

# Climate Change Adaptation and the Challenge of Governance

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Science at Work  
— for a —  
Sustainable World

# A 4 Degree World?

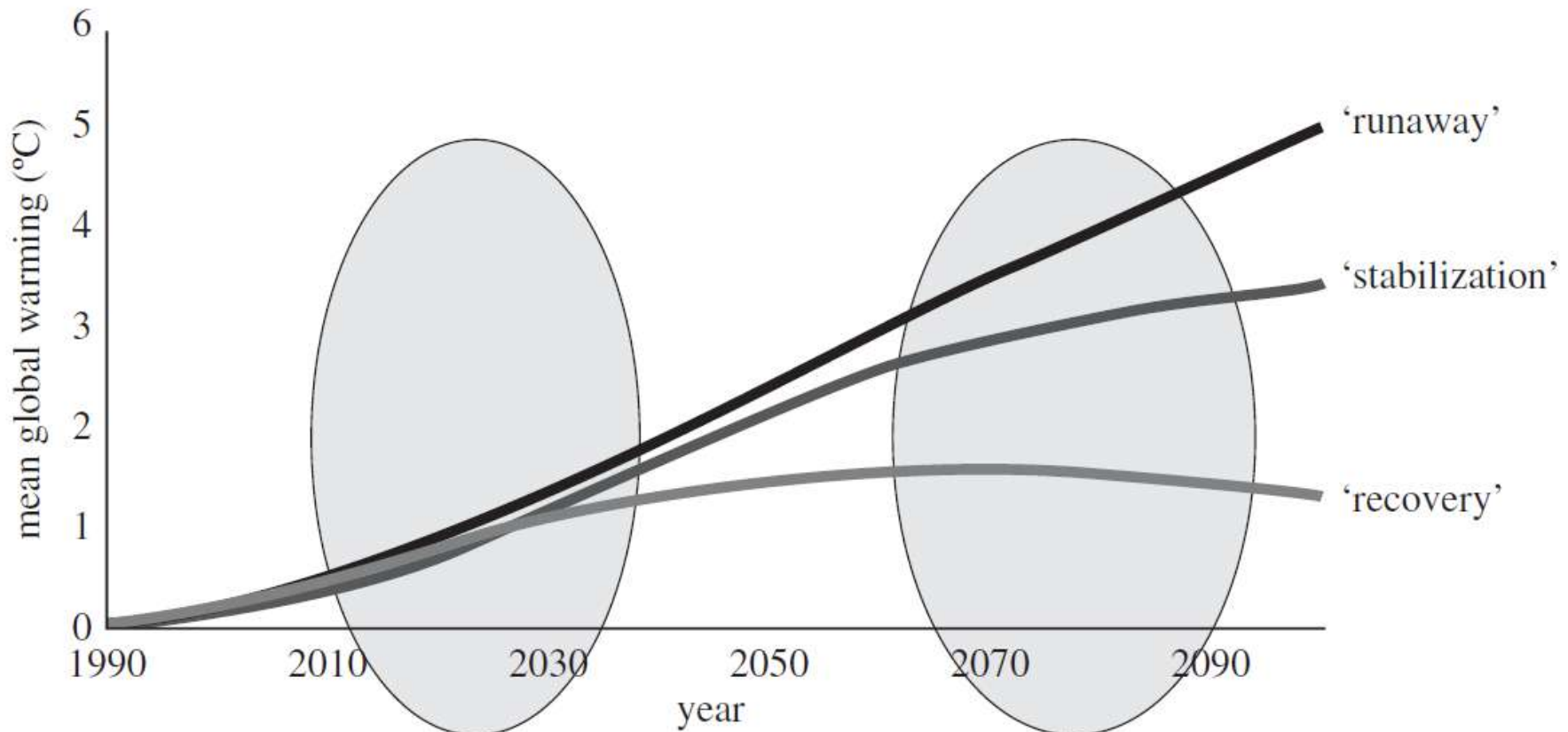
- The 2009 Copenhagen Accord recognized the scientific view 'that the increase in global temperature should be below 2 degrees Celsius' despite growing views that this might be too high.



