

Coastal and Marine Issues: Sea-Level Rise in the Mid-Atlantic

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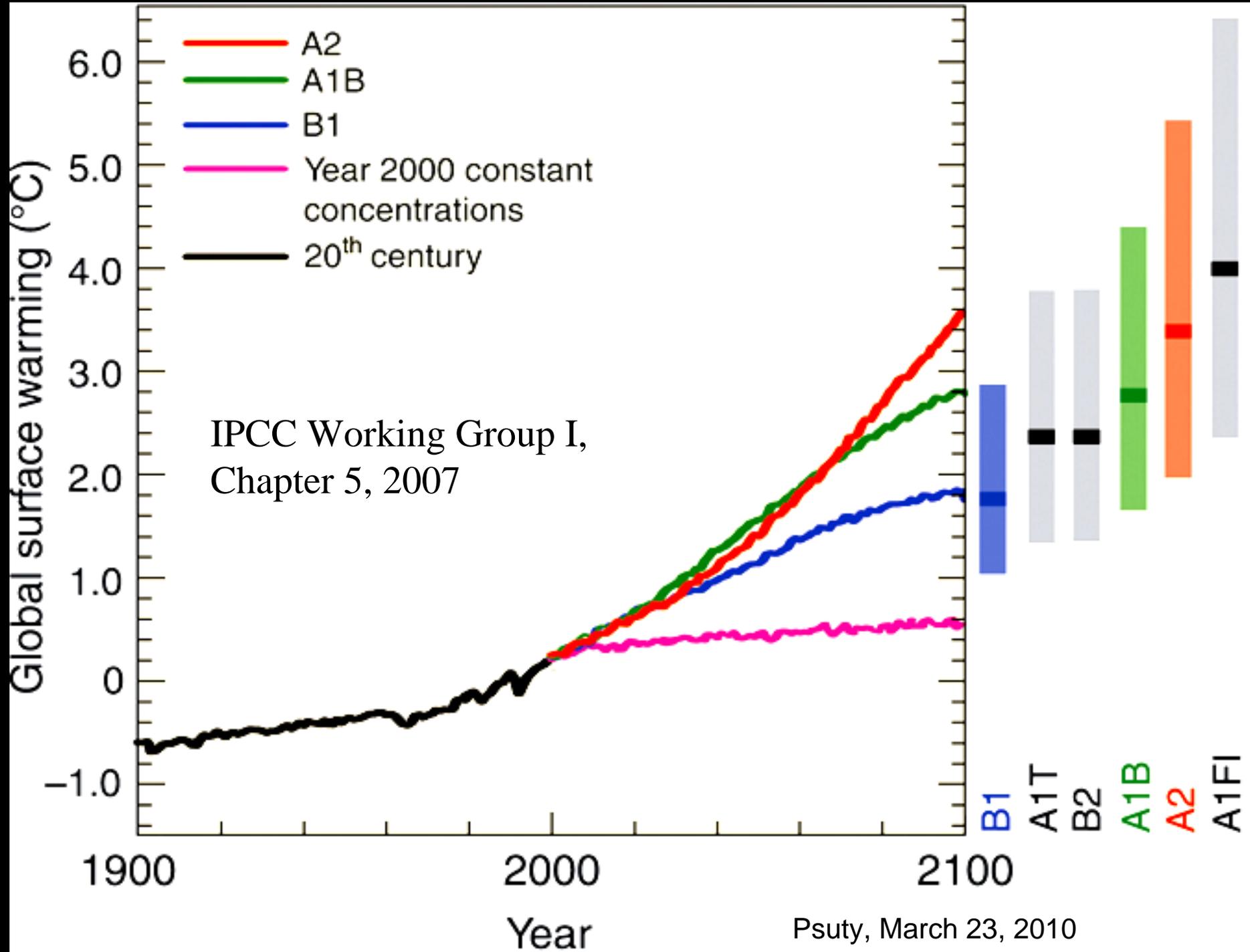
March 23, 2010

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE

Climate Change 2007

Assessment Reports 1990, 1995, 2001

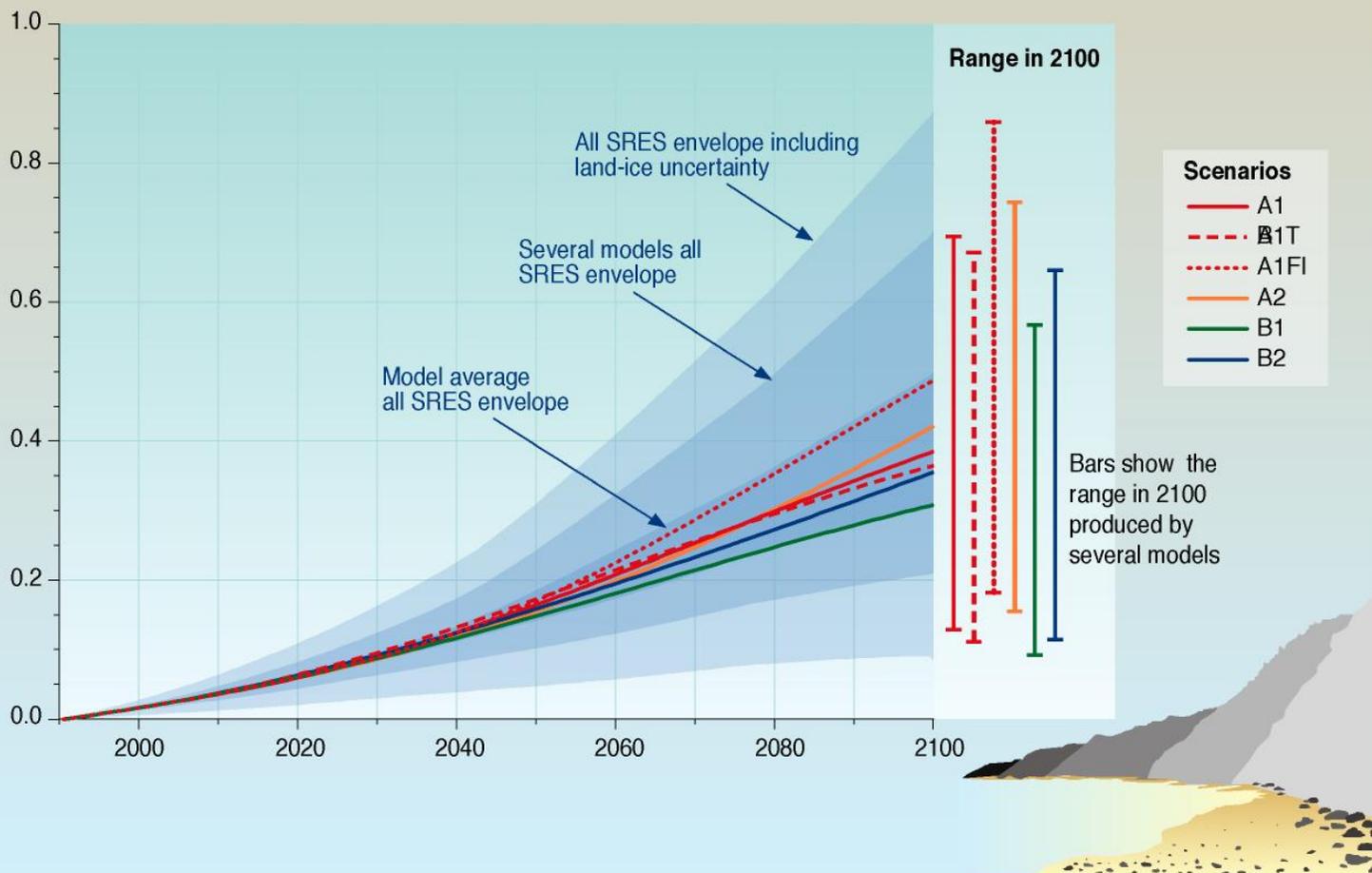
Synthesis Report, Valencia, November 2007.



