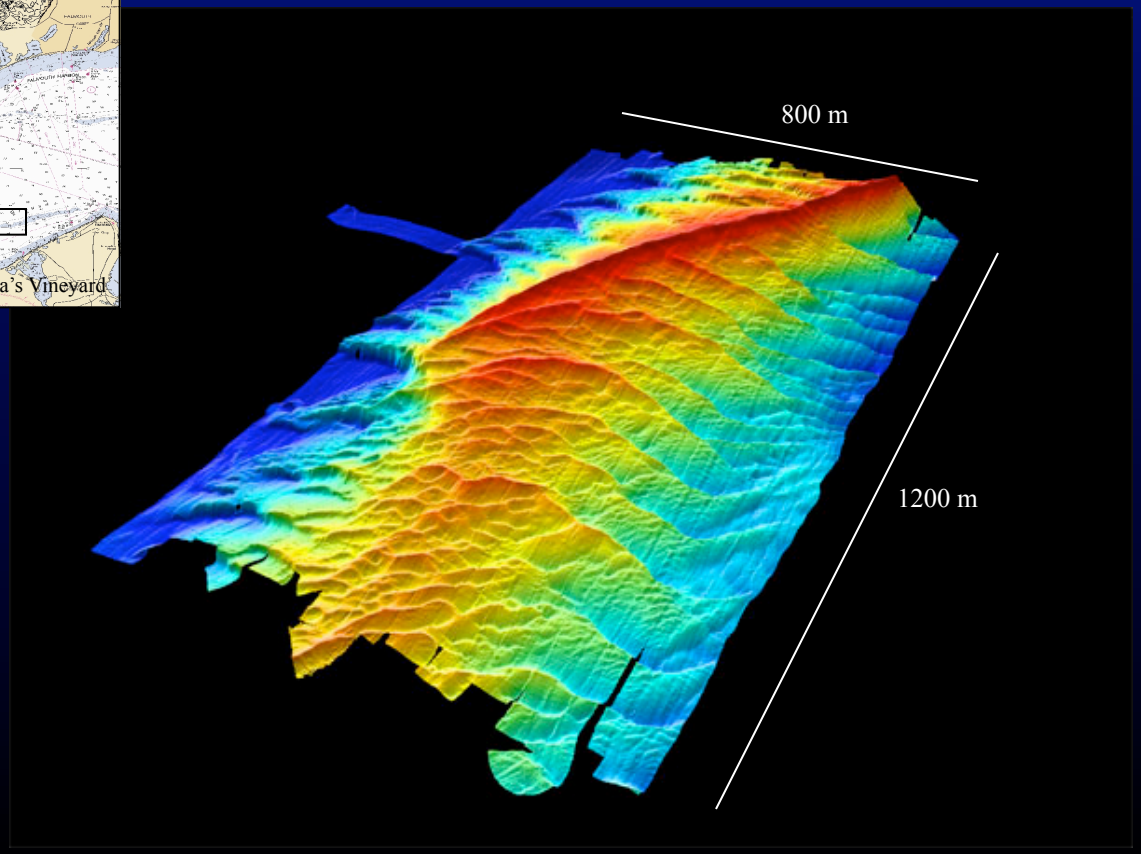
Complexities of High-Resolution data

Repeatability
Monitoring Change in Shoal Morphology

Middle Ground (sand shoal), Vineyard Sound, Massachusetts





Water Depth
~5 – 20 m

Bedform Height
~1- 6 m

Rich Signell, USGS