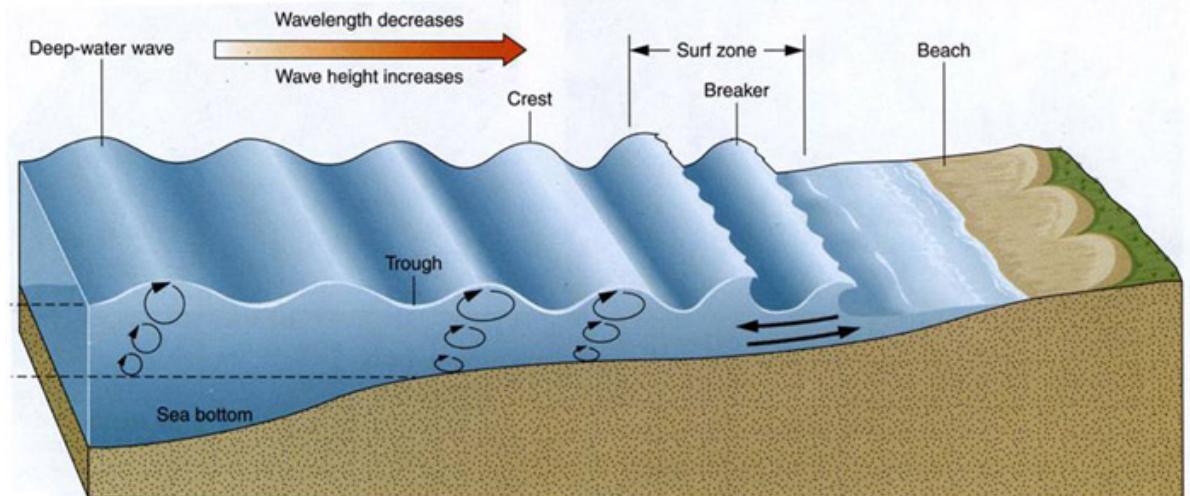
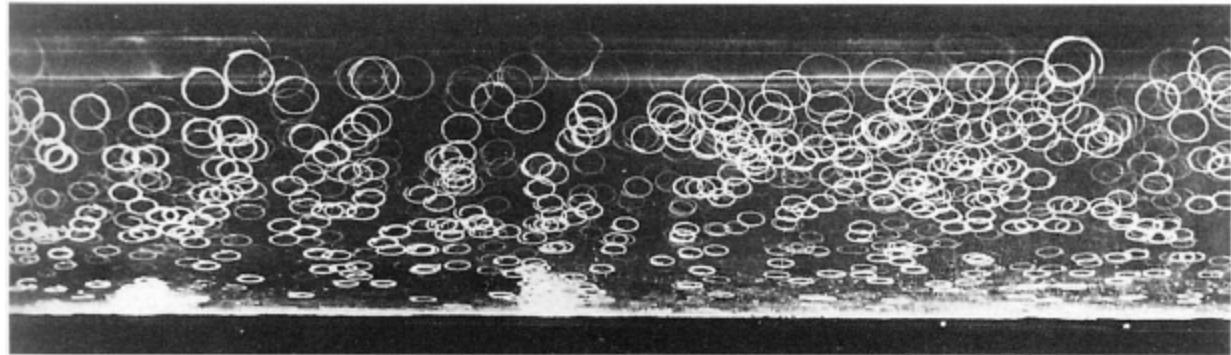
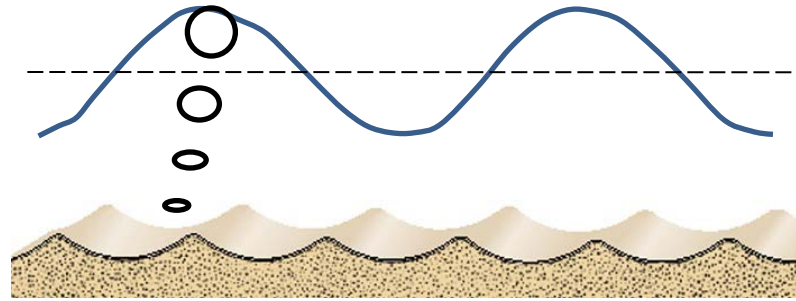
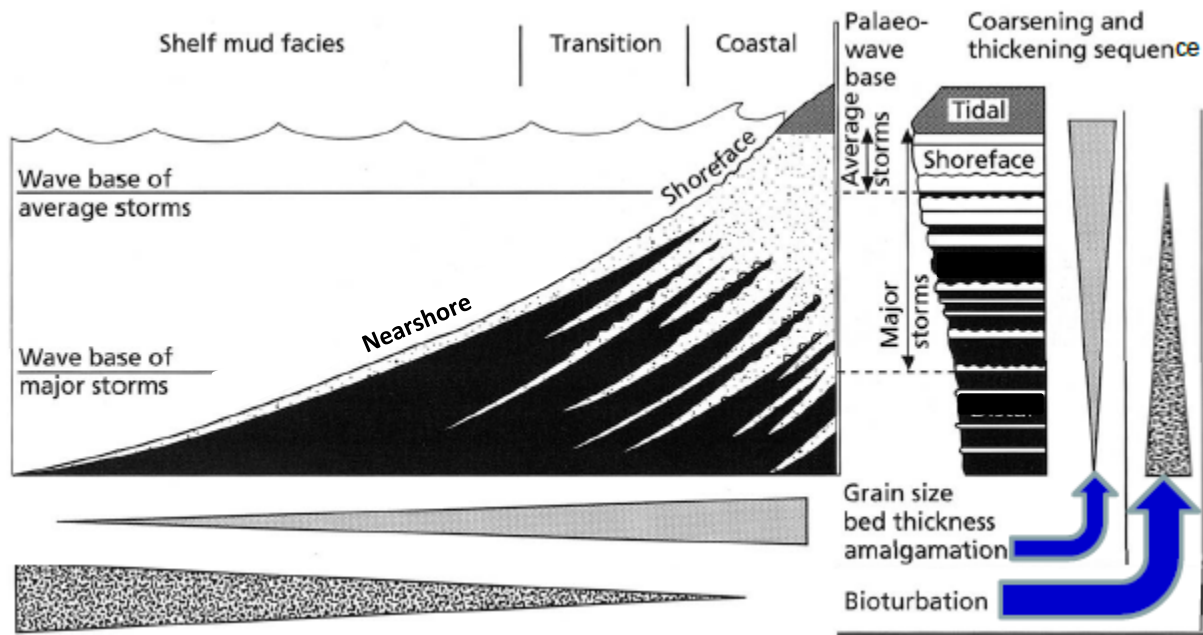