Global average sea level rise (1990 - 2100)

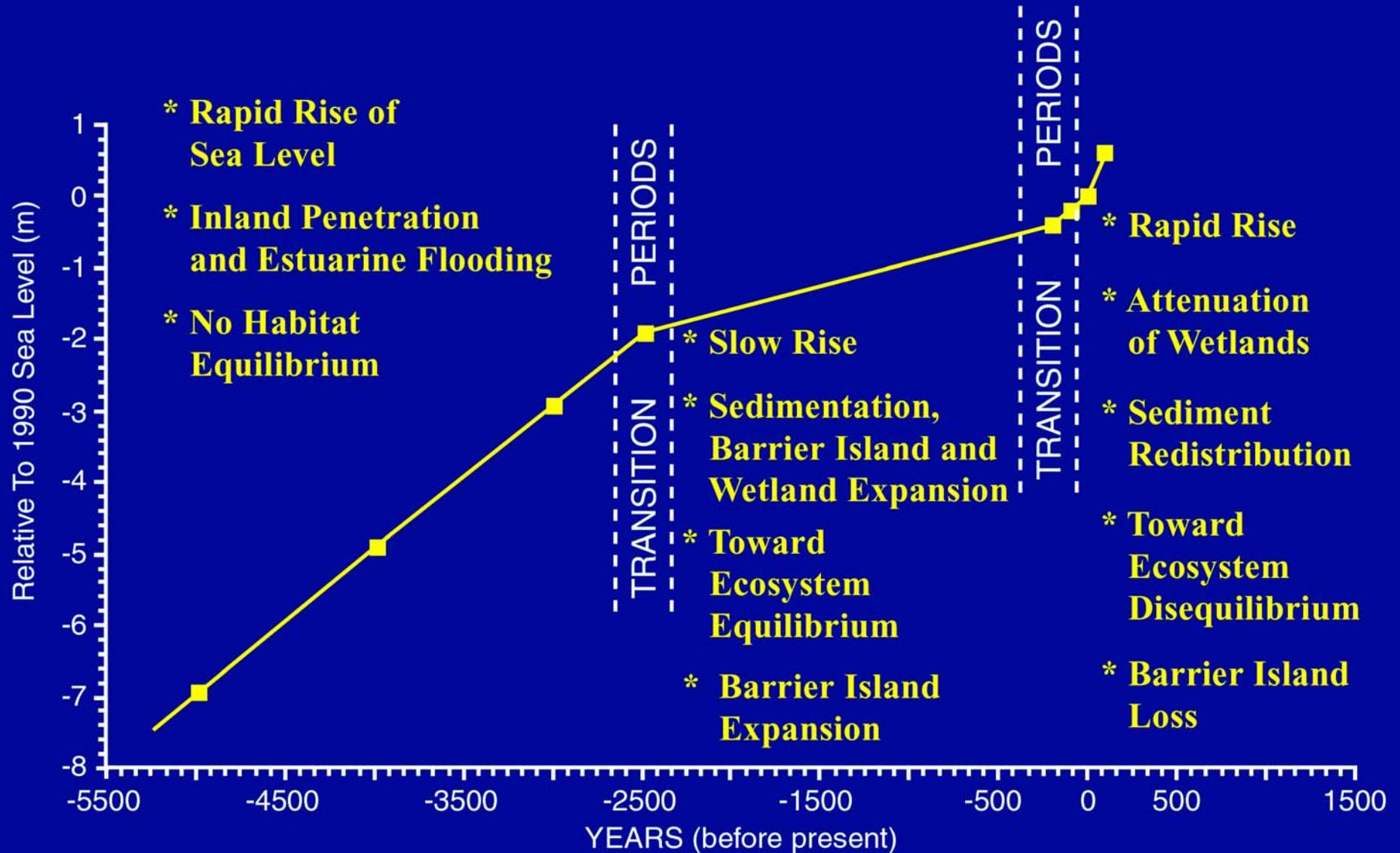
for the six SRES Scenarios

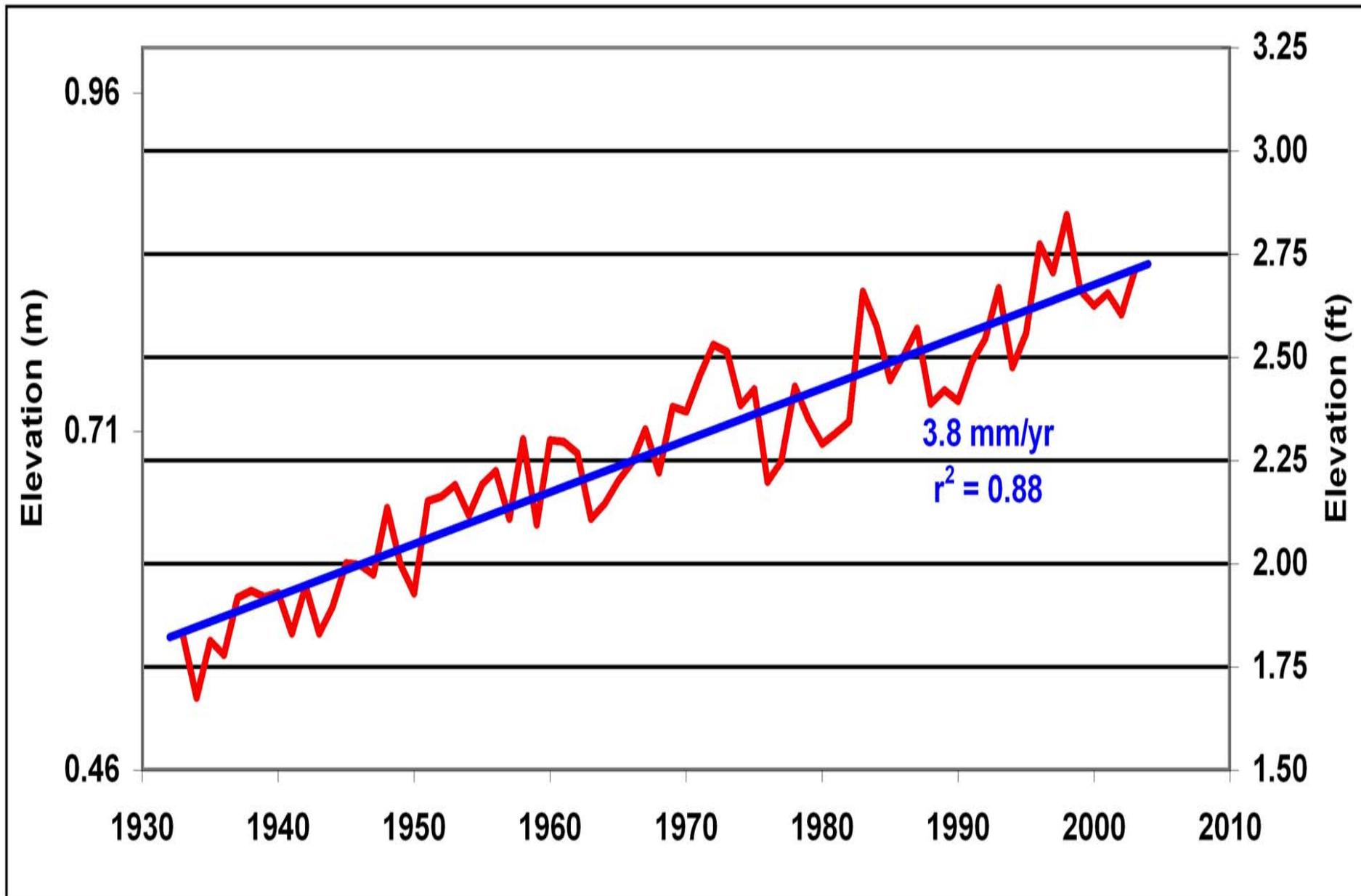
Sea level rise (metres)



