

# Temporal and Spatial Variability in Sediment Texture on Northern, Paraglacial Beaches: New Hampshire

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# Project Goals

- Determine the textural characteristics of the New Hampshire beaches
- Determine temporal variability of sediments
- Assess the source of sediment

# Motivation

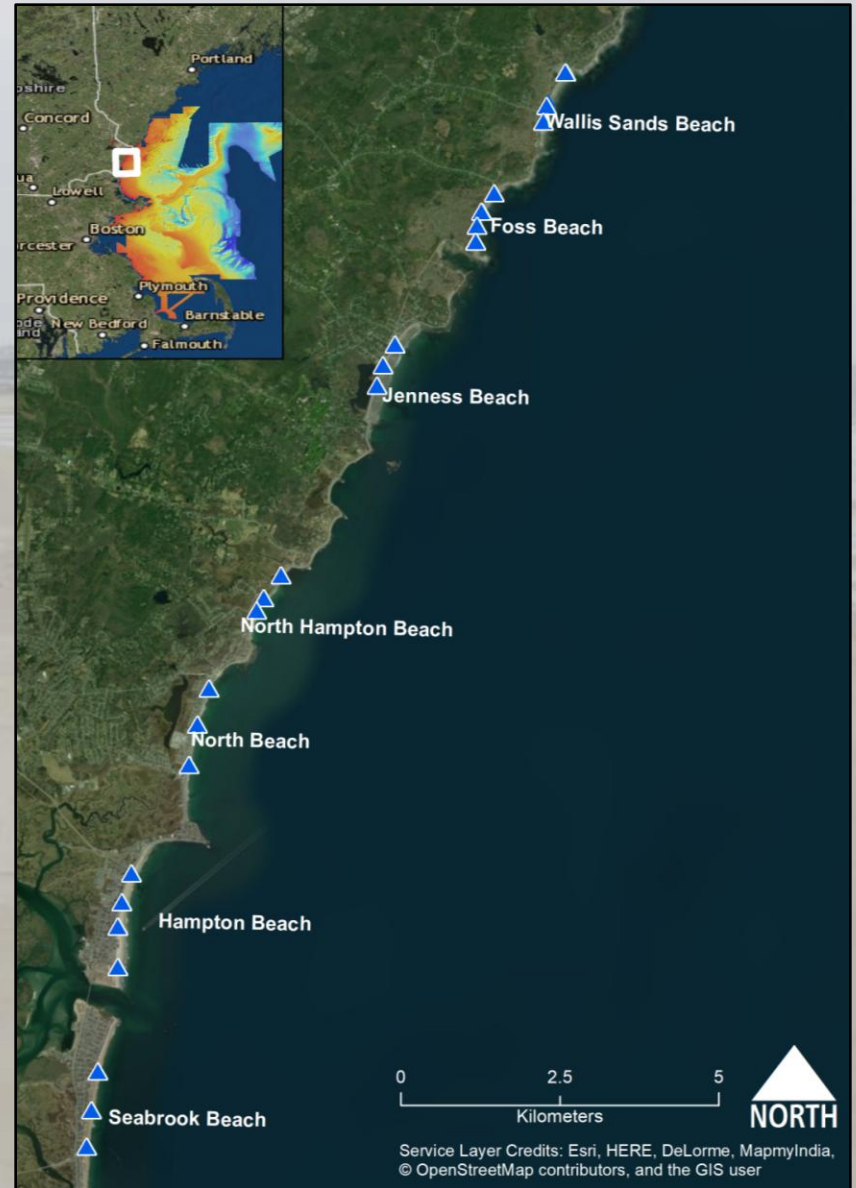
- Sea-Level Rise
- Coastal Resiliency
- Beach Nourishment
- First Detailed  
Sediment Study on  
New Hampshire Coast





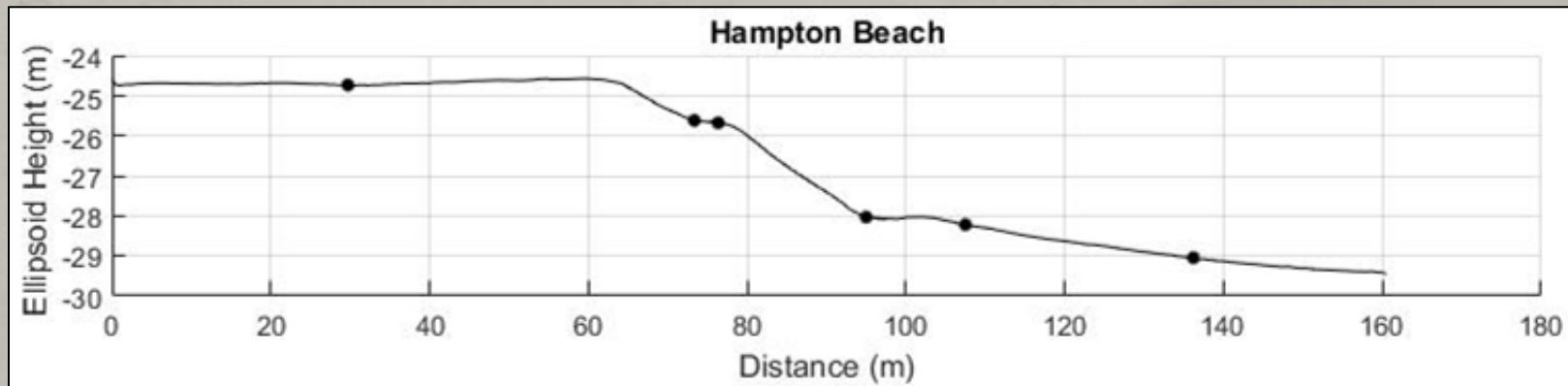
# Study Area

- Seven main NH beaches
- Includes small pocket beaches, attached barriers, and a barrier island
- Mostly separated by headlands