# A 4 Degree World?

- The continued rise in greenhouse gas emissions in the past decade and the delays in a comprehensive global emissions reduction agreement have made achieving this target extremely difficult, arguably impossible, raising the likelihood of global temperature rises of 3°C or 4°C within this century.





incremental adaptation to changes of reasonable certainty is possible

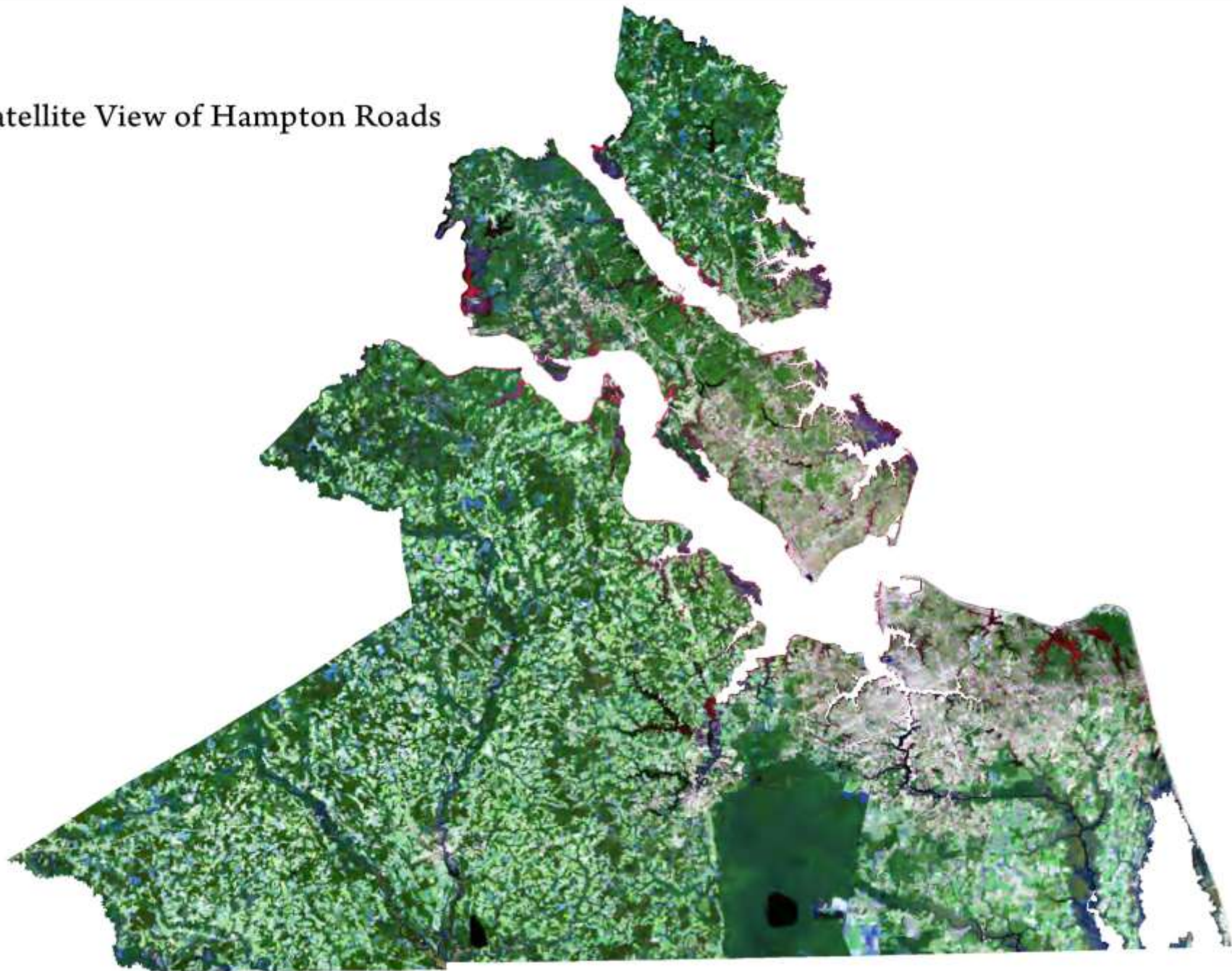
planning must increasingly allow for divergent possible futures, and transformative adaptation

# Improvements in both top-down and bottom-up governance are needed

- Many local adaptation decisions will not provide maximum value (and may even be maladaptive) unless integrated in a framework that functions across multiple geographic scales