Wind, Waves & Beaches



Wind, Waves & Beaches



Upper Plane Bed Stratification
-Typical Beach



Hummocky Cross-Stratification
-Typical Average Storm Base

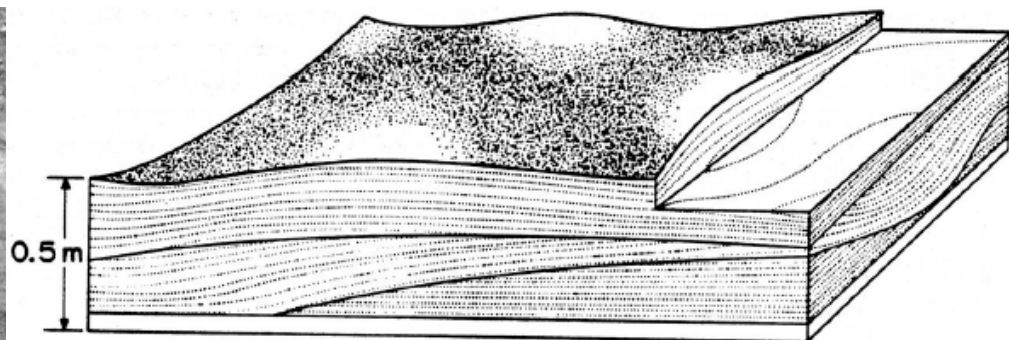
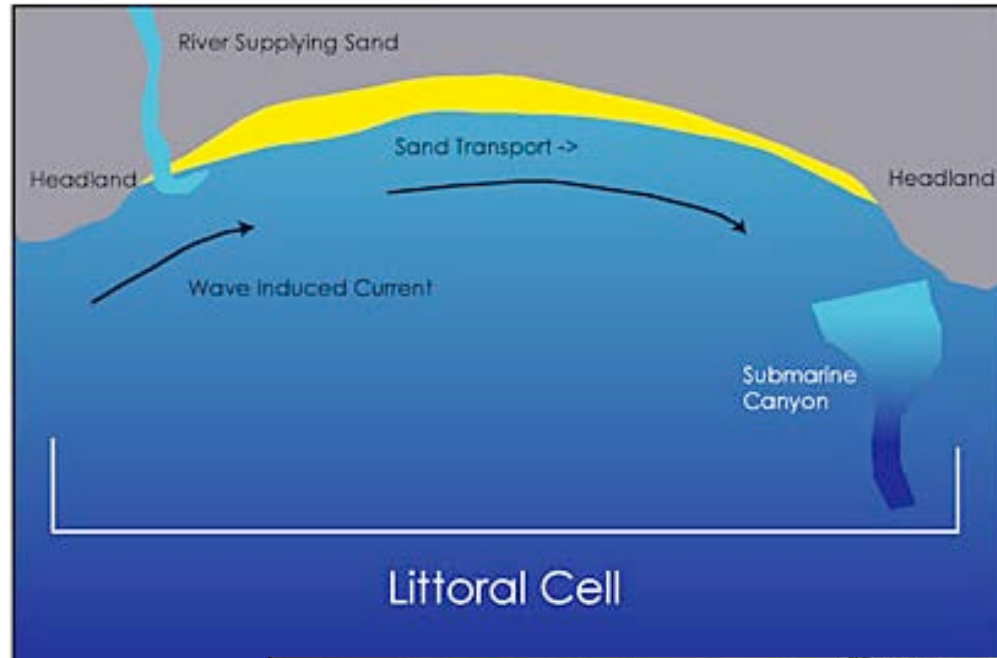
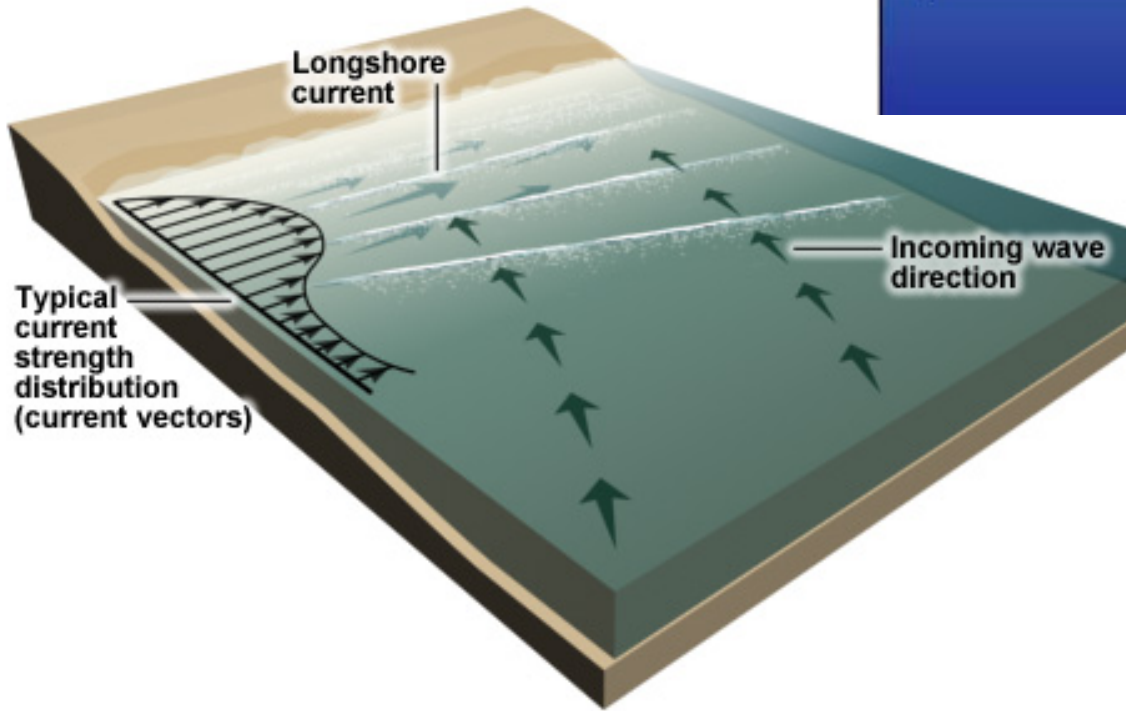


Figure 1. Characteristics of hummocky cross-stratification, published by Harms and others (1975, p. 88).