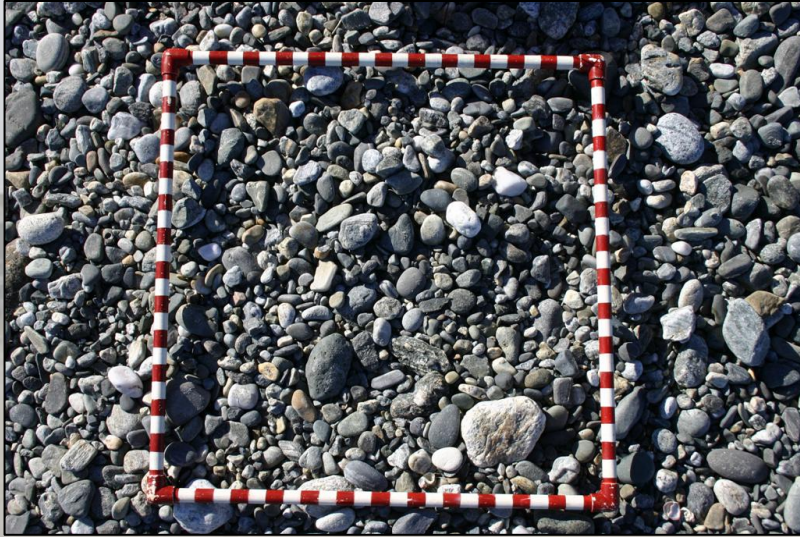
# Methods

- 24 transects on 7 main beaches
- Sampled after extended erosional and accretional periods
- At least 4 samples taken per transect
- Over 240 samples in total