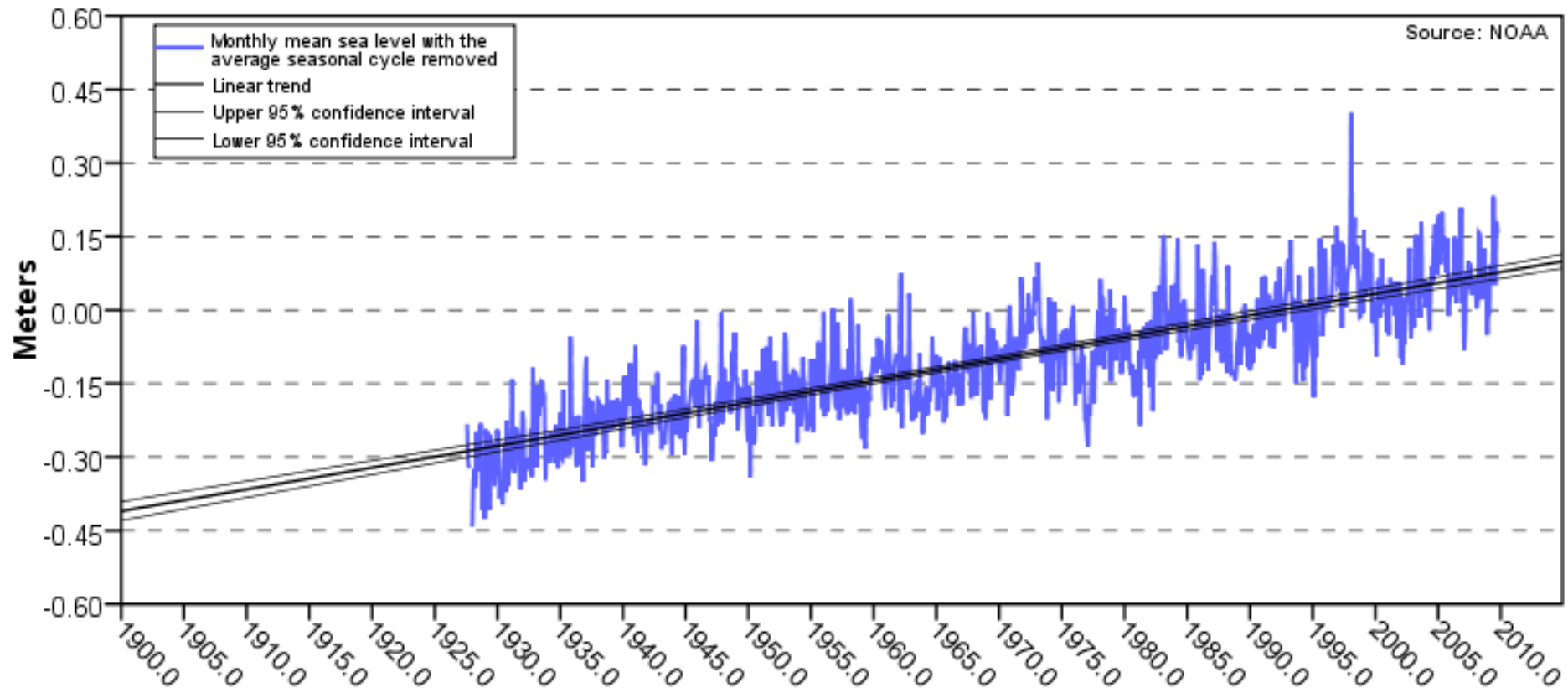


## Satellite View of Hampton Roads



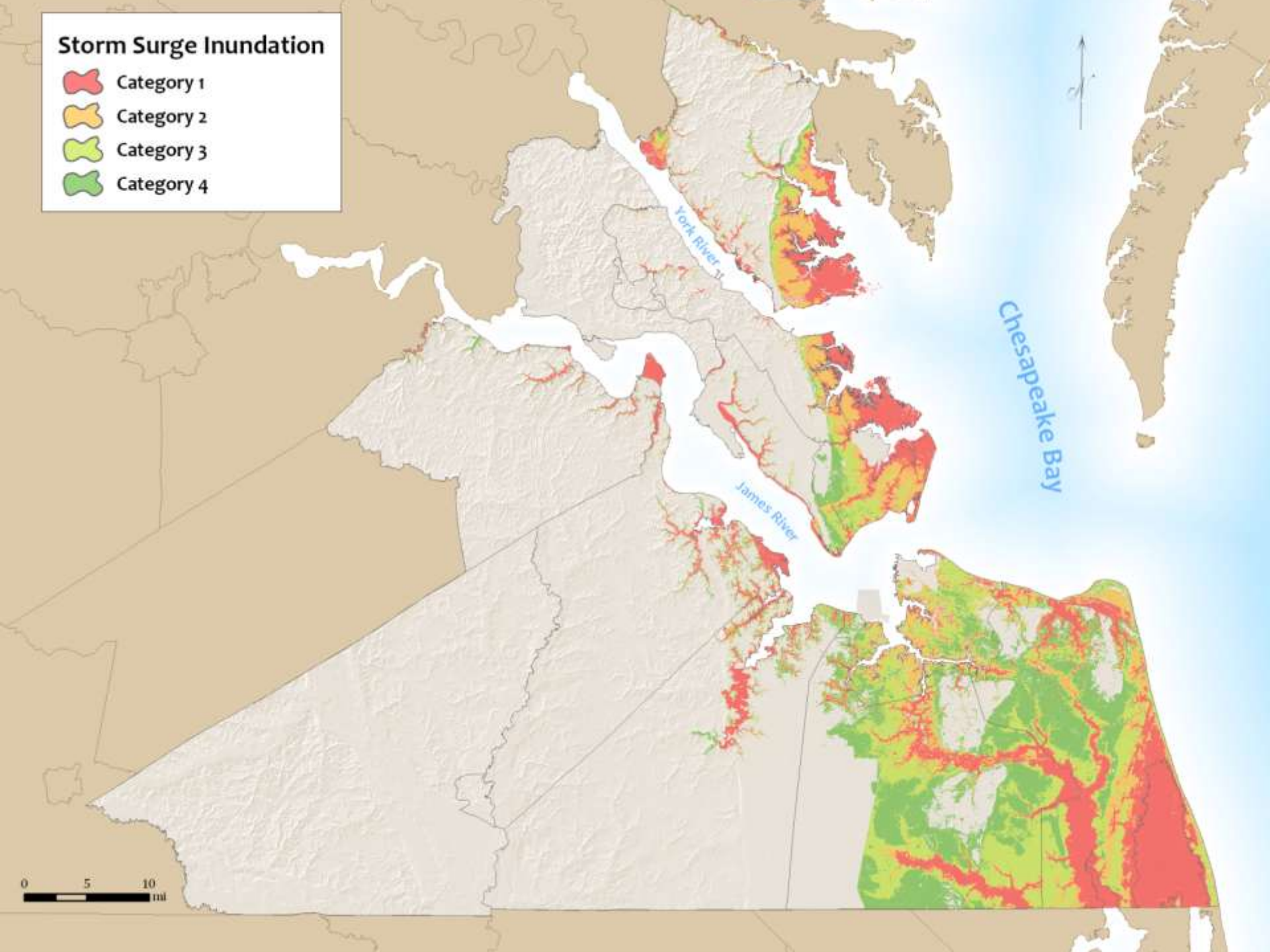
# Historic Sea Level Rise Rate

Sewells Point, VA  $4.44 \pm 0.27$  mm/yr



# Storm Surge Inundation

- Category 1
- Category 2
- Category 3
- Category 4



# Erosion and Sea Level Rise



## Legend

- Transect Point
- Identified Dune Sites
- Baseline
- 1937 Shoreline
- 1953 Shoreline
- 1963 Shoreline
- 1980 Shoreline
- 1994 Shoreline
- 2002 Shoreline

# Governance Challenge

- Majority of land use decision making power held at the local level
- Competition among neighborhoods for limited resources to deal with flooding issues
- Regional planning agency has the “power of good ideas” but little regulatory authority