WG1 TS FIGURE 24

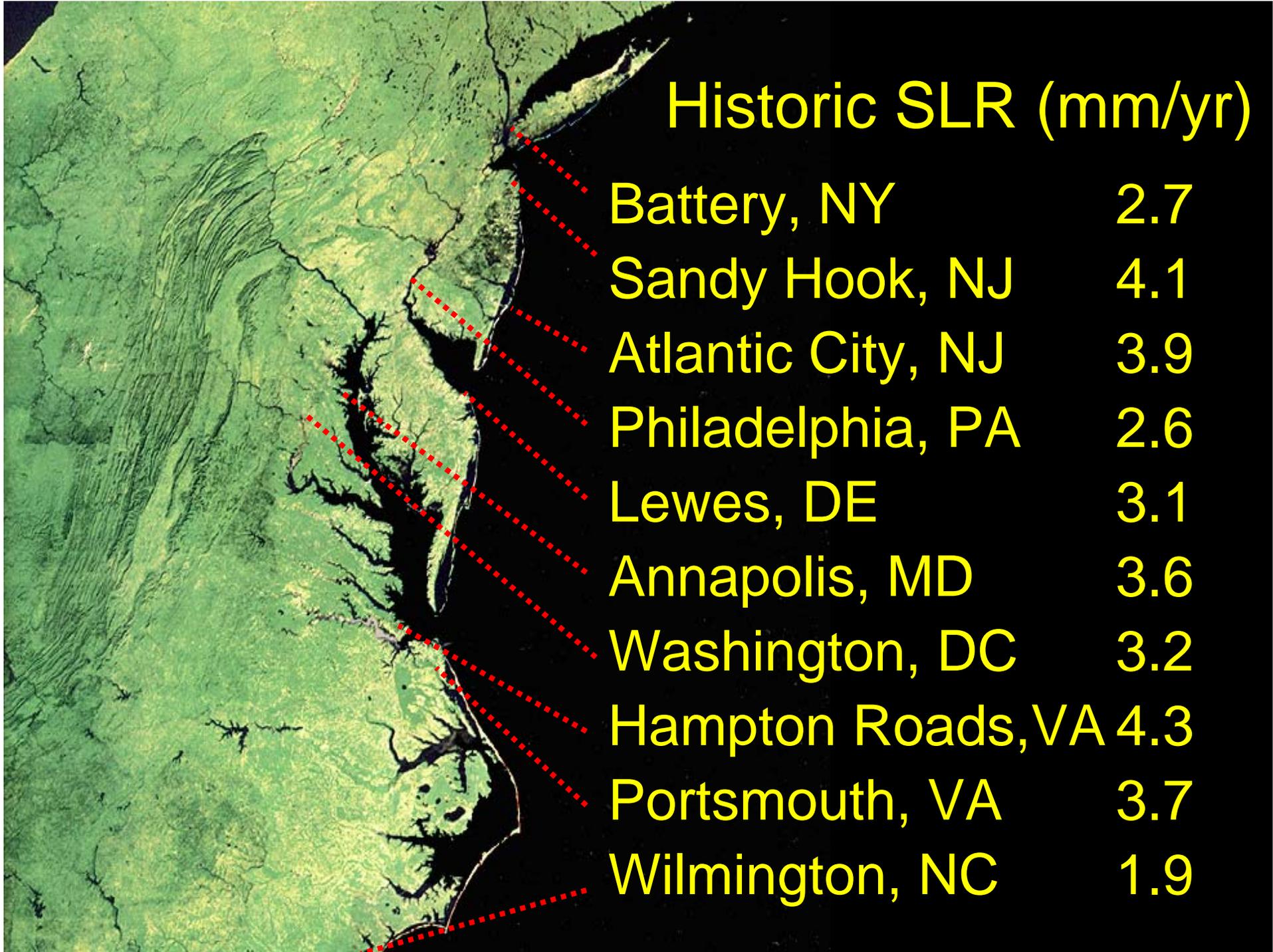
Recent Geological Context





Sandy Hook

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Historic SLR (mm/yr)