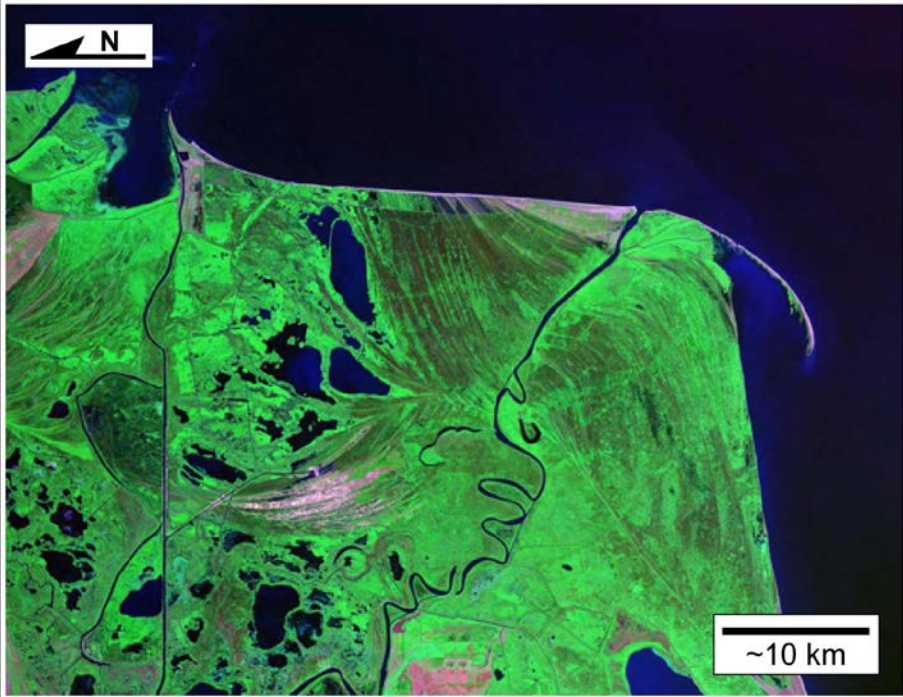
Alongshore Transport



Longshore Current



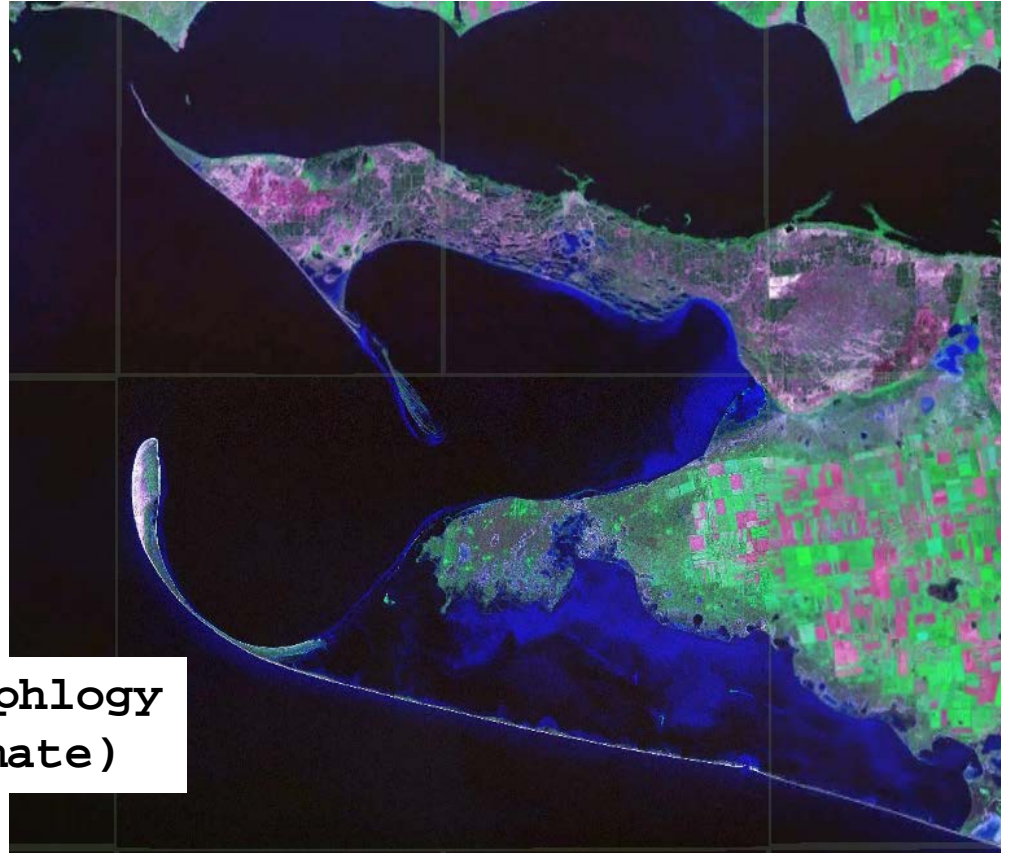
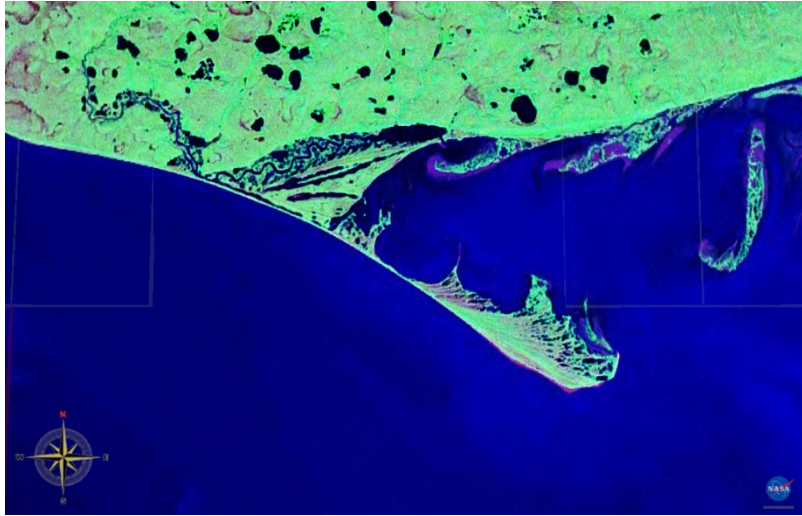
Alongshore Transport



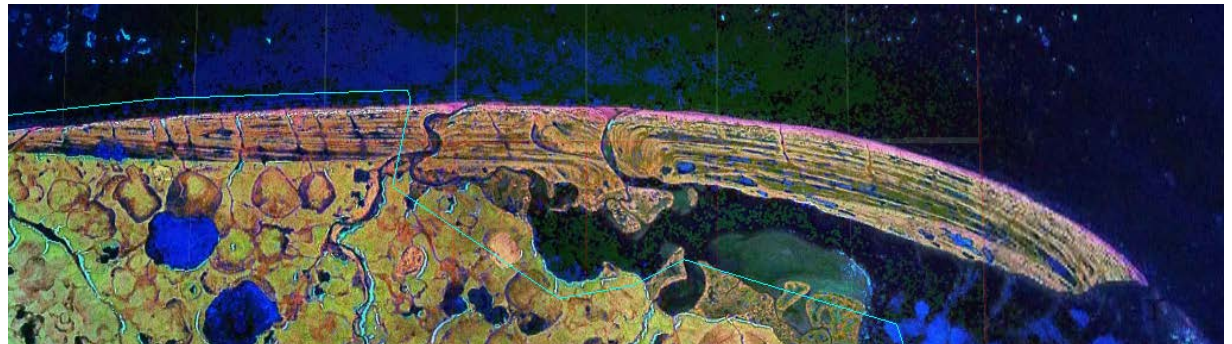
Alongshore Transport



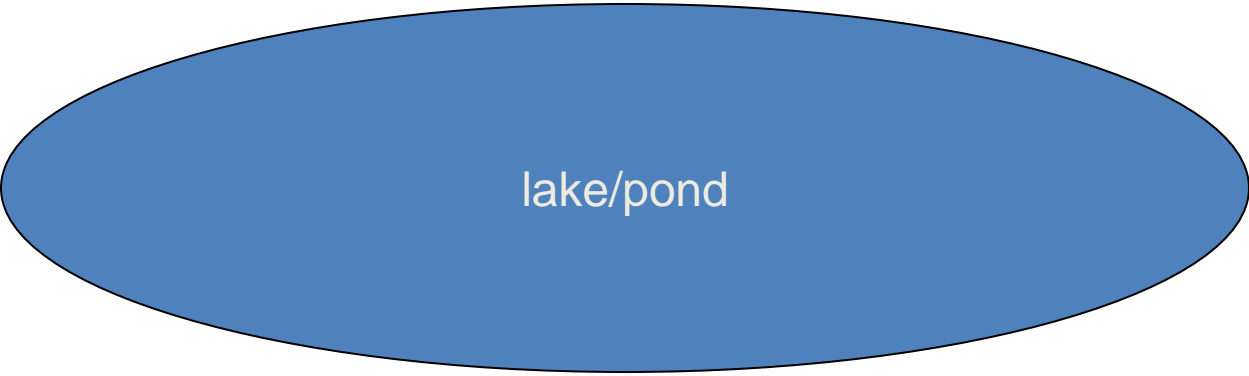
Alongshore Transport - Spits



Shoreline Morphology
= $f(\text{wave climate})$



Alongshore Transport



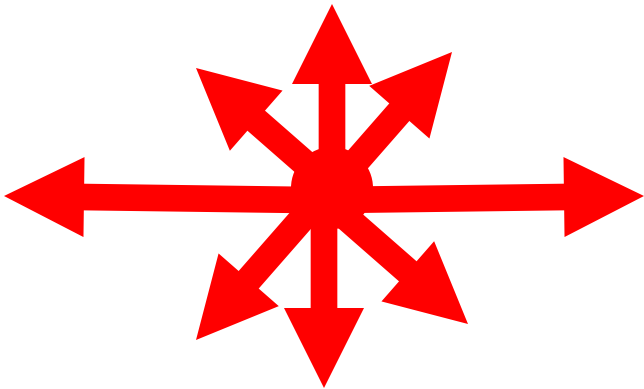
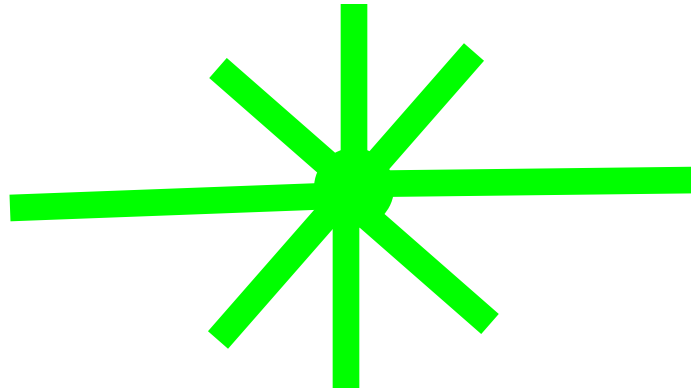
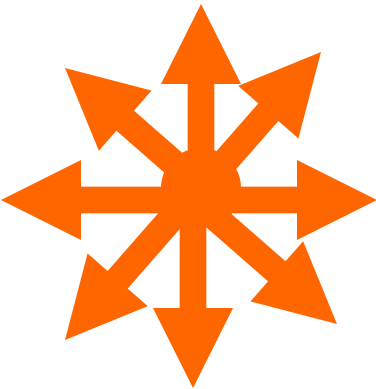
wind