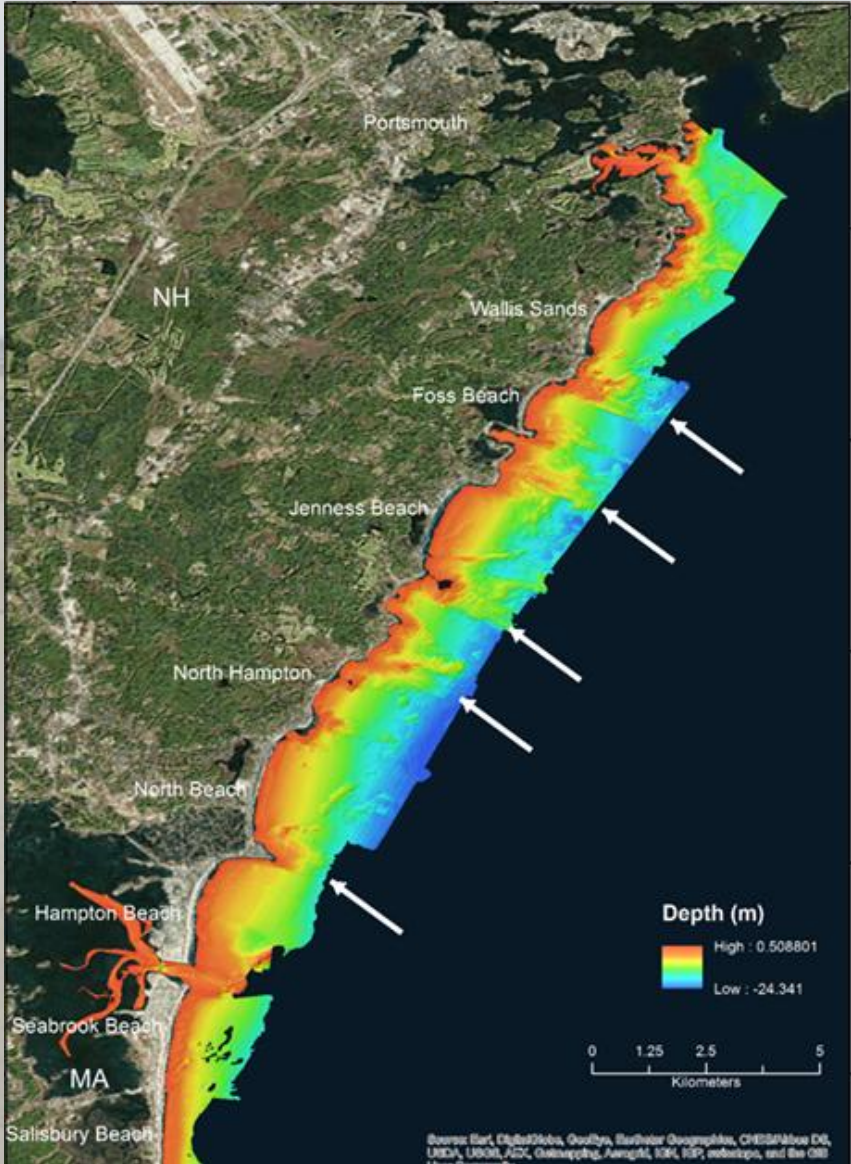


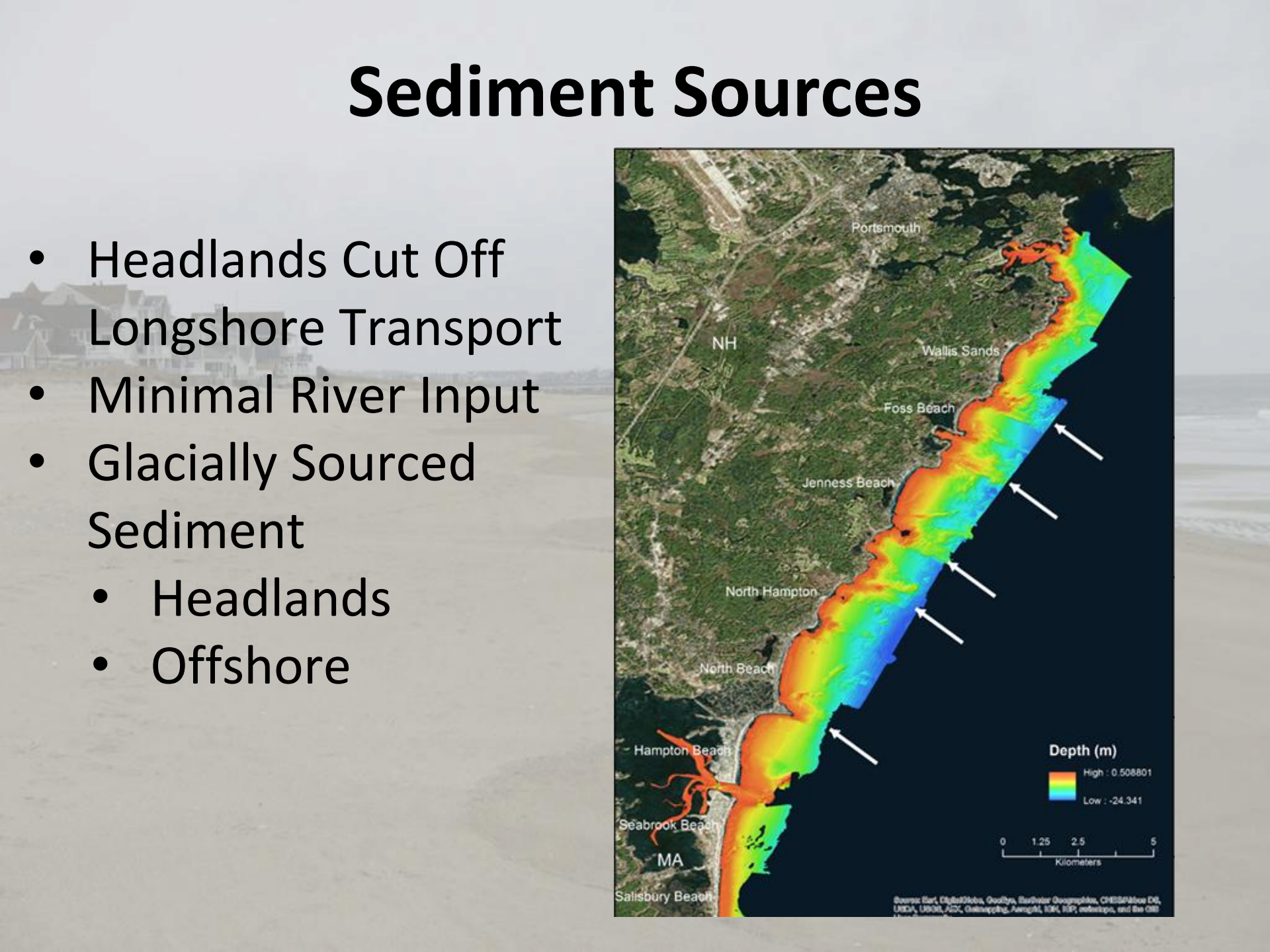
# Sampling



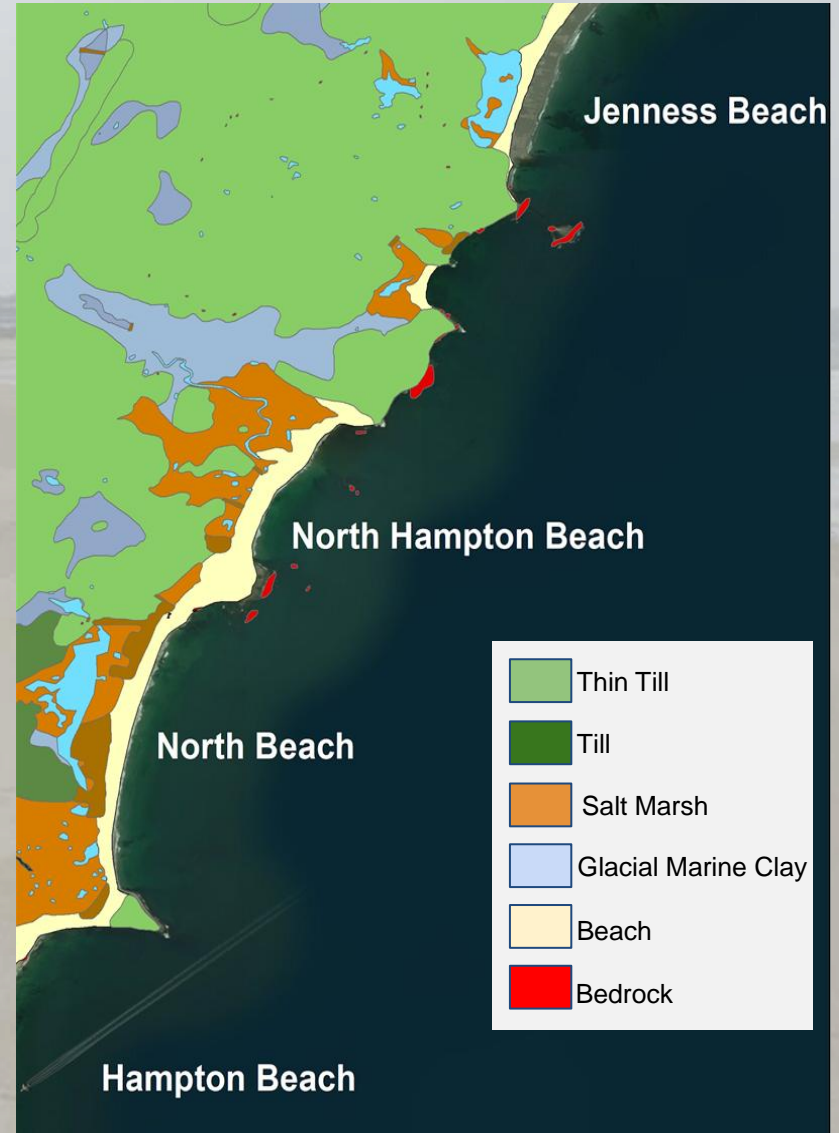
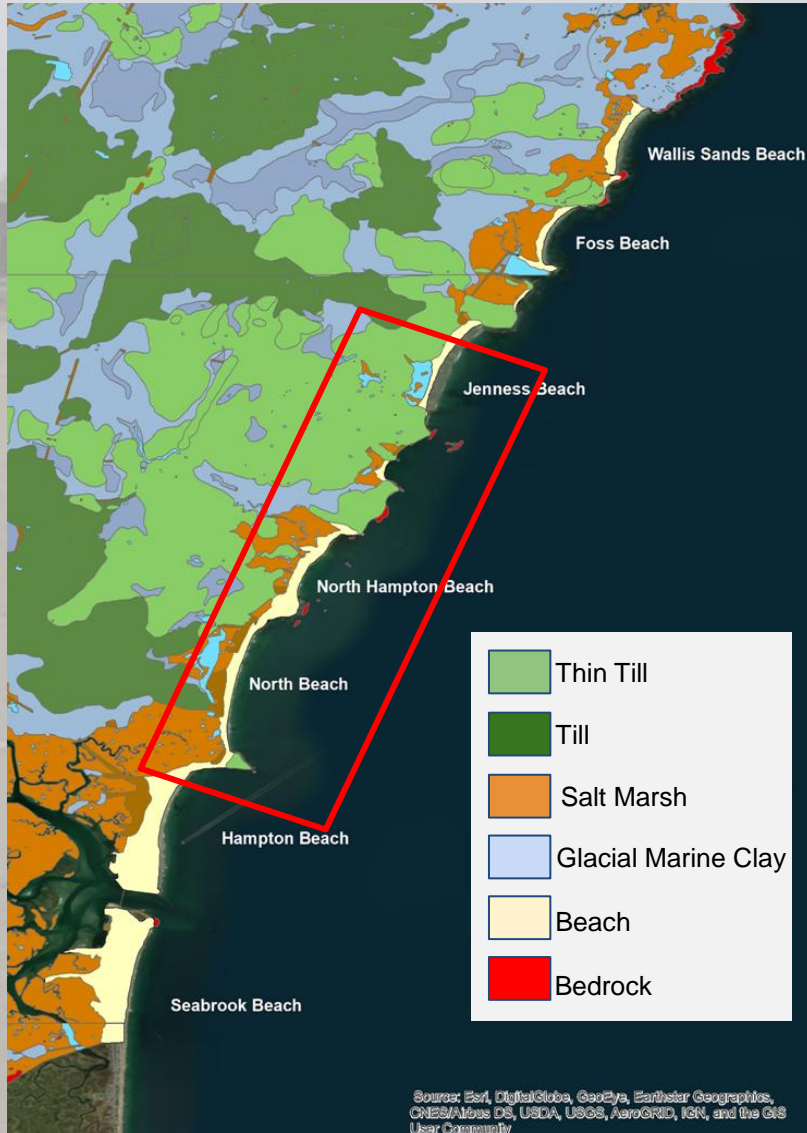