# Governance Challenge

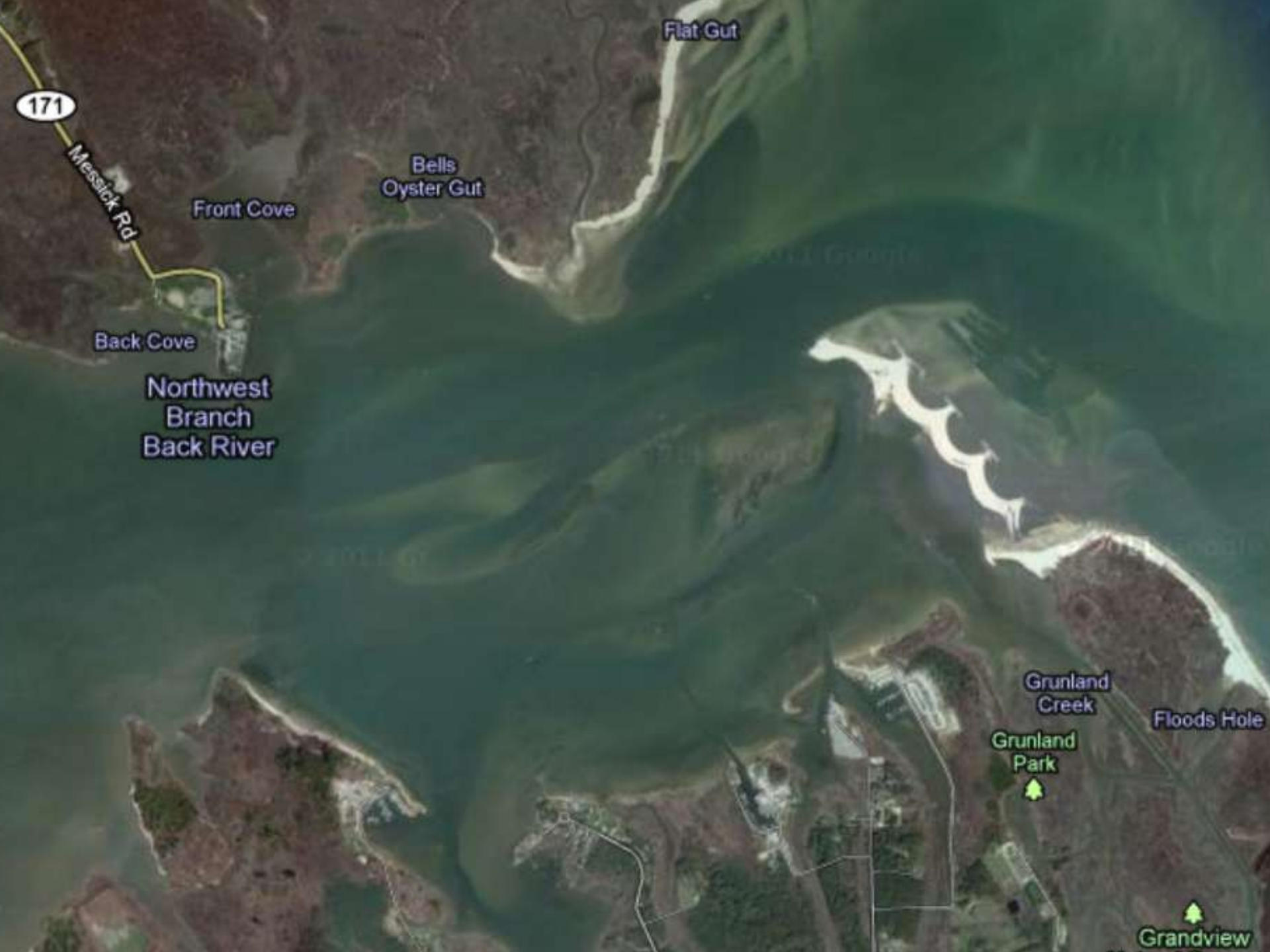
- Virginia Coastal Program is funding adaptation planning at the regional level
- State level climate change plan does little to address adaptation questions
- Weak federal requirements for adaptation planning in infrastructure projects



# Governance Challenge

- Private nonprofit organizations are beginning the process of working with citizens groups to build awareness of climate change impacts and educate citizens to participate in the political process
- Thus far little integration among the various efforts





Flat Gut

171

Messick Rd

Bells  
Oyster Gut

Front Cove

Back Cove

Northwest  
Branch  
Back River

Grunland  
Creek

Floods Hole

Grunland  
Park

Grandview

# Improving the Governance Situation

- Nested plans that address both varying temporal and geographic scales
- Balancing of response to both ecosystem service and infrastructure impacts of climate change
- Facilitated neighborhood level planning process to educate and address both social and infrastructure issues