x

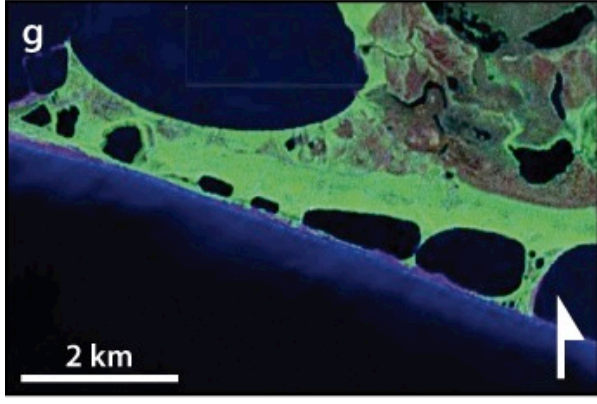
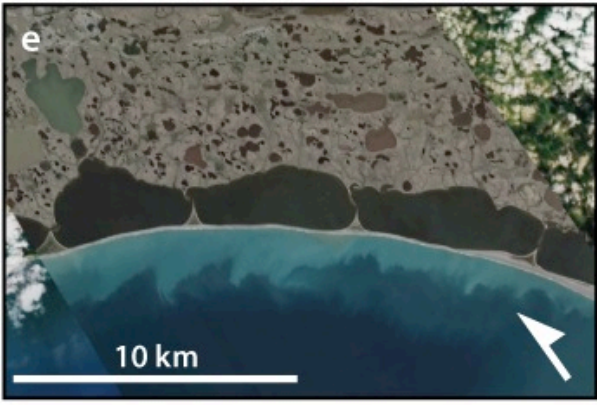
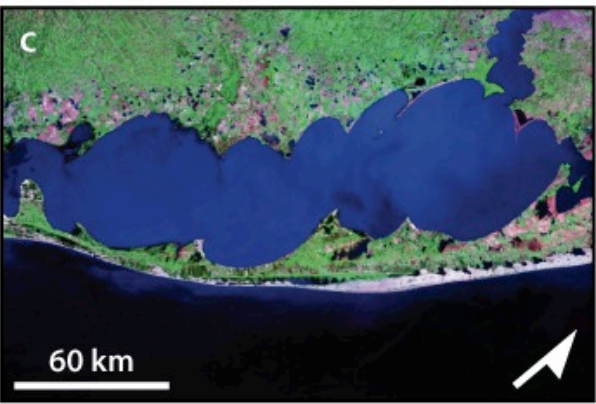
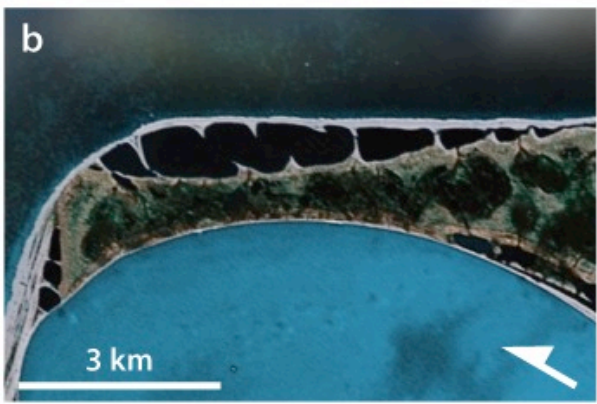
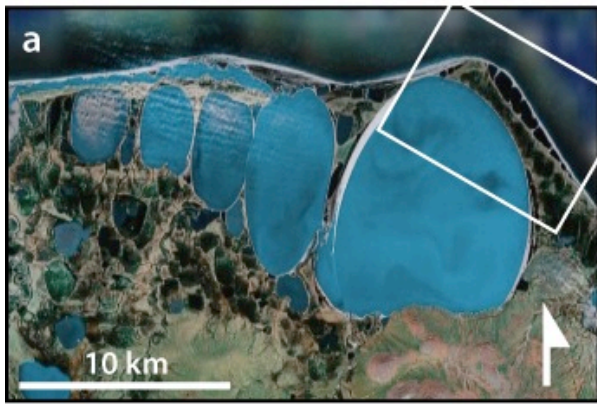
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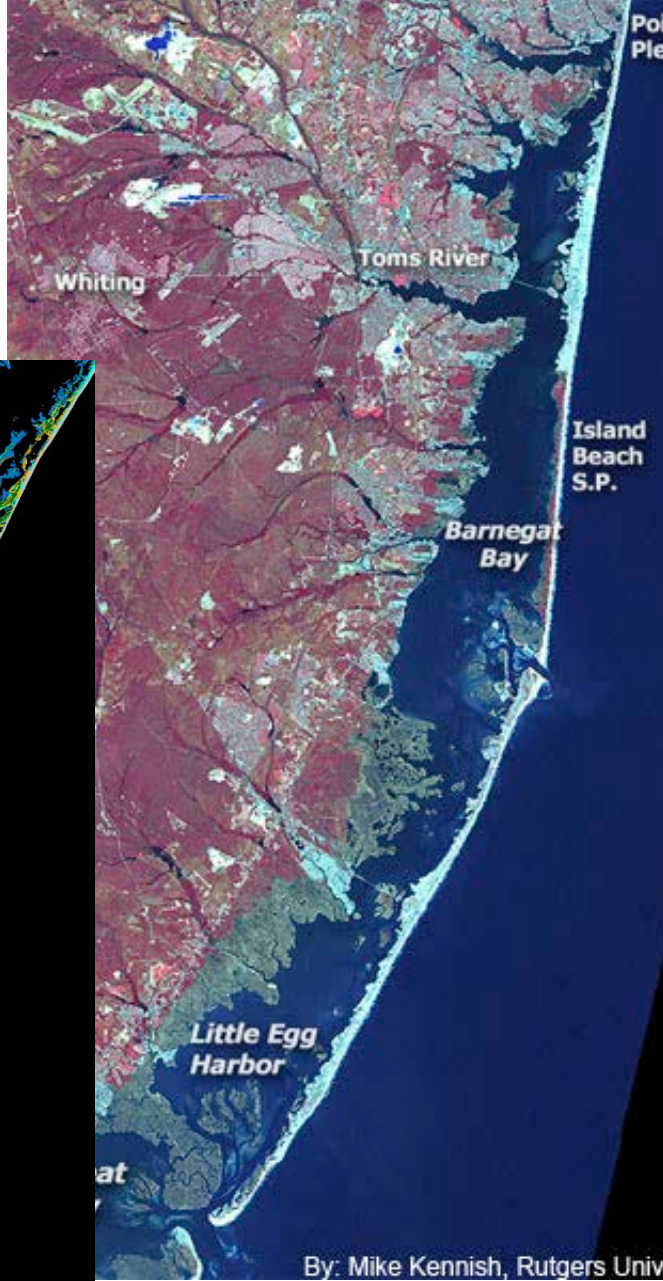
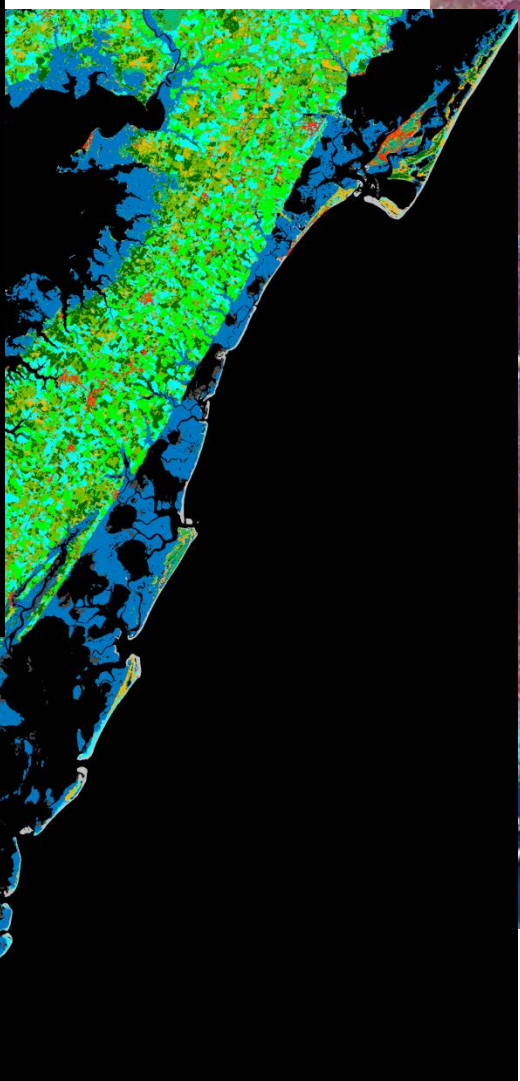
waves