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- # Sediment Sources
- Headlands Cut Off Longshore Transport
  - Minimal River Input
  - Glacially Sourced Sediment
    - Headlands
    - Offshore
- 
- The map displays the coastline from Portsmouth, NH, down to Salisbury Beach, MA. A color-coded bathymetric overlay indicates depth, with a legend showing a range from 0.508801 m (High) to -24.341 m (Low). The colors transition from red/orange near the shore to blue further out. White arrows point to specific locations along the coast: Wallis Sands, Foss Beach, Jenness Beach, North Hampton, North Beach, Hampton Beach, Seabrook Beach, and Salisbury Beach. The map also shows the state boundaries for NH and MA. A scale bar at the bottom right indicates distances from 0 to 5 Kilometers. Source information at the bottom right credits ESRI, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, SVP, and others.

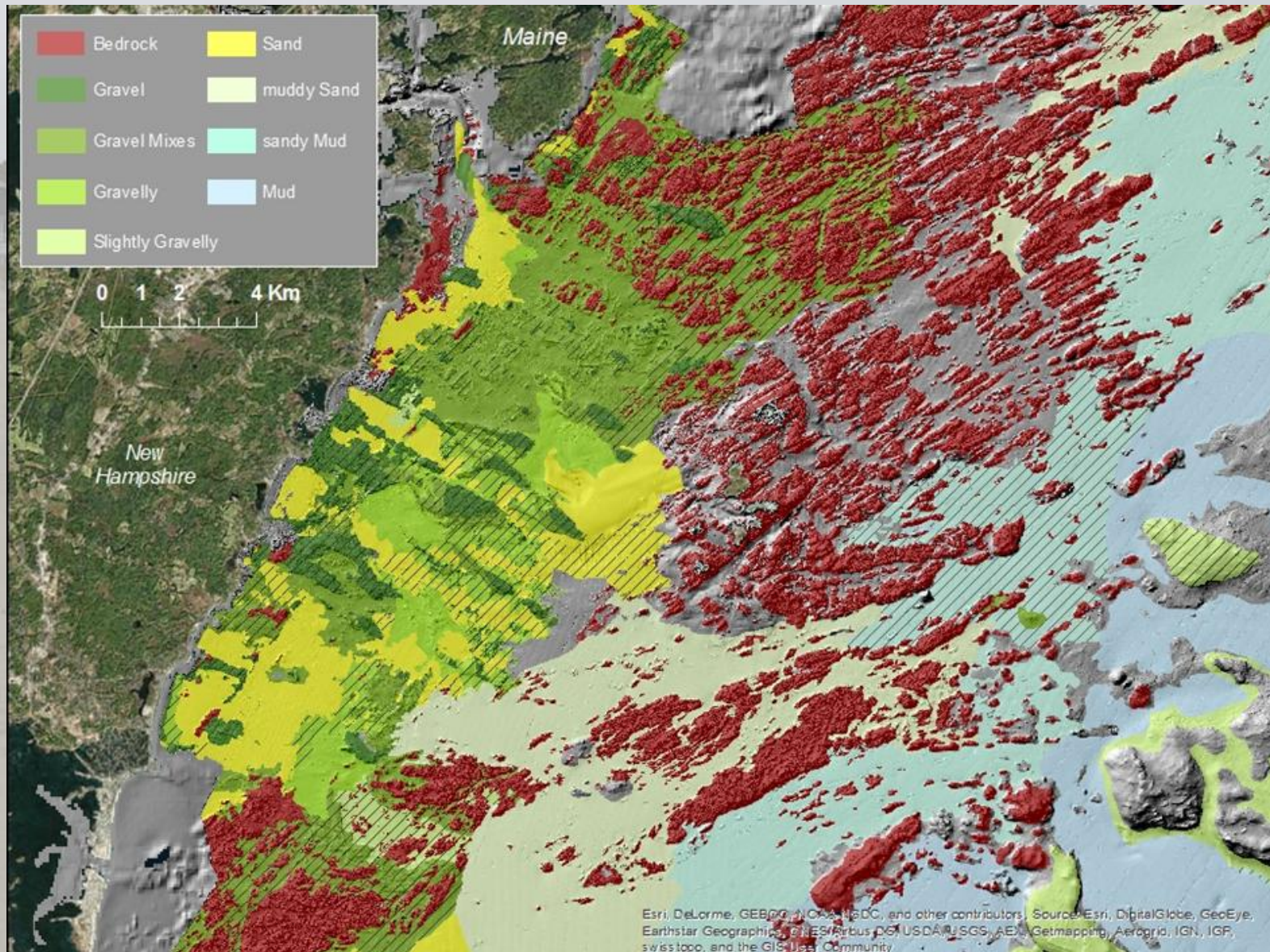


# Surficial Geology





# Offshore Sediment





# Characteristics of Beach Sediments

- Northern Beaches
  - Bimodal; Sand-Cobble
  - Highly Variable
- Southern Beaches
  - Unimodal
  - Medium to Coarse Sand