Battery, NY 2.7

Sandy Hook, NJ 4.1

Atlantic City, NJ 3.9

Philadelphia, PA 2.6

Lewes, DE 3.1

Annapolis, MD 3.6

Washington, DC 3.2

Hampton Roads, VA 4.3

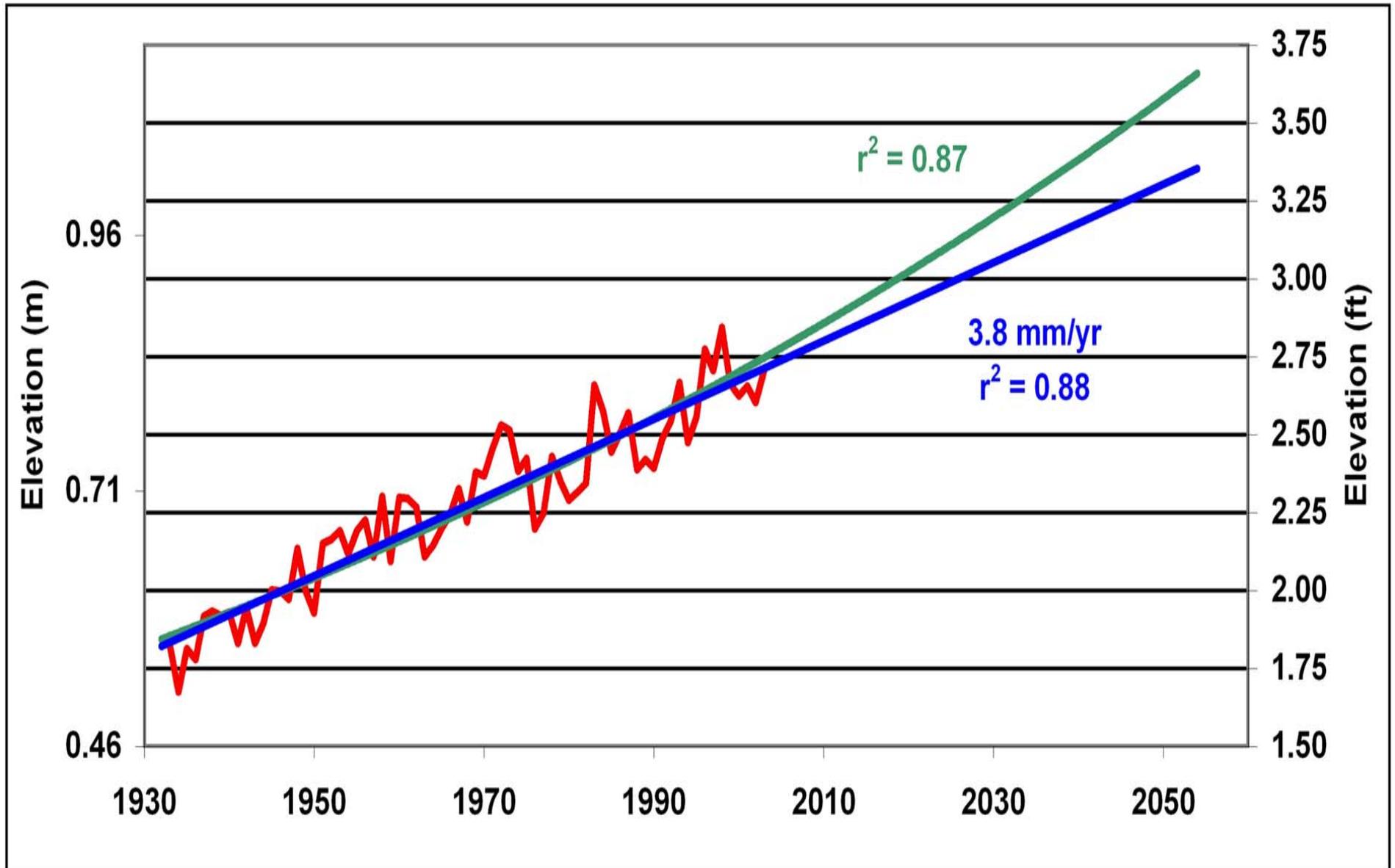
Portsmouth, VA 3.7

Wilmington, NC 1.9



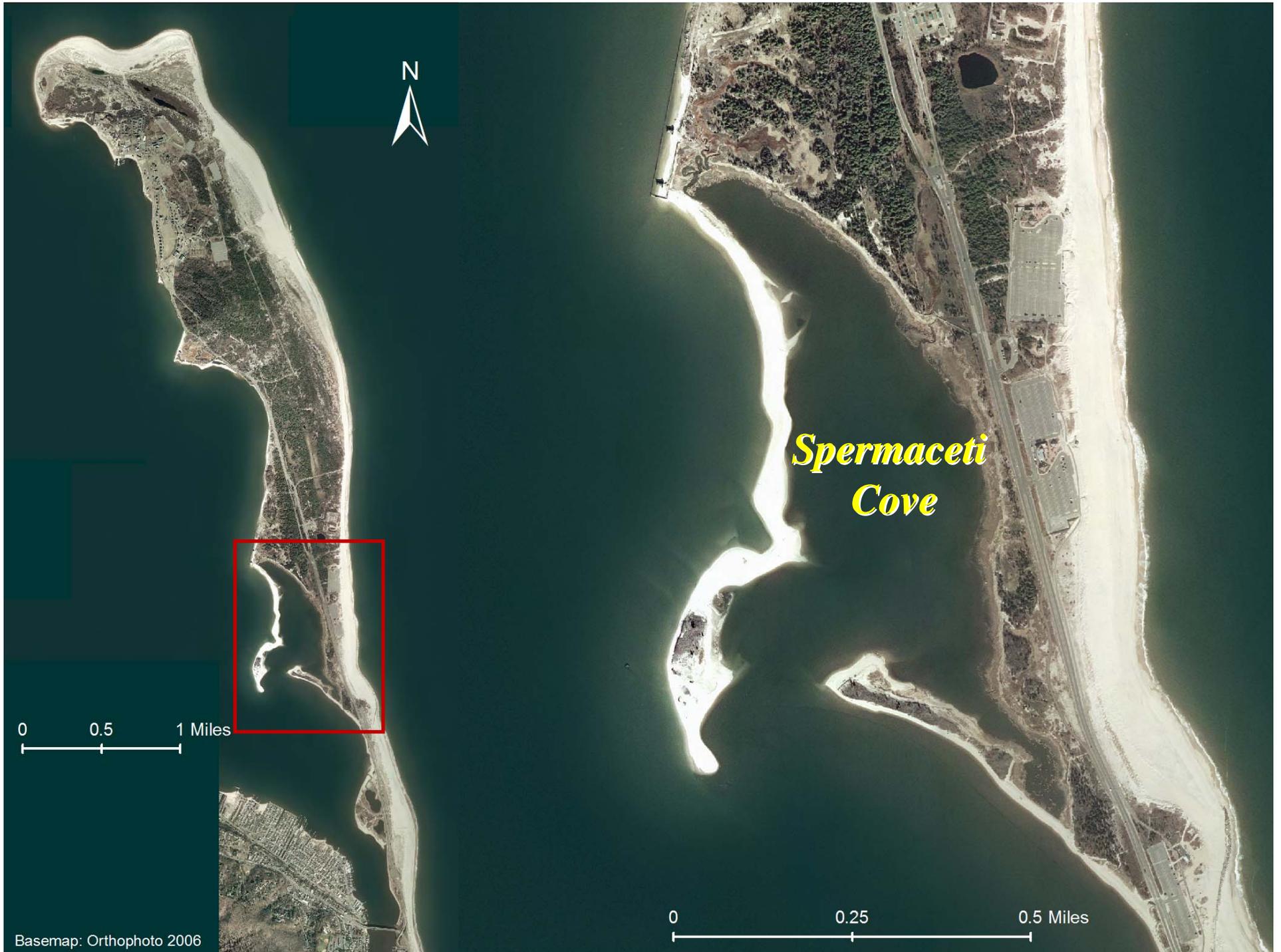
bayside vulnerability

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Sandy Hook

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*Spermaceti
Cove*

0 0.5 1 Miles

0 0.25 0.5 Miles

Basemap: Orthophoto 2006



*Spermaceti
Cove*