Alongshore Transport



Barrier Islands



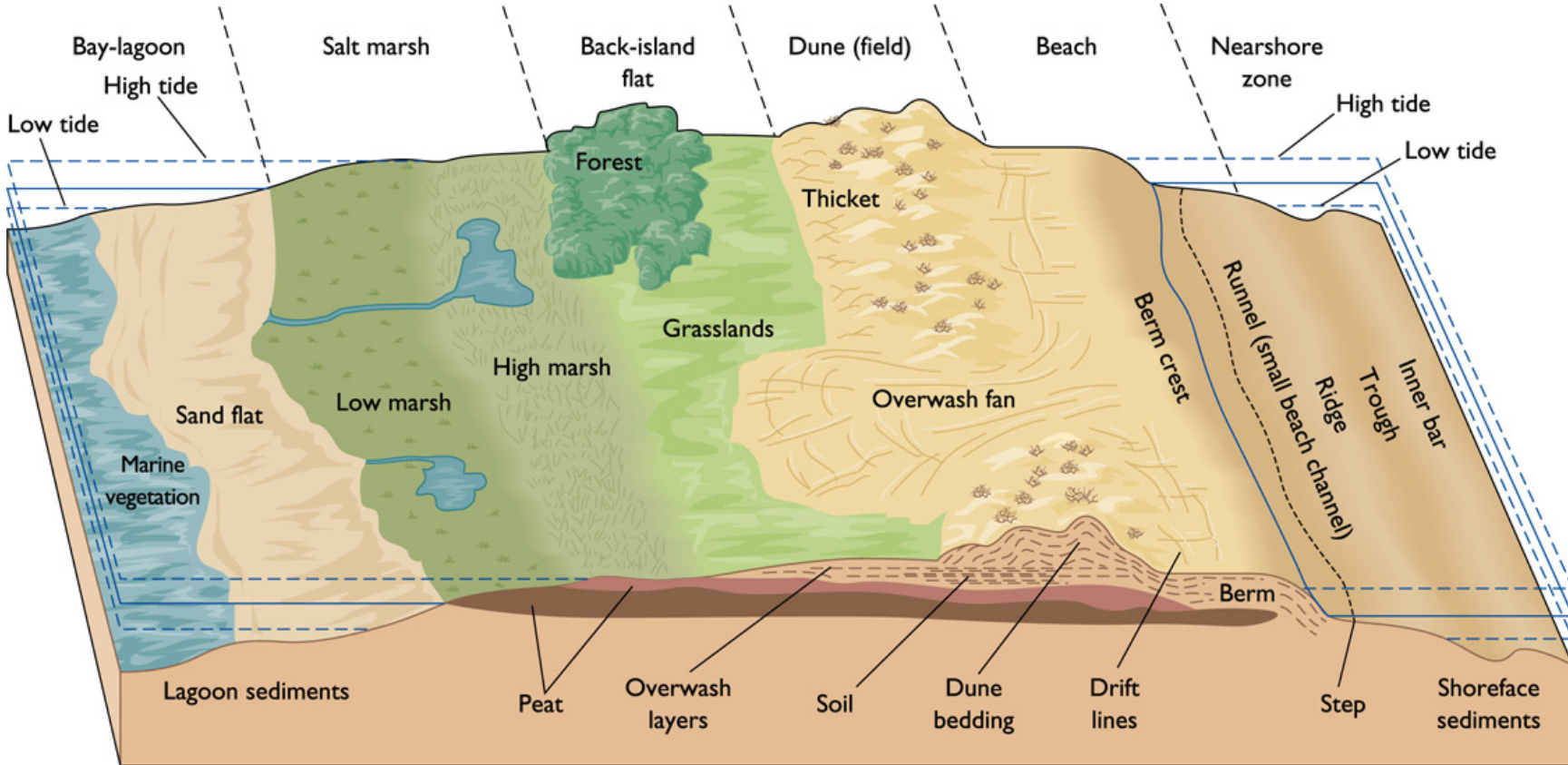
Pol
Ple

Island
Beach
S.P.