North Hampton (August 8, 2016):  
Accretional Conditions

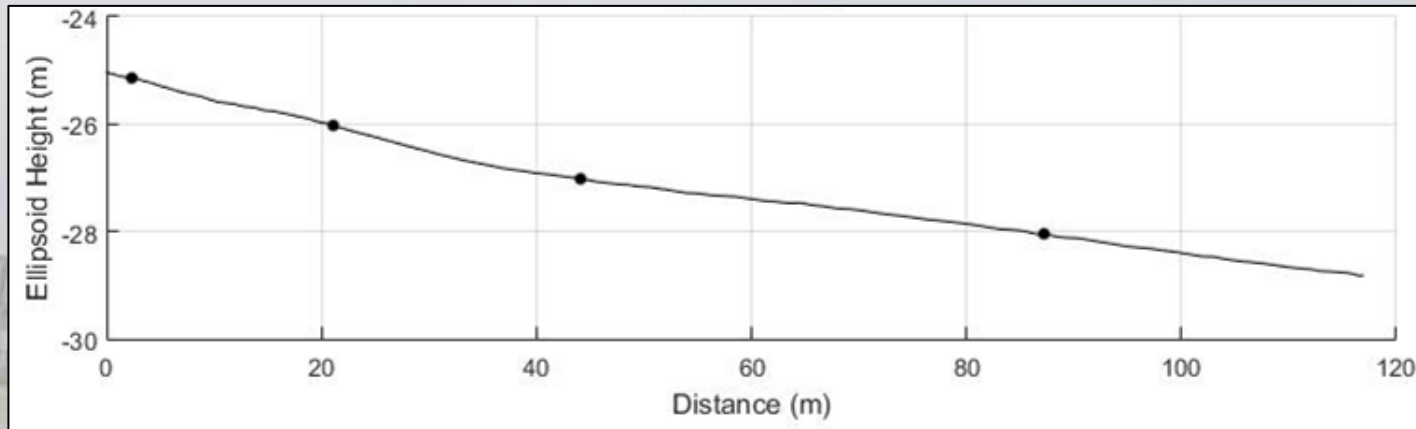


North Hampton (September 9, 2016):  
Erosional Conditions (after Hermine)

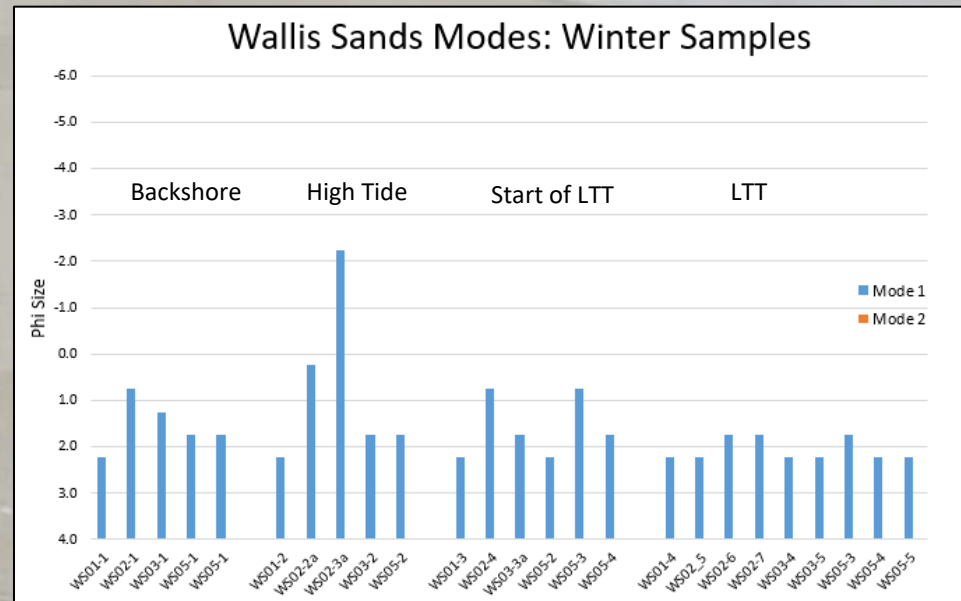




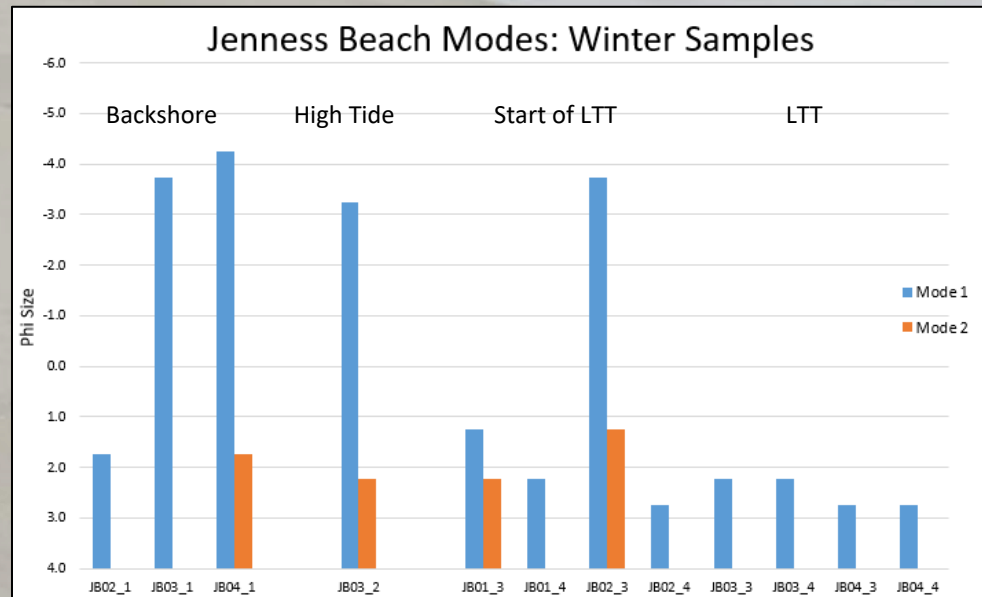
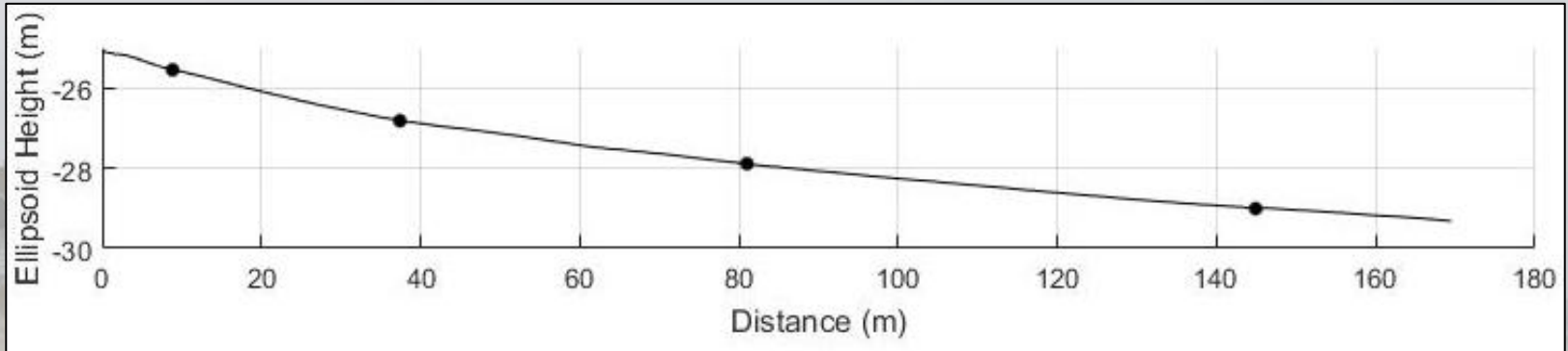
# Northern Beaches: Wallis Sands