→ **Displacement of
beach and wetlands**

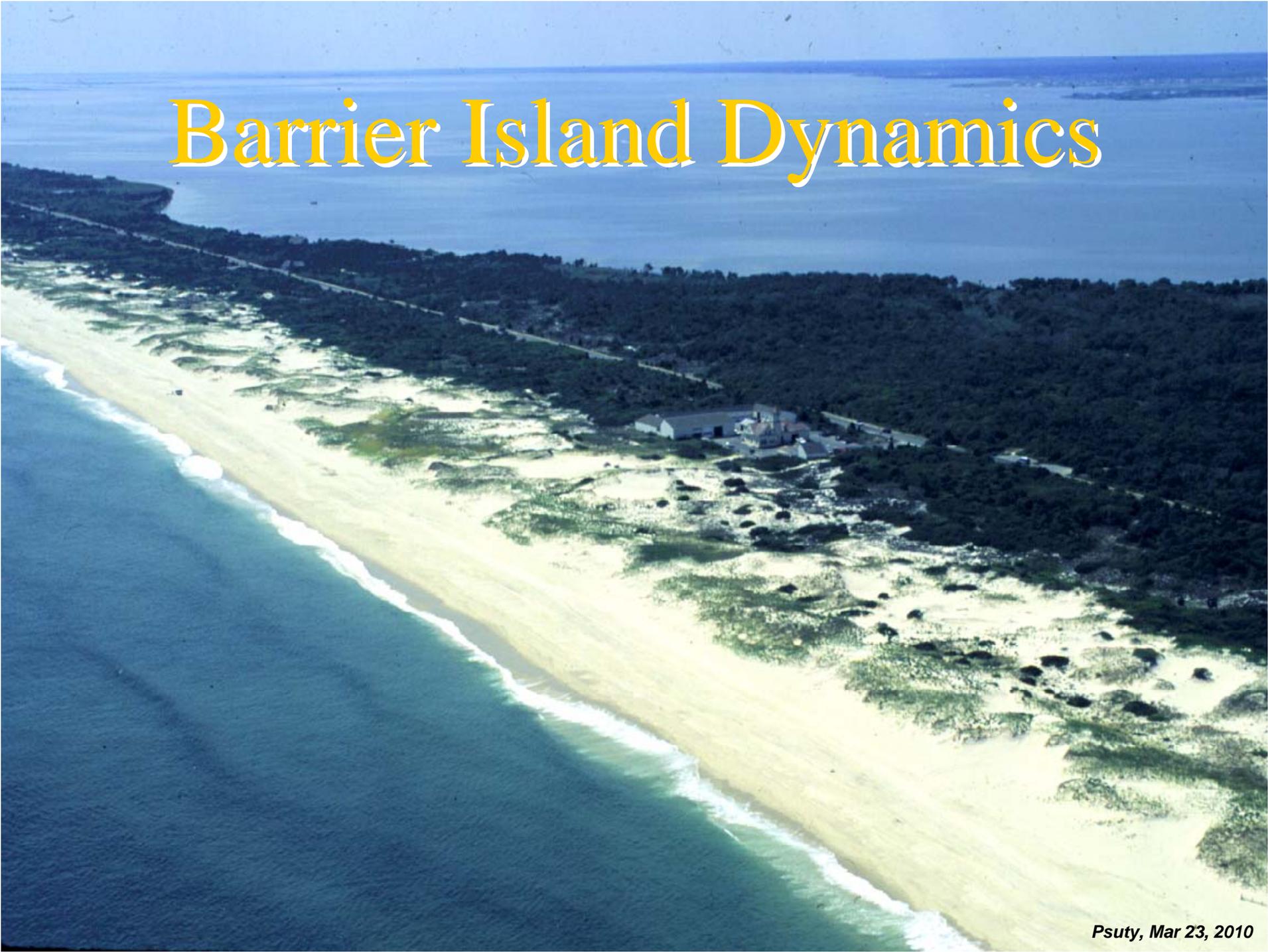
→ **Barriers**

Beach Response



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Barrier Island Dynamics

An aerial photograph of a barrier island coastline. The image shows a wide, sandy beach on the left, transitioning into a dense line of green vegetation. A road runs parallel to the coast, and a small cluster of buildings is visible in the middle ground. The ocean is visible in the foreground, and the sky is clear and blue.