at

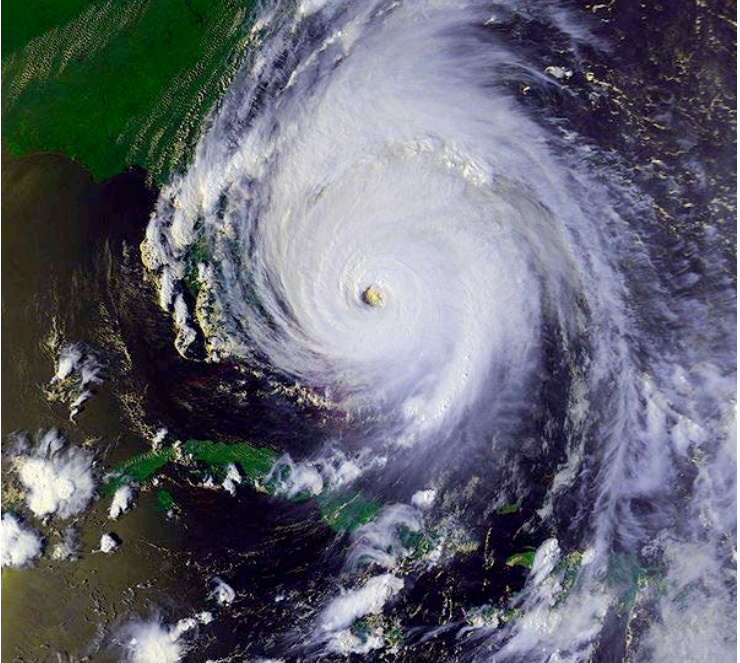
By: Mike Kennish, Rutgers Univ

Barrier Islands



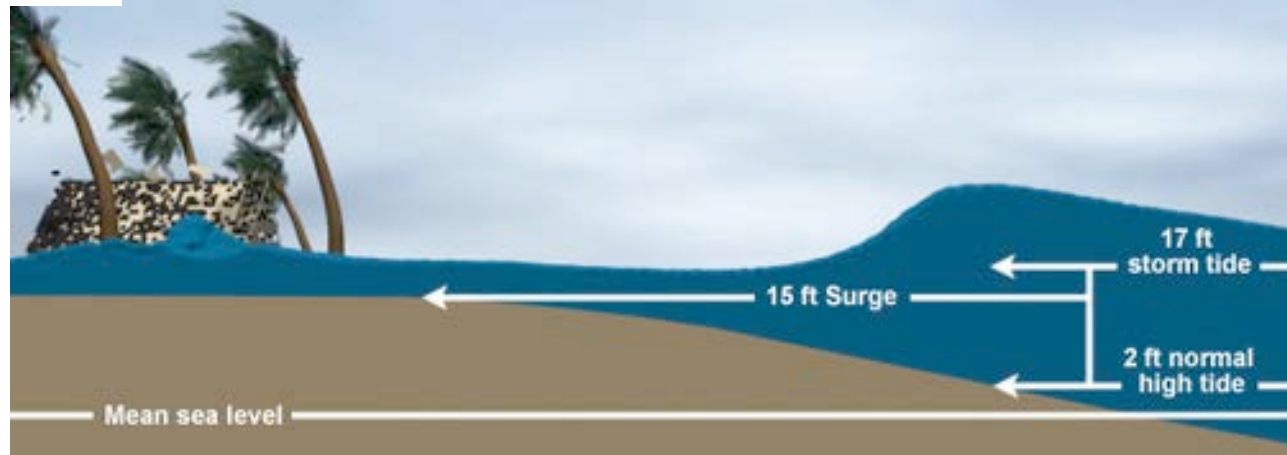
(b) MORPHOLOGY OF A BARRIER-ISLAND SYSTEM

Barrier Islands & Storms

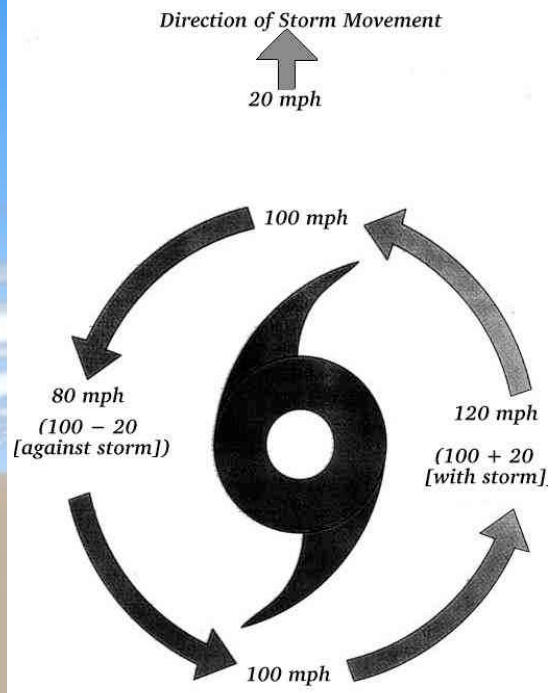
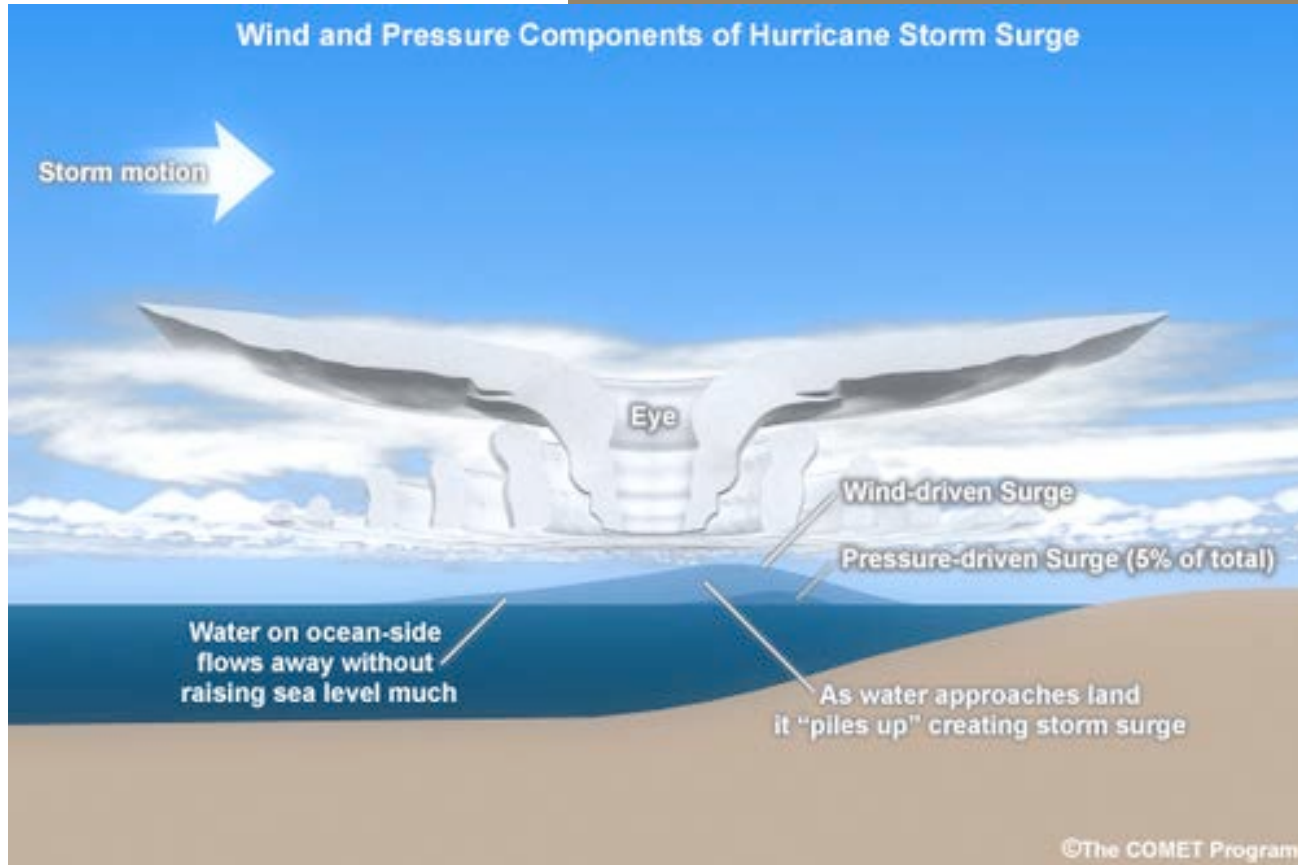


