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Union of Concerned Scientists  
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## Underwater:

Rising Seas, Chronic Floods, and the Implications for U.S. Coastal Real Estate





## SEA LEVEL RISE VIEWER

700 Park Ave, Norfolk, VA, 23504, USA



WATER  
LEVEL

6ft

5ft

4ft

3ft

2ft

1ft

MHHW



SEA LEVEL  
RISE



LOCAL  
SCENARIOS



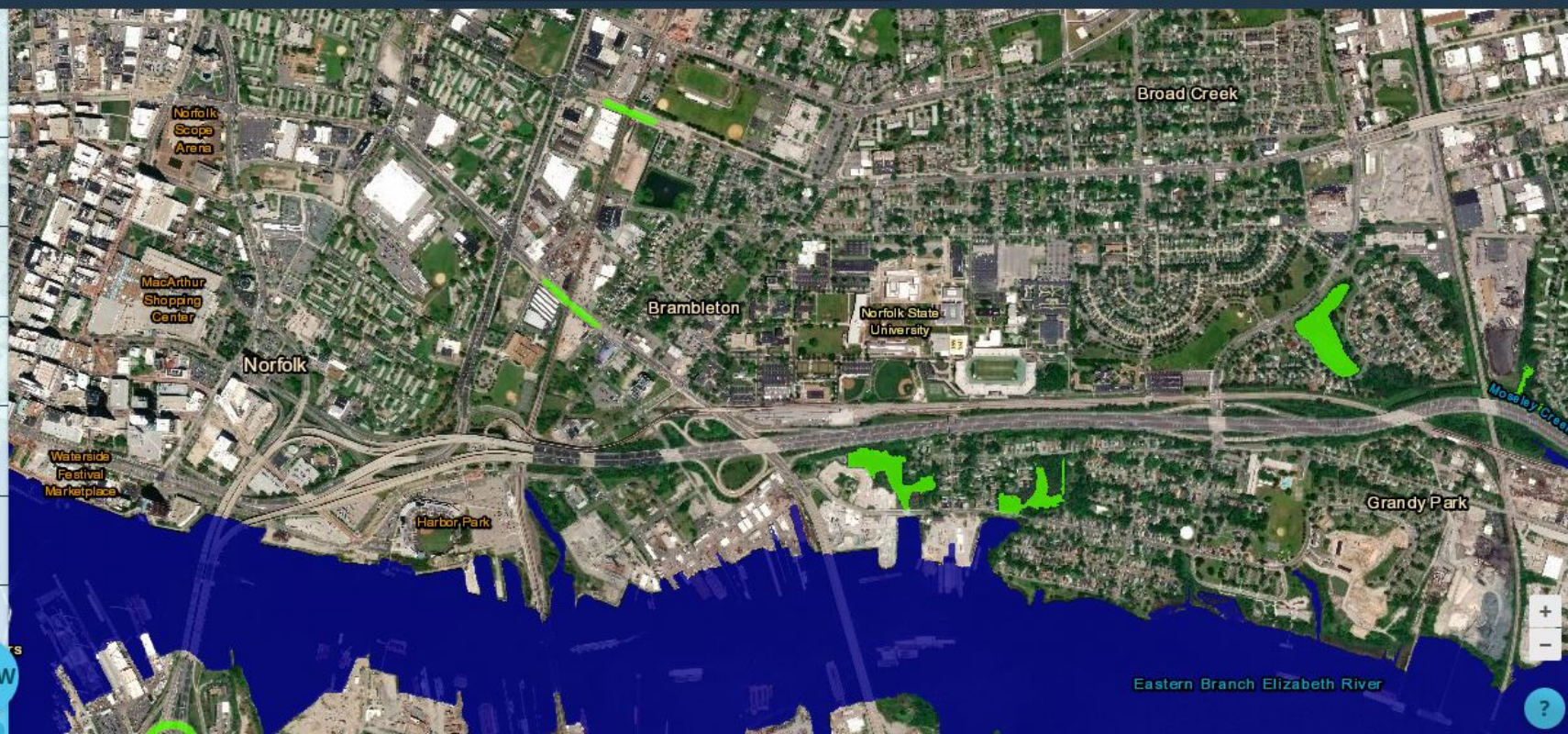
MAPPING  
CONFIDENCE



MARSH  
MIGRATION



VULNERABILITY





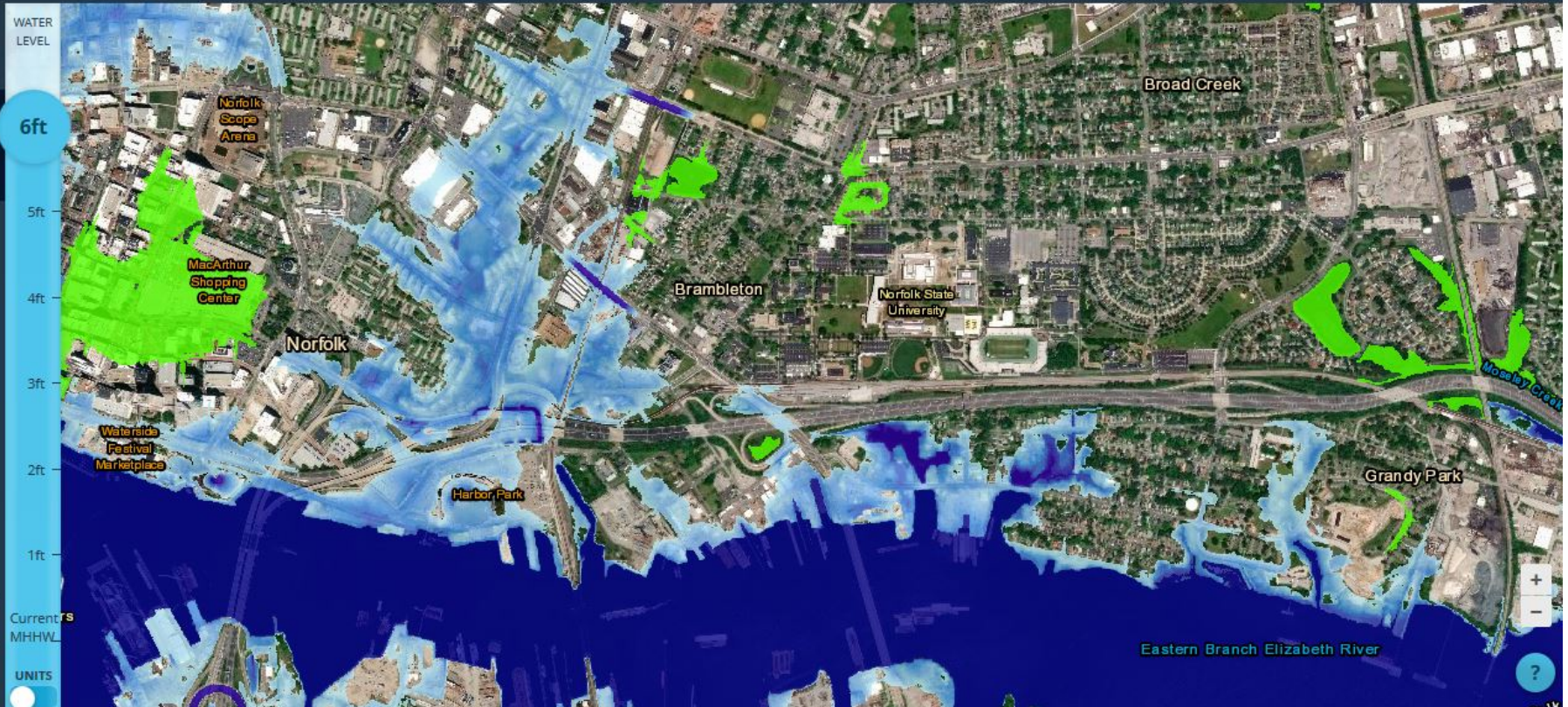


## SEA LEVEL RISE VIEWER

700 Park Ave, Norfolk, VA, 23504, USA



-  SEA LEVEL RISE
-  LOCAL SCENARIOS
-  MAPPING CONFIDENCE
-  MARSH MIGRATION
-  VULNERABILITY



# Encroaching Tides

How Sea Level Rise and Tidal Flooding Threaten U.S. East and Gulf Coast Communities over the Next 30 Years



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EXECUTIVE SUMMARY