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Static Land Use

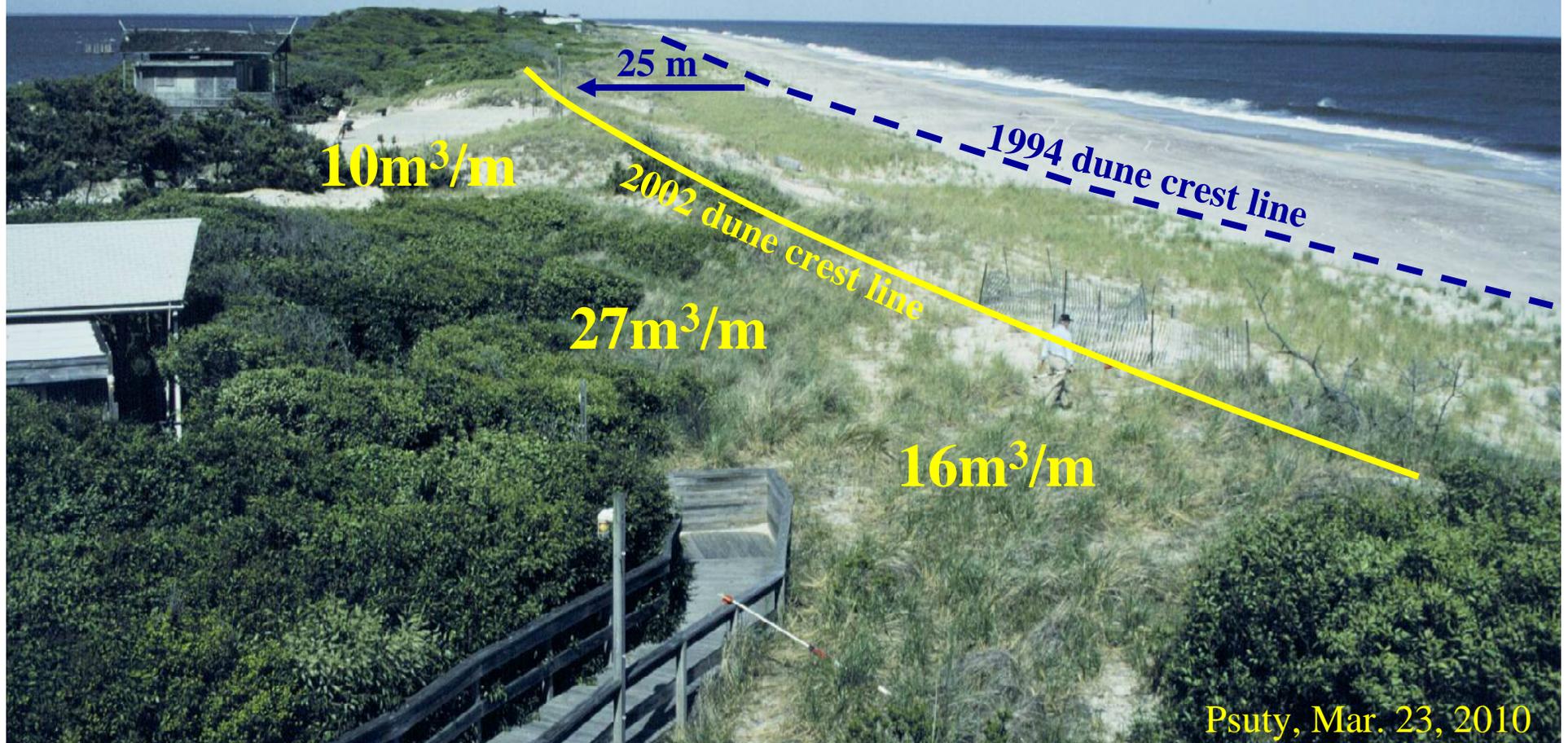
Dynamic System

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Circulation Cell Episode 1994-2002

2002
Dune Recovery

1994
Crestline Displacement





Beach and Dune Displacement

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Parabolics in Undeveloped Portion

beach budget versus dune budget



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Marsh edge, sediment transfer