Station 2- Representative Profile

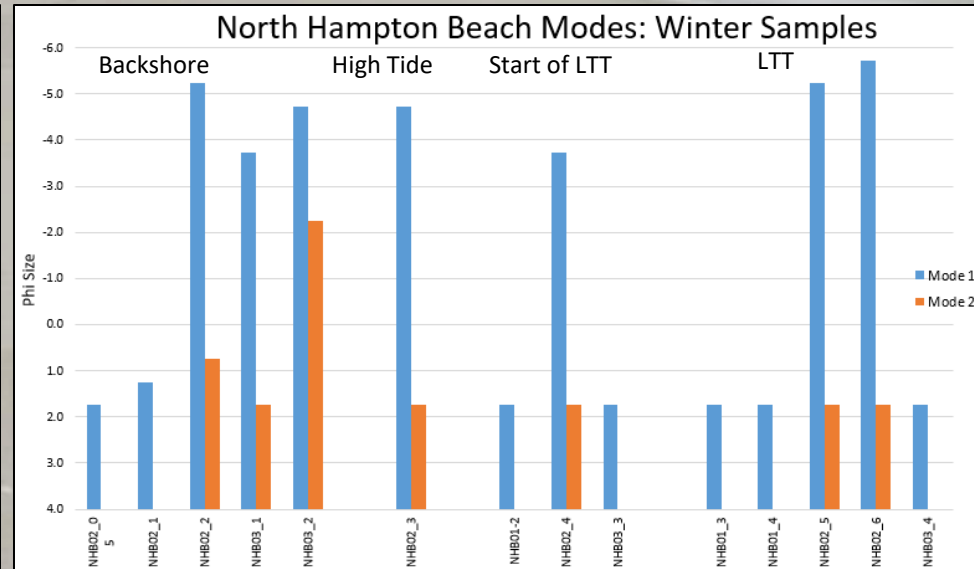
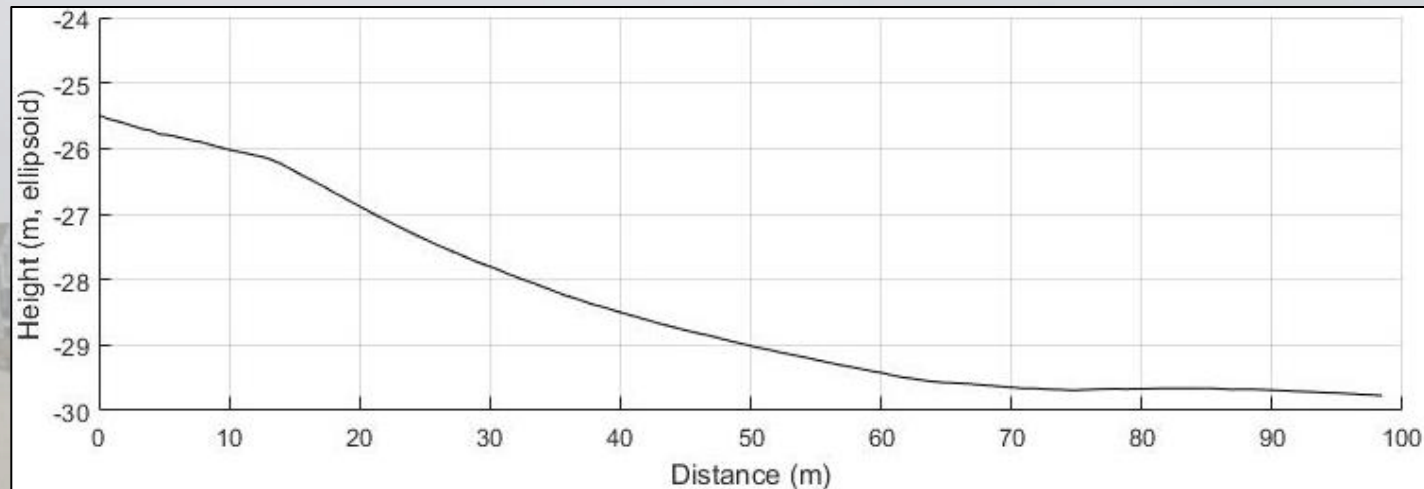