## The US Military on the Front Lines of Rising Seas

### Growing Exposure to Coastal Flooding at East and Gulf Coast Military Bases

**HIGHLIGHTS**  
The US Armed Forces depend on up and functional bases to carry out their stated mission to provide the military forces needed to deter war and to protect the security of the country. The US military and defense budget in fiscal year 2013 was just under \$600 billion. Of that total, about one-third was earmarked for the maintenance and operation of bases. Many of which are in the United States. Given growing exposure to rising seas and storm surge, the widespread, the military is at risk of losing land where vital infrastructure, training and testing grounds, and housing for thousands of its personnel currently exist.



Photo courtesy of the US Navy. Photo credit: US Navy. Photo credit: US Navy.

## When Rising Seas Hit Home

Hard Choices Ahead for Hundreds of US Coastal Communities



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# Underwater

Rising Seas, Chronic Floods, and the Implications for US Coastal Real Estate

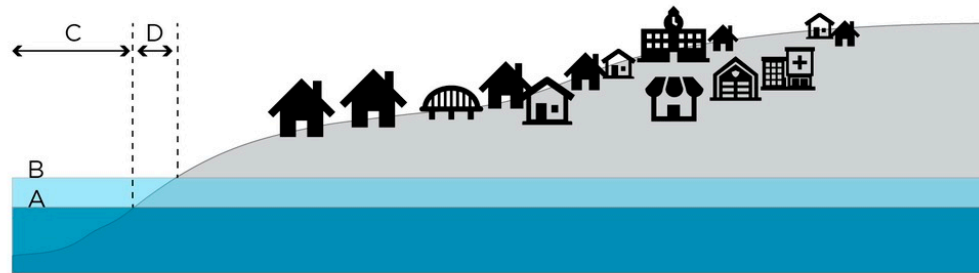


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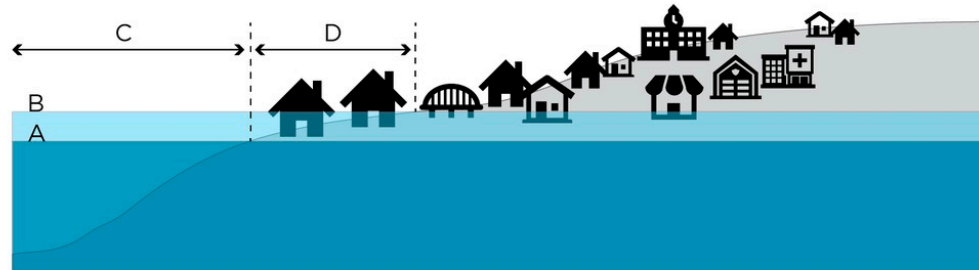