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Marsh deterioration

habitat loss

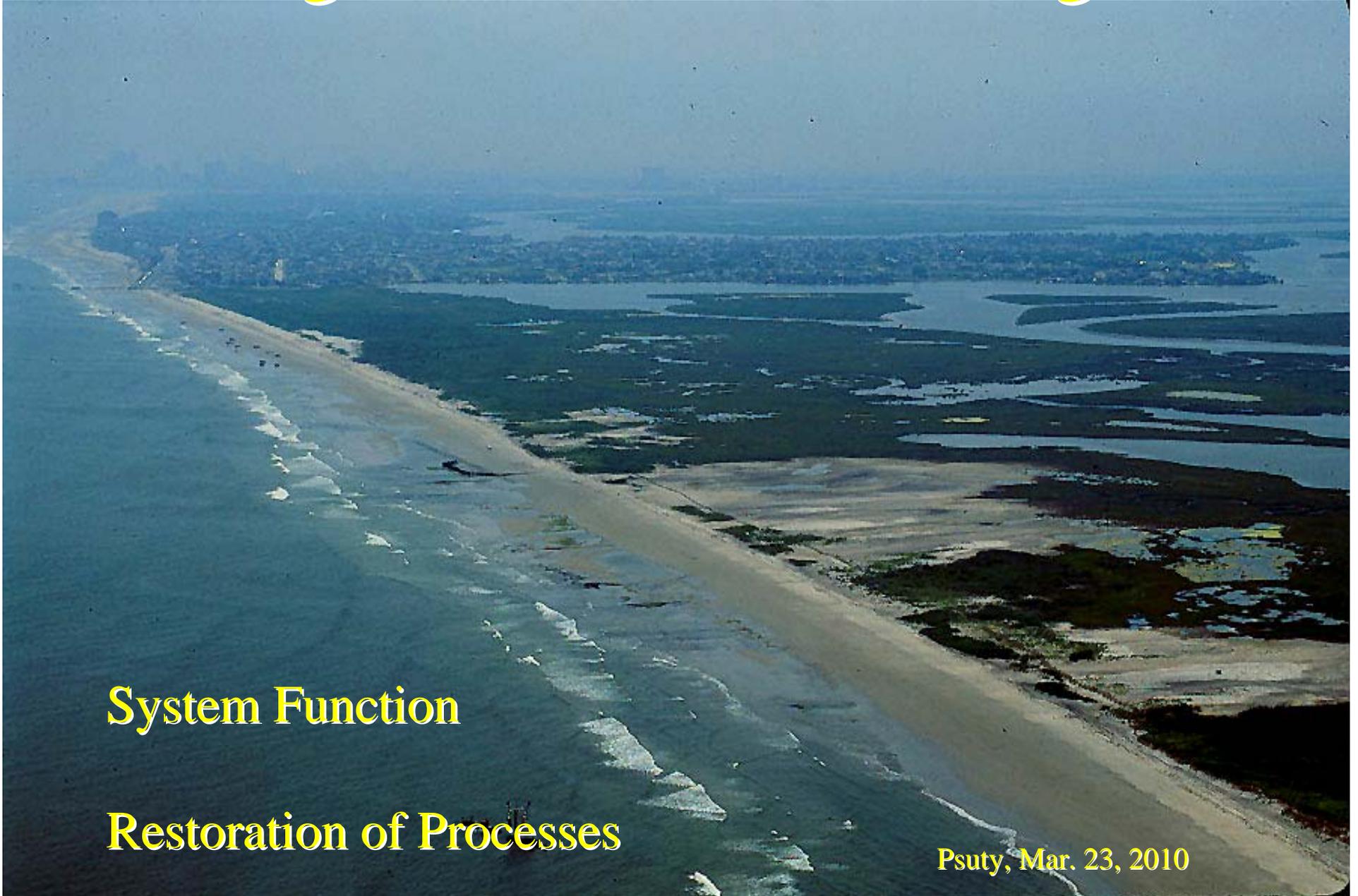


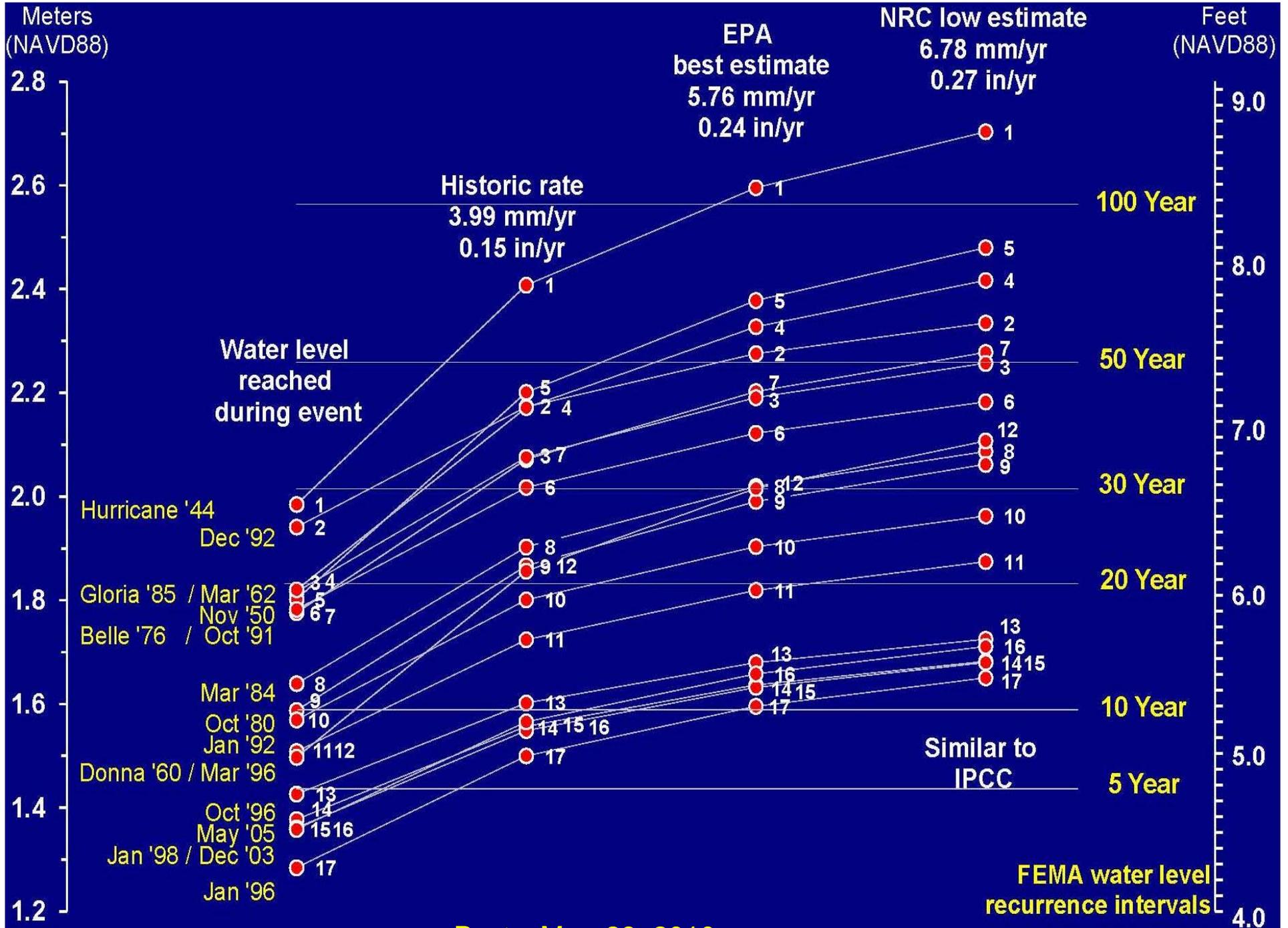
Negative Sediment Budget

System Function

Restoration of Processes

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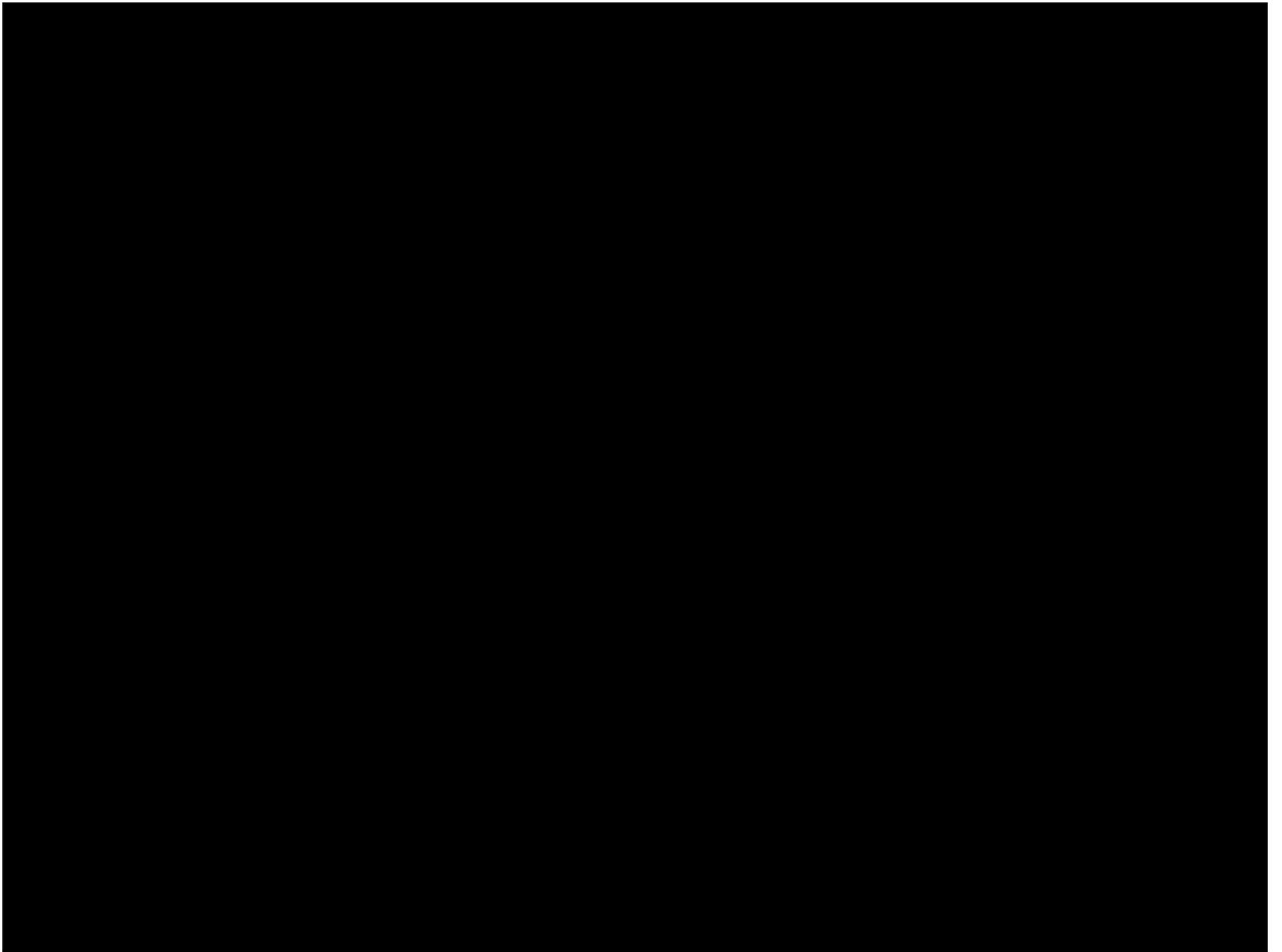
- Sea-Level Rise has been changing and will continue to change the coastal environment.