# Northern Beaches: Jenness Beach

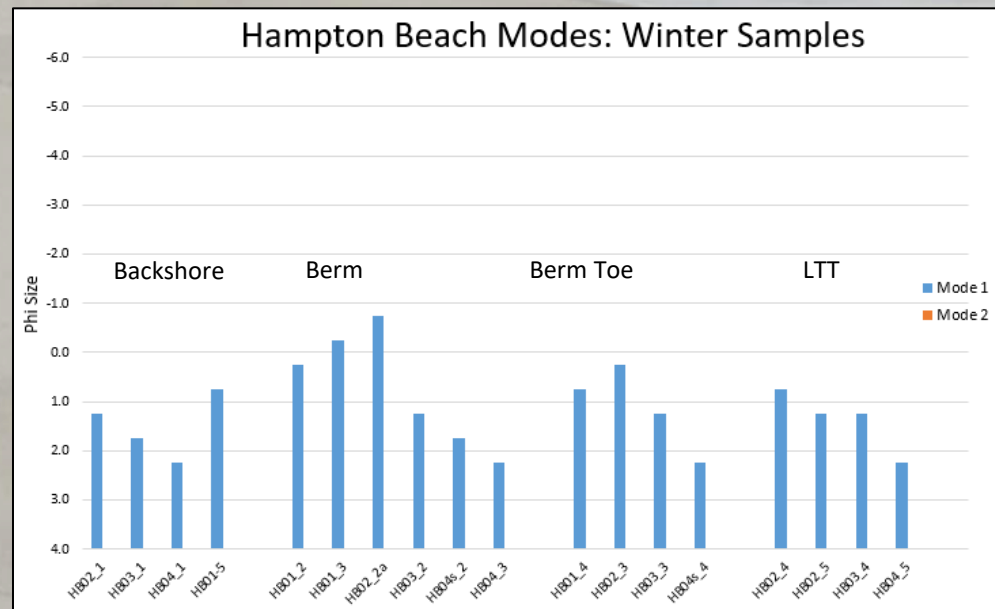
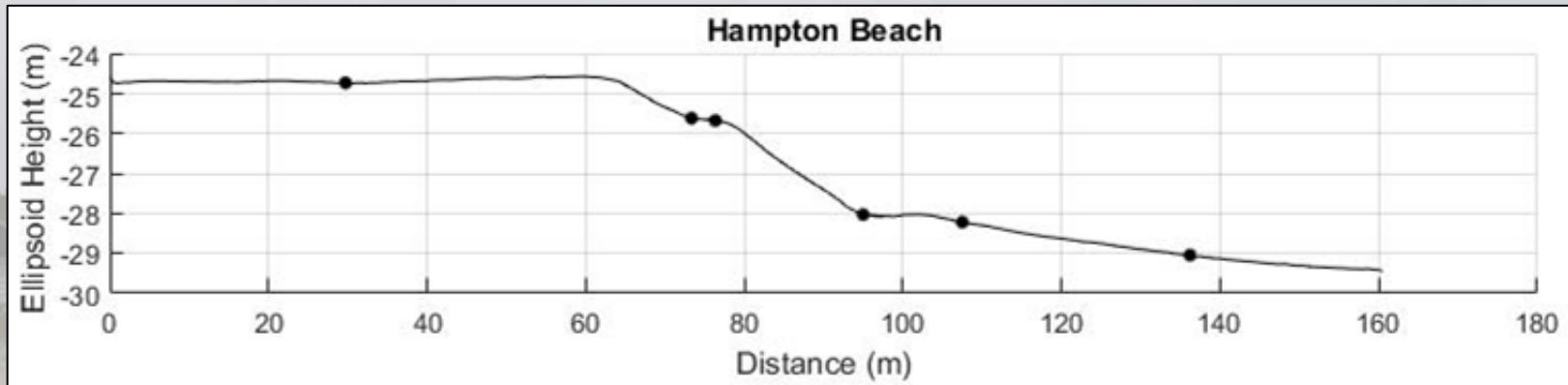