# [ Chronic Inundation and Sea Level Rise

Today



With Future  
Sea Level Rise



- A. High tide level
- B. Chronic flooding level
- C. Permanent inundation zone (underwater with each high tide)
- D. Chronic inundation zone (underwater 26 times or more a year)



# [ Defining Chronic Inundation



Photo: Emily Michot/The Miami Herald via AP



# [ Mapping Chronic Inundation

## 1. Tide gauge records



## 2. Digital Elevation Models



## 3. Sea level rise projections

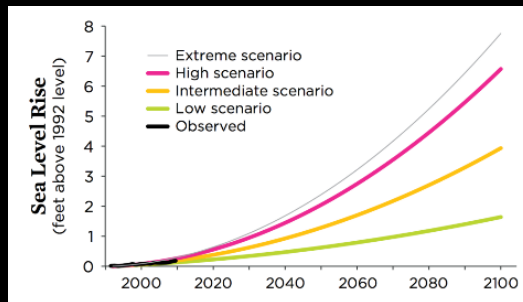
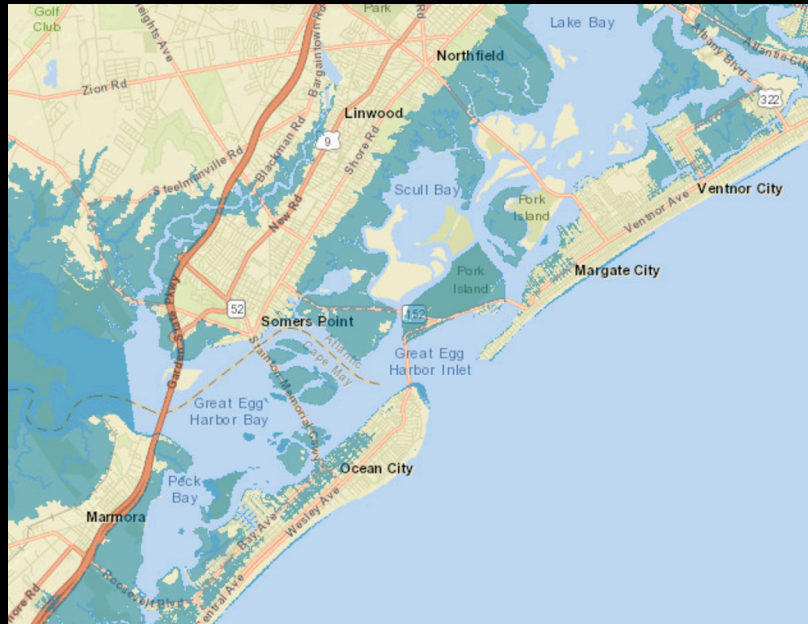


Photo: NOAA

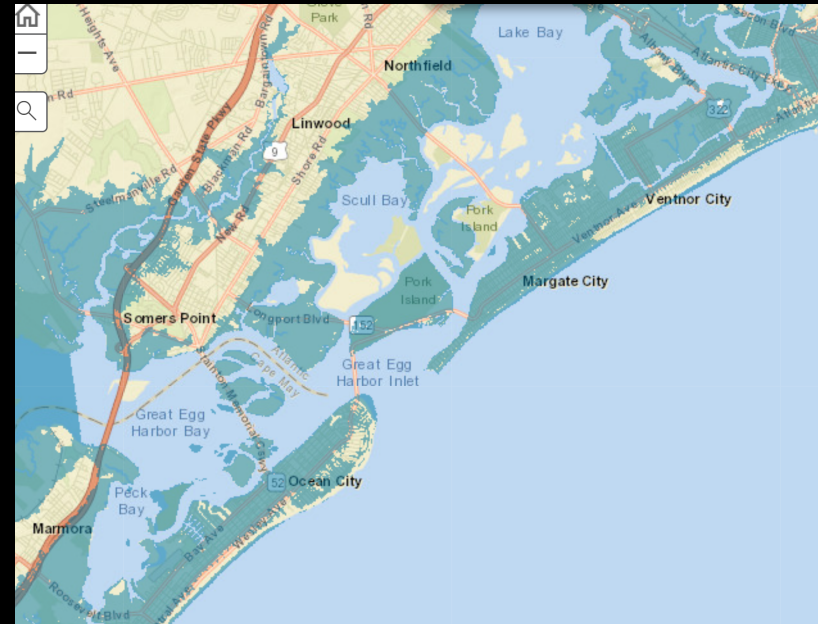


# [ Chronic inundation grows over time

2035 (intermediate)



2100 (intermediate)