Barrier Islands & Storms

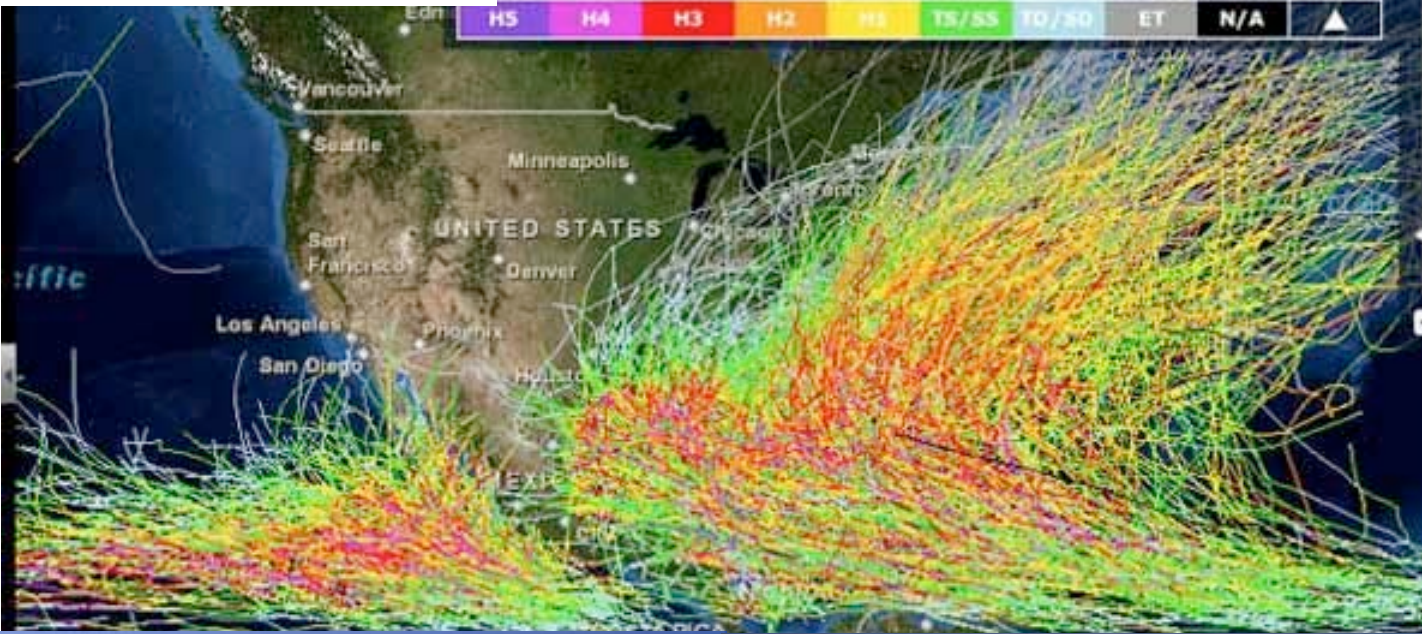
http://www.nhc.noaa.gov/surge/animations/hurricane_stormsurge.swf



NOAA/The COMET Program



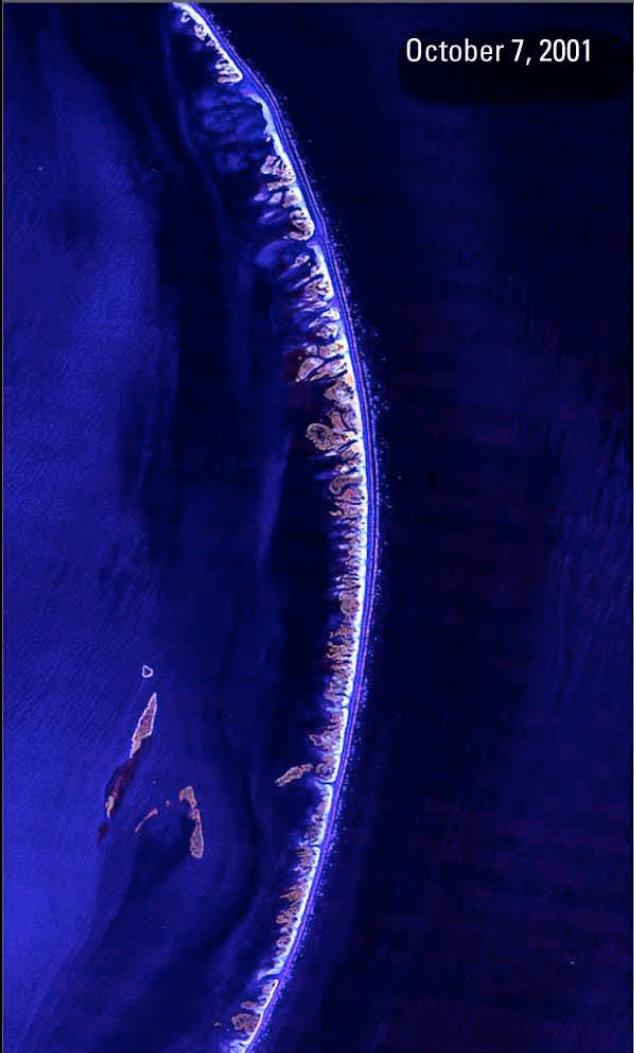
Barrier Islands & Storms



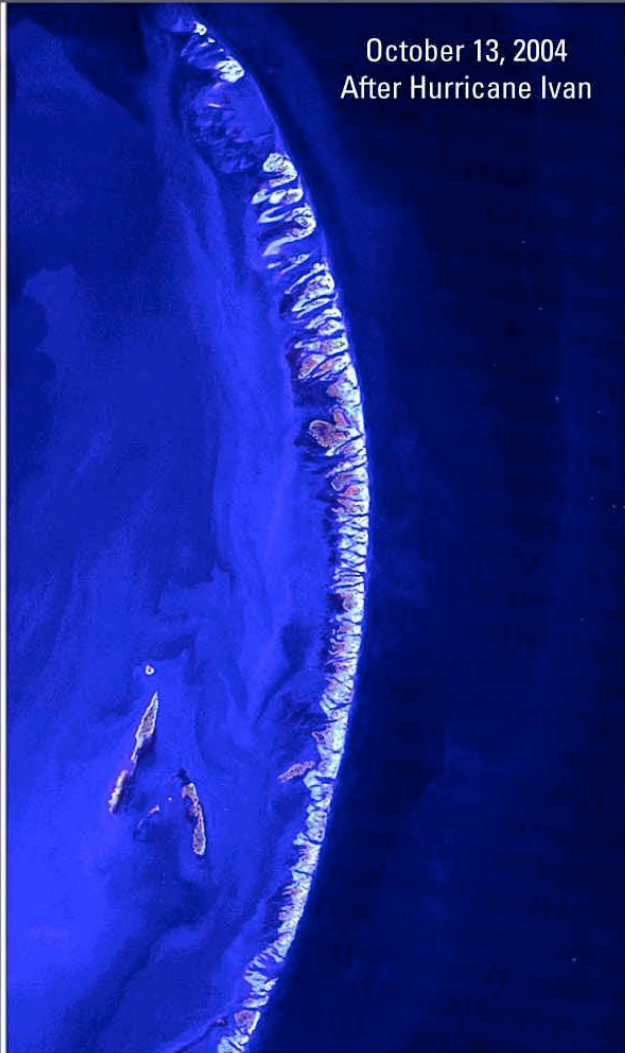
Barrier Islands & Storms



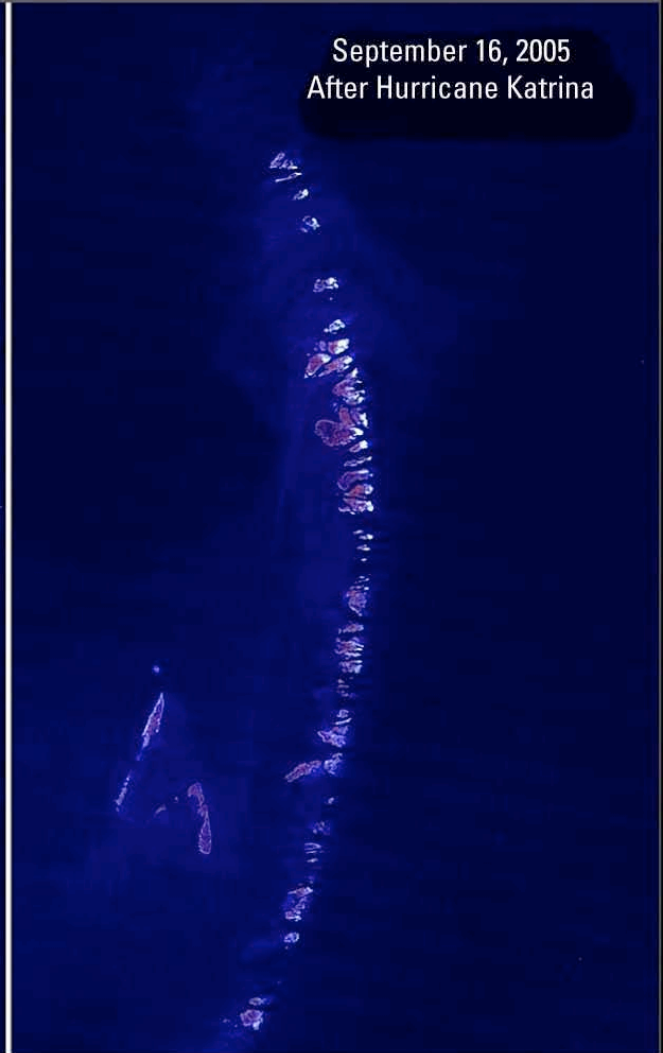
Chandeleur Islands, Louisiana Before and After Hurricanes Katrina and Rita (Landsat 5 Thematic Mapper Satellite Imagery)