- Knowledge of the magnitudes and directions of change are essential to decision-making.

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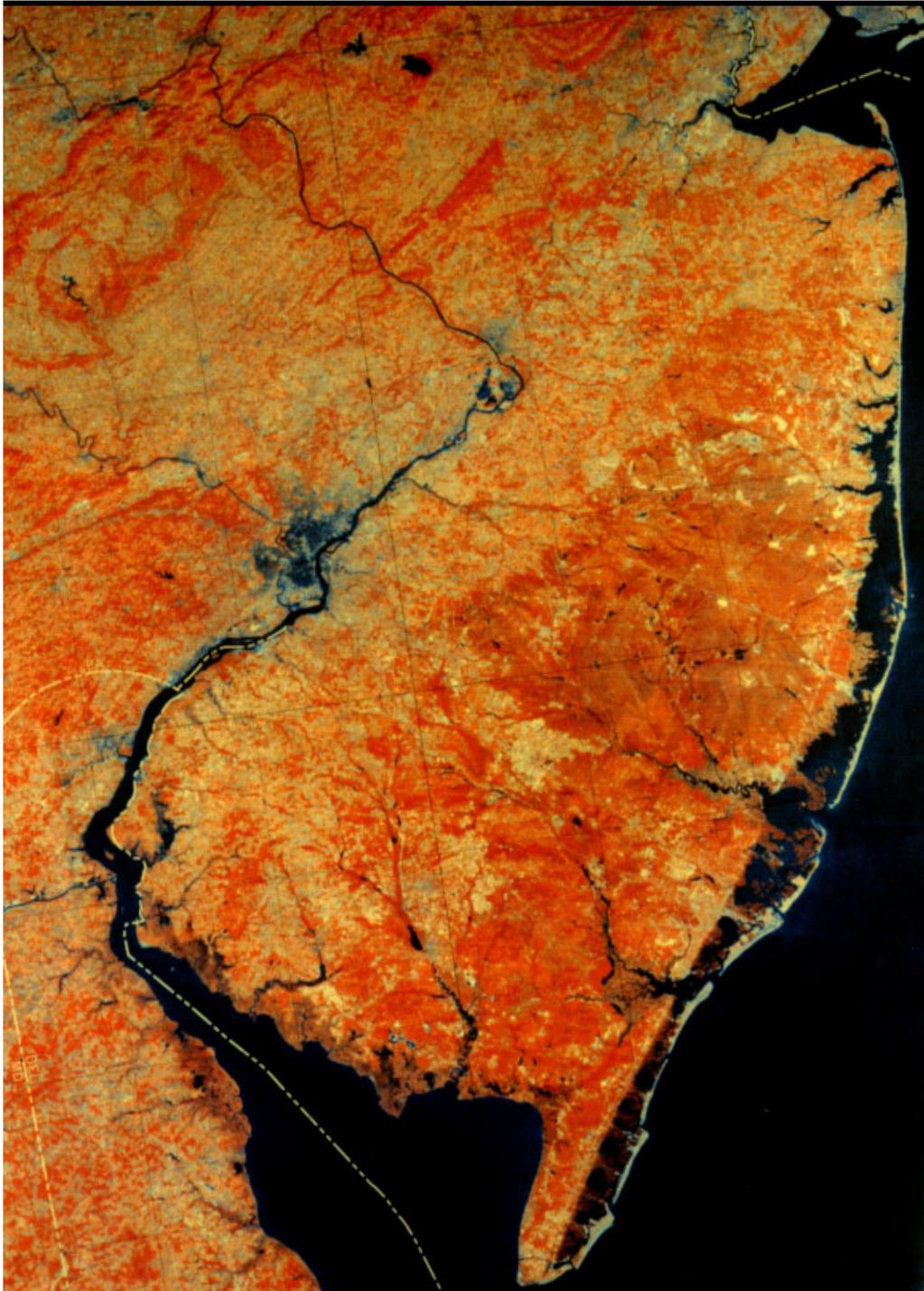
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Coastal Diversity

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Barrier Islands
and Headlands

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Coastal
Watersheds

Cliffed Coast