<https://www.ucsusa.org/RisingSeasHitHome>

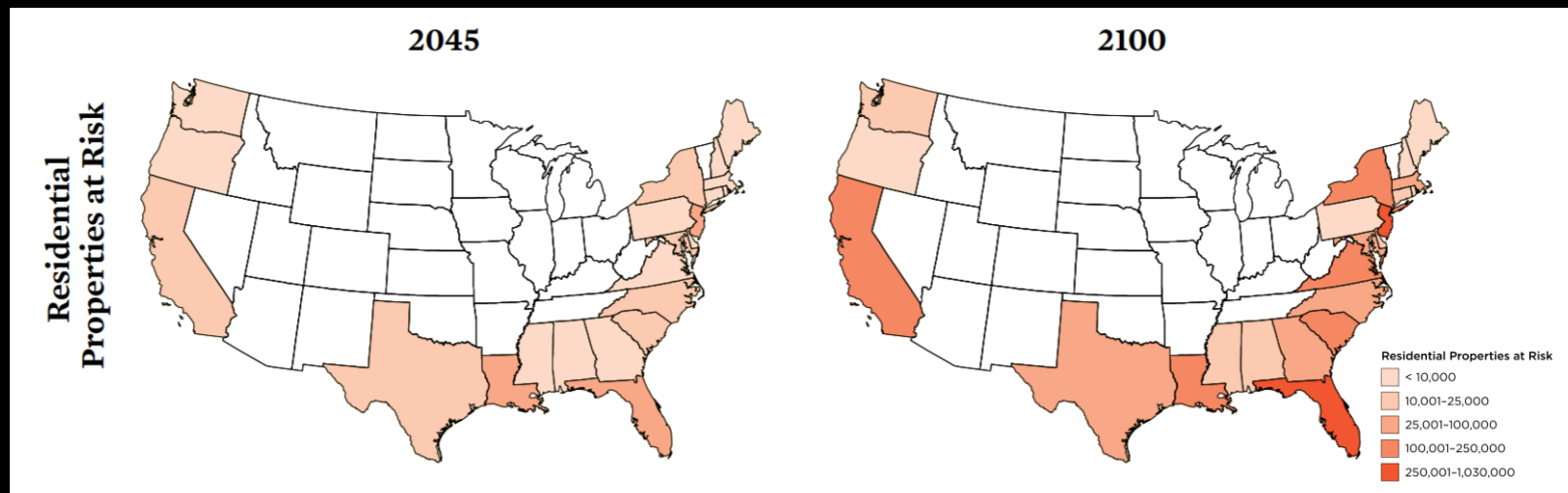
[What does this mean for coastal property?





# [ Homes at risk

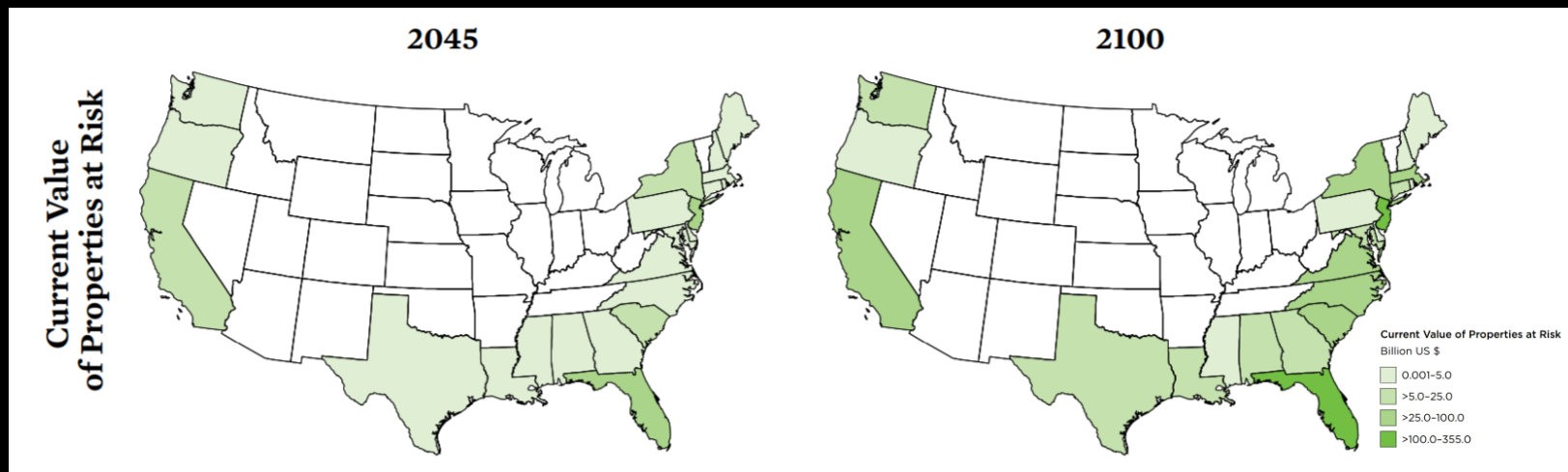
## A National Overview



Data provided by third parties through the Zillow Transaction and Assessment Dataset (ZTRAX). More information on accessing the data can be found at <https://www.zillow.com/ztrax>.