October 7, 2001



October 13, 2004
After Hurricane Ivan



September 16, 2005
After Hurricane Katrina

Data Series 281

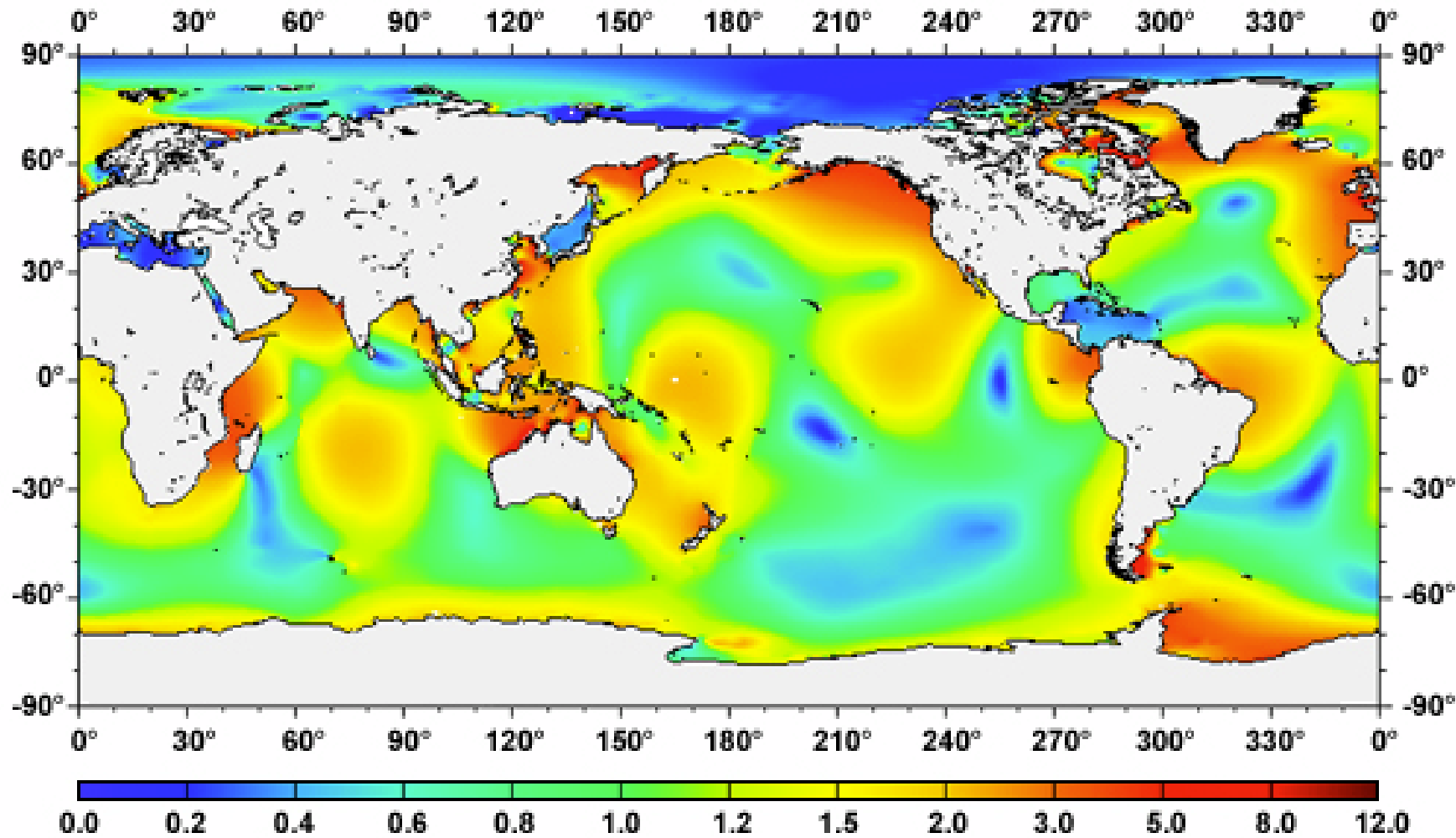
U.S. Department of the Interior
U.S. Geological Survey



Image Source:
Landsat 5 Thematic Mapper Satellite Imagery is provided by the USGS Center for Earth Resources Observation and Science. Bands 4 (near-ir), 5 (mid-ir), and 3 (visible red) are displayed.

Tides

Global Tidal Range



Tidal range (m) = $2 * (O1 + K1 + M2 + S2) \approx \text{MHWS} - \text{MLWS}$

Courtesy of James Chittleborough, National Tidal Centre, BoM
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Tides

Tidal Prism: Volume of water exchanged in a tidal cycle
= (tidal range) x (flooded area)



Tides

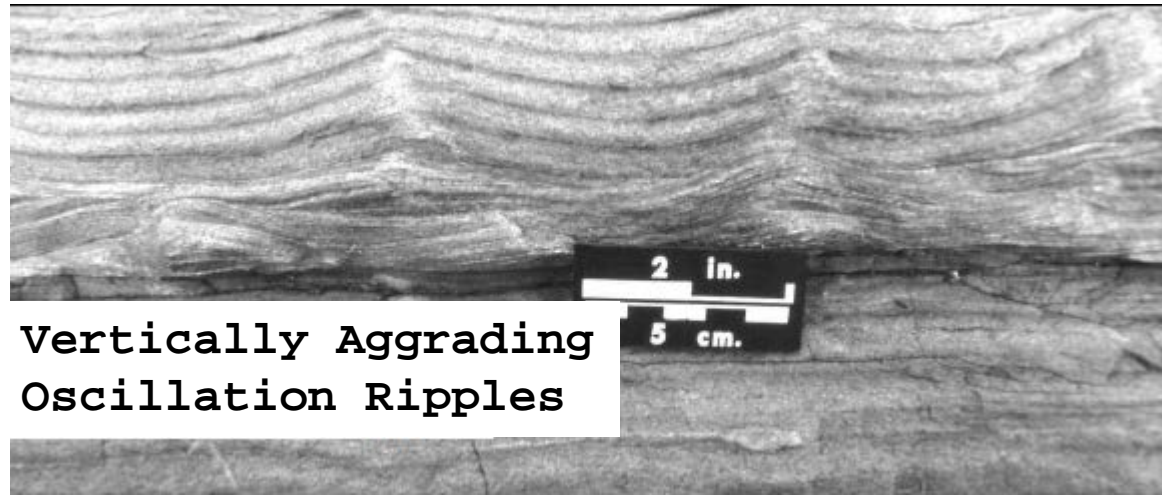
Tidal Flats



Highly Biotruncated Muds

Tidal Channels

Herringbone Cross-Stratification



Vertically Aggrading
Oscillation Ripples