# Northern Beaches: North Hampton Beach



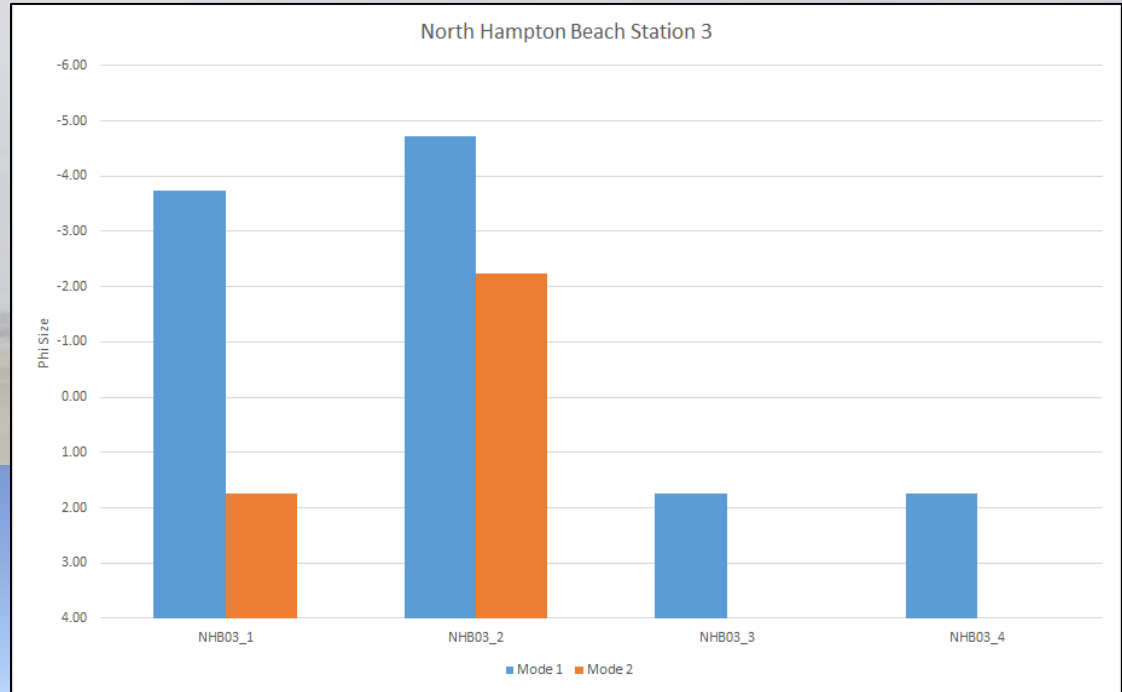
# Southern Beaches: Hampton Beach



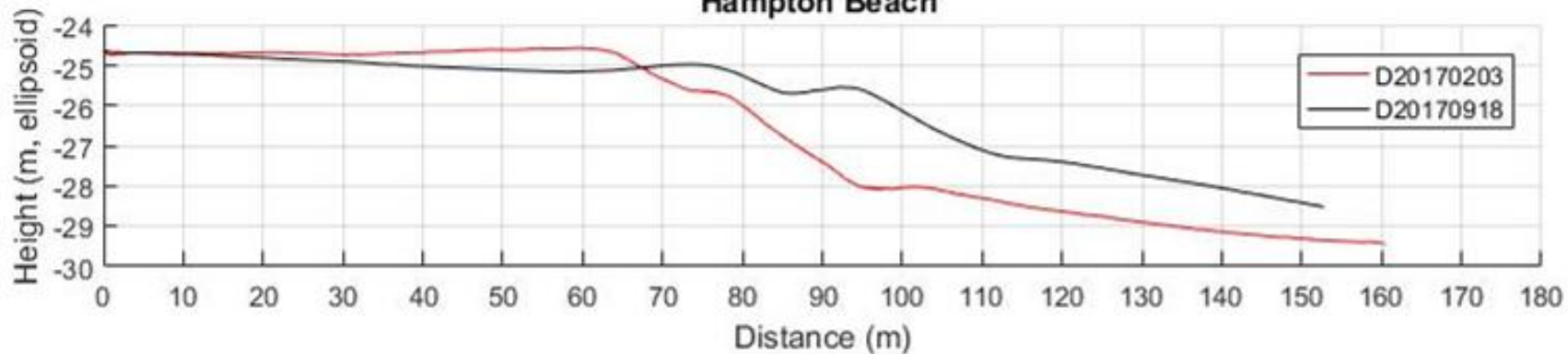


# Single Profile Variation

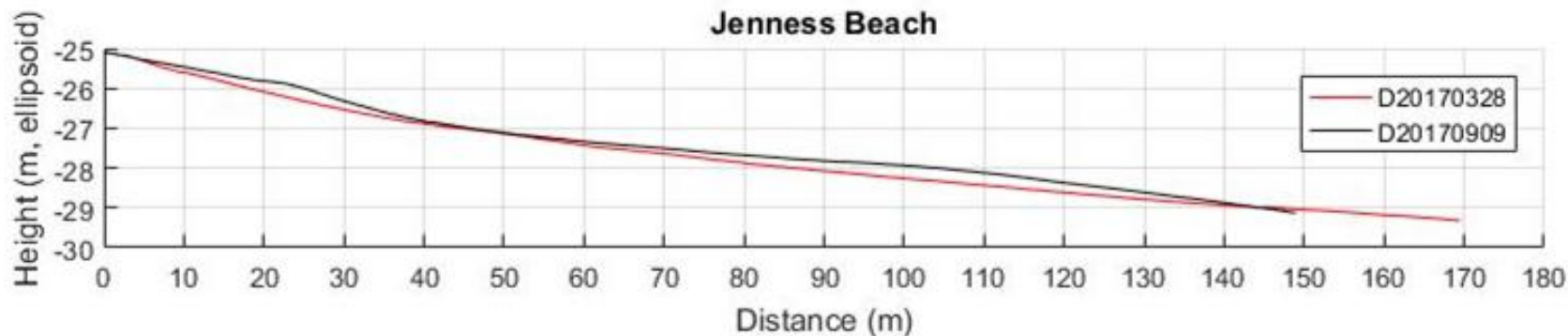
- There can be drastic changes along a single profile



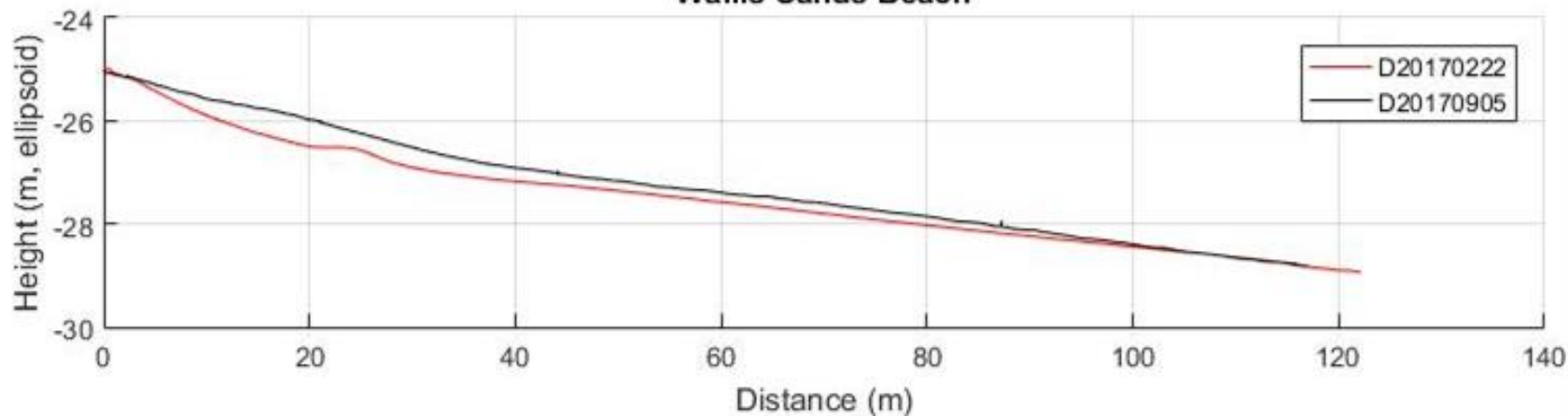
### Hampton Beach



### Jenness Beach



### Wallis Sands Beach





# Summary

- Northern beaches are highly variable
  - Alongshore and along a profile
  - Bimodal with a coarser backshore
- Southern beaches are uniform
  - Unimodal
  - Medium to coarse sand
- Sediment sources
  - On and offshore, limited longshore transport
  - Eroding glacial features
  - Offshore sediment bodies

# Acknowledgments

- UNH Department of Earth Science
- UNH Center for Coastal and Ocean Mapping
- BOEM – New Hampshire Cooperative Agreement
- UNH School of Marine Science
- UNH Graduate School
- New Hampshire Coastal Program



# Questions?