# [ Value at risk

## A National Overview

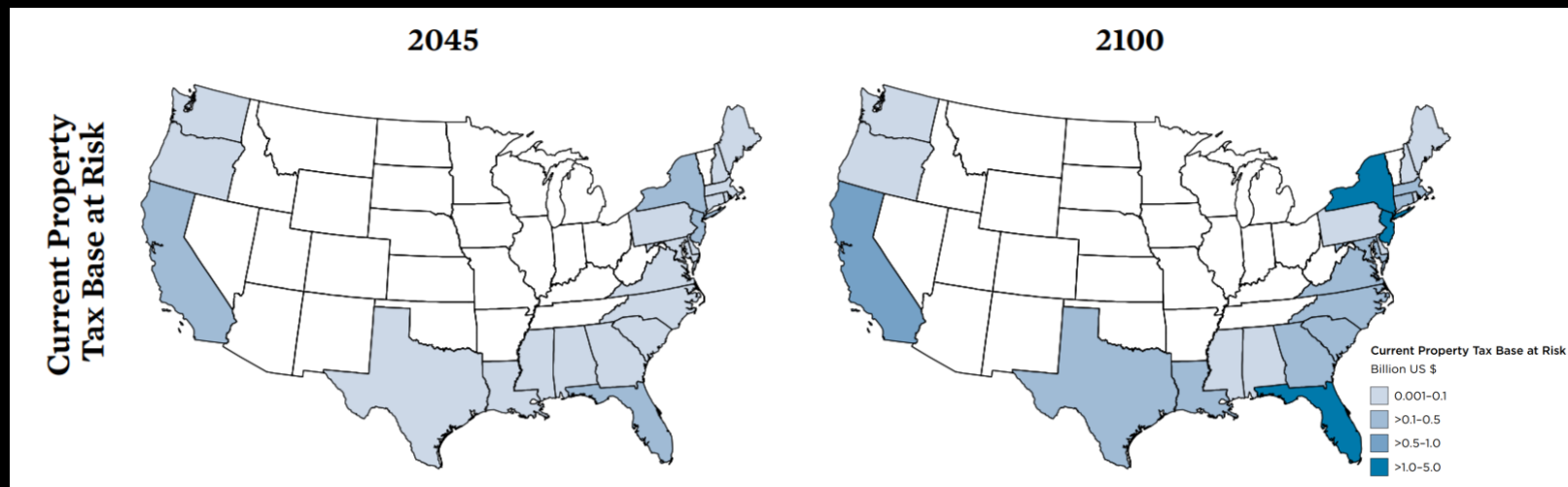


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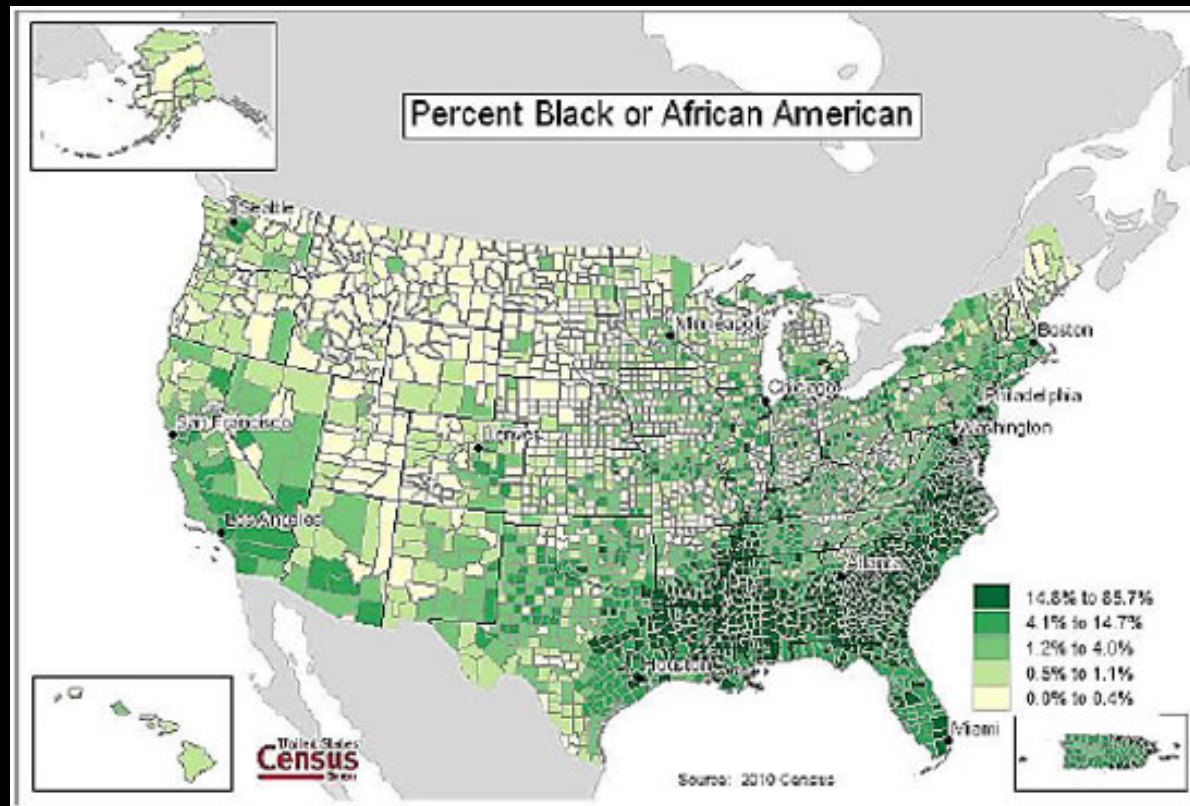
# [ Tax base at risk

## A National Overview



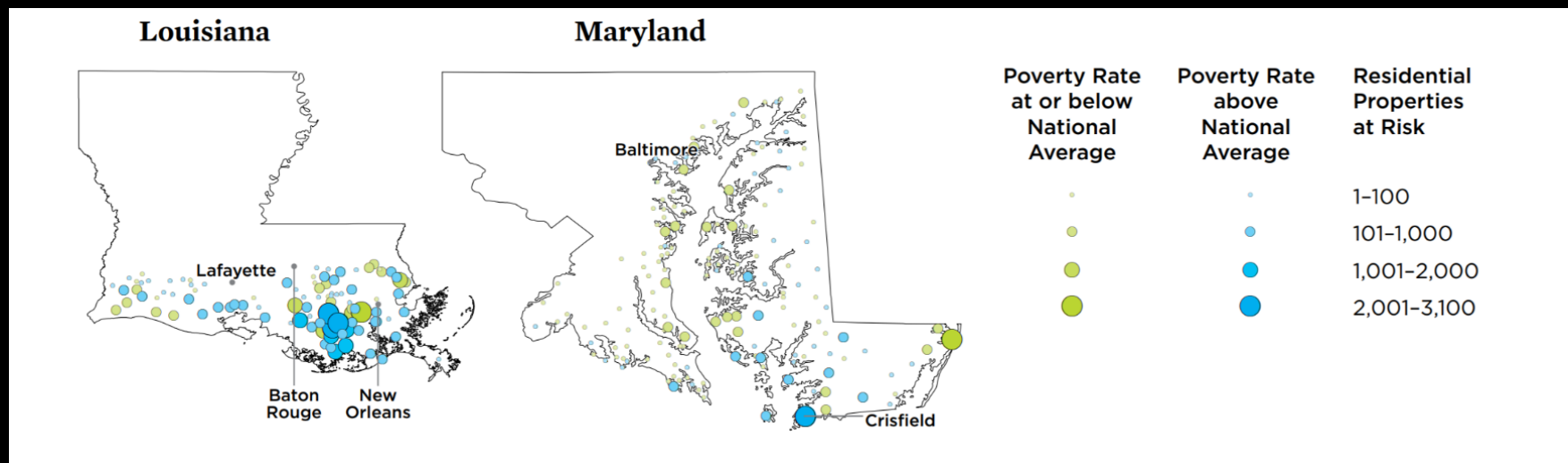
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[ What does this mean for African American communities?



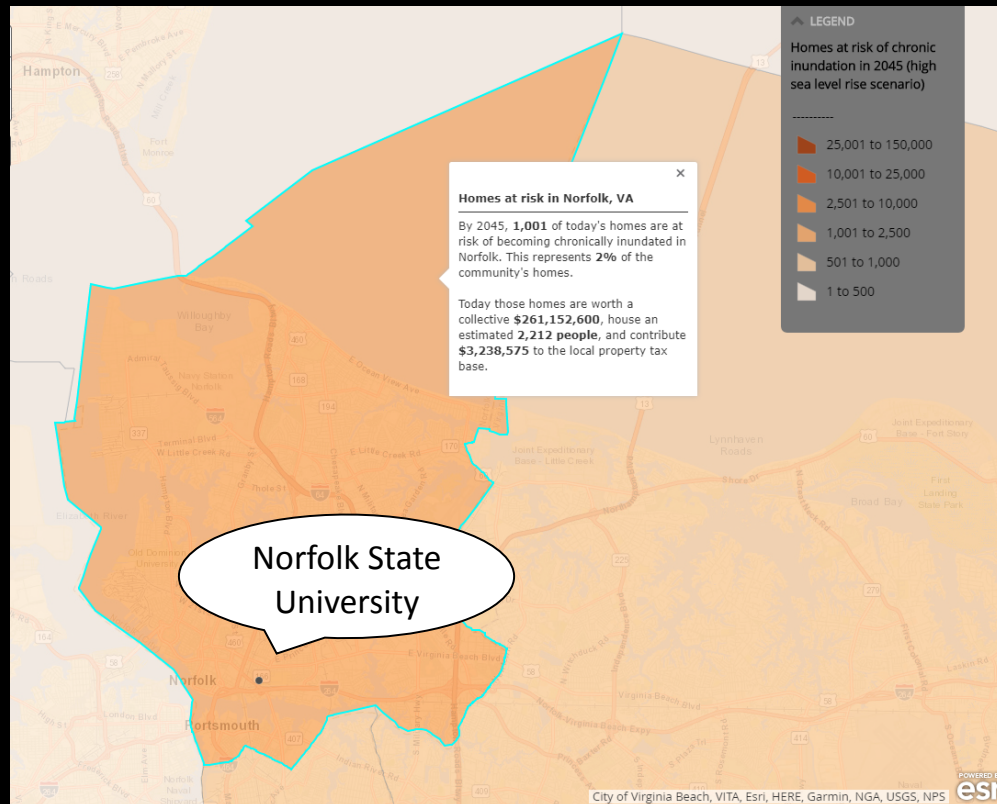


# [ Snapshot of the chronic flooding and poverty intersection (2045)



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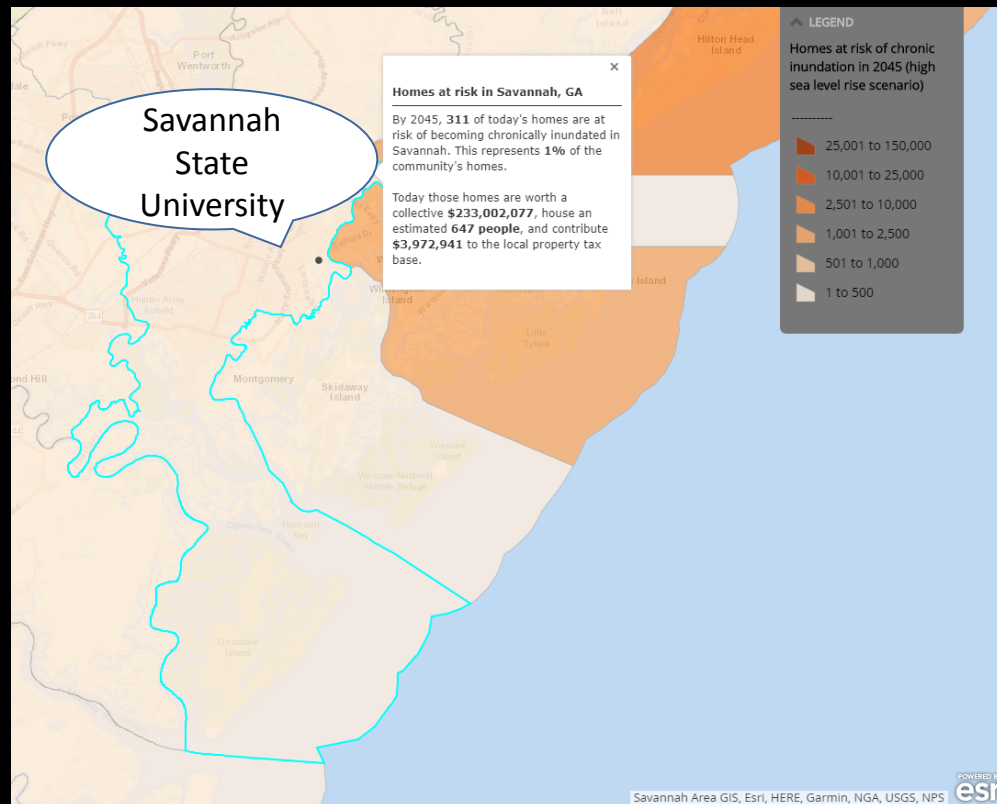
# [ HBCUs most at risk of chronic inundation



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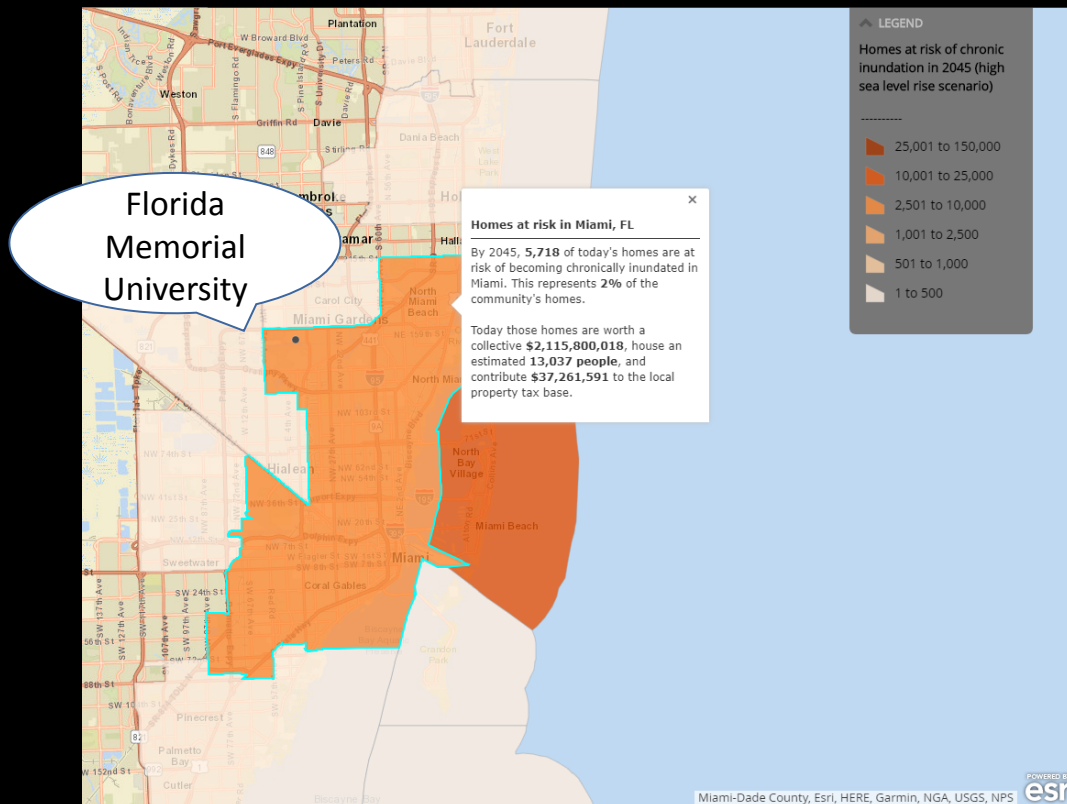


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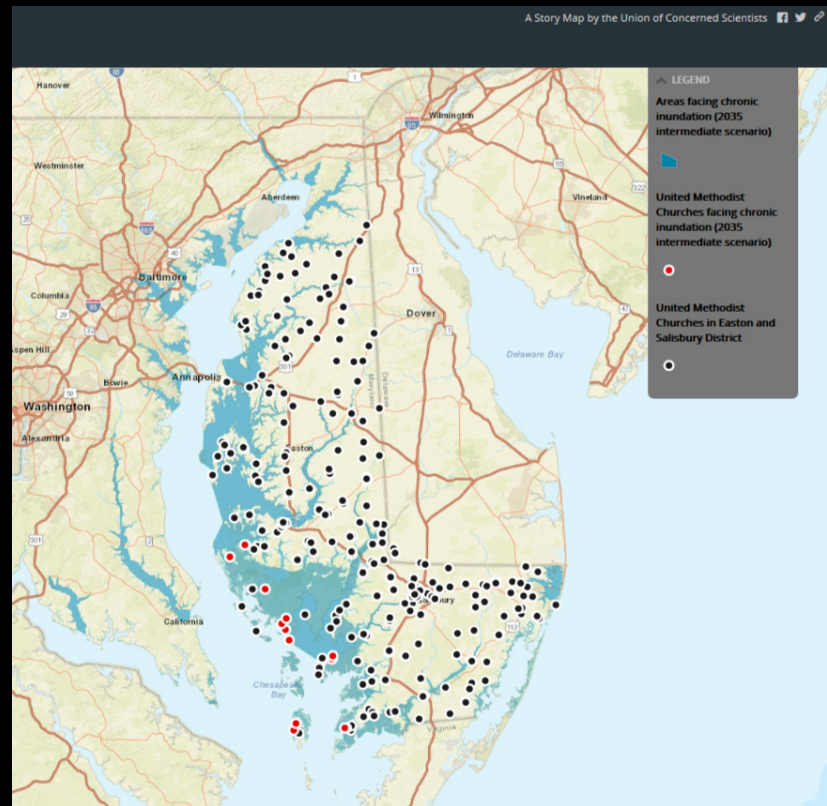
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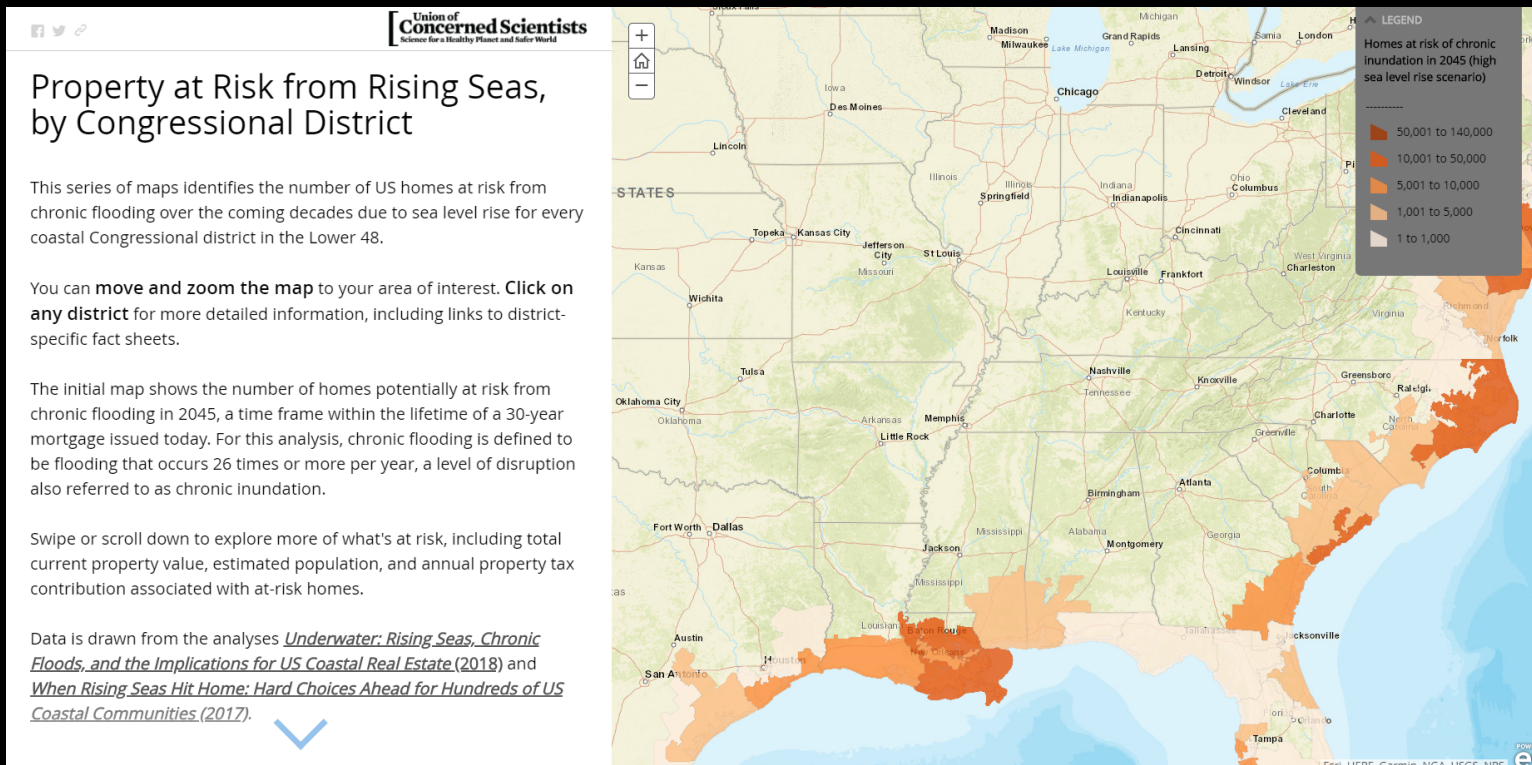
# [African American Churches at Risk on Maryland's Eastern Shore





# Property at Risk from Rising Seas, by Congressional District

<https://www.ucsusa.org/coastaldistricts>



[ Reducing emissions makes a huge  
L difference



[ Thank you. Any questions?

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Reports available at <http://ucsusa.org/underwater> and  
<http://ucsusa.org/RisingSeasHitHome>

Get involved with UCS: <http://ucsusa.org/action-center>