

So much coastal flooding! What's going on? Research can help

COL Policy Forum 2013

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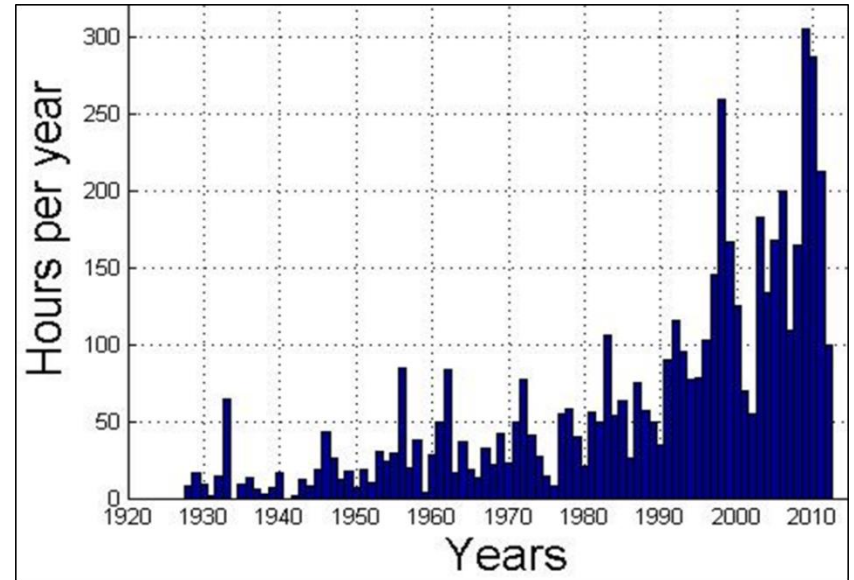
Bottom Line

- **Coastal Sea Level is Rising** and in some areas rising faster every year
- **Coastal storms - more frequent - more powerful**
- **Ocean Research can help** us better predict future sea level along our coasts and types of coastal storms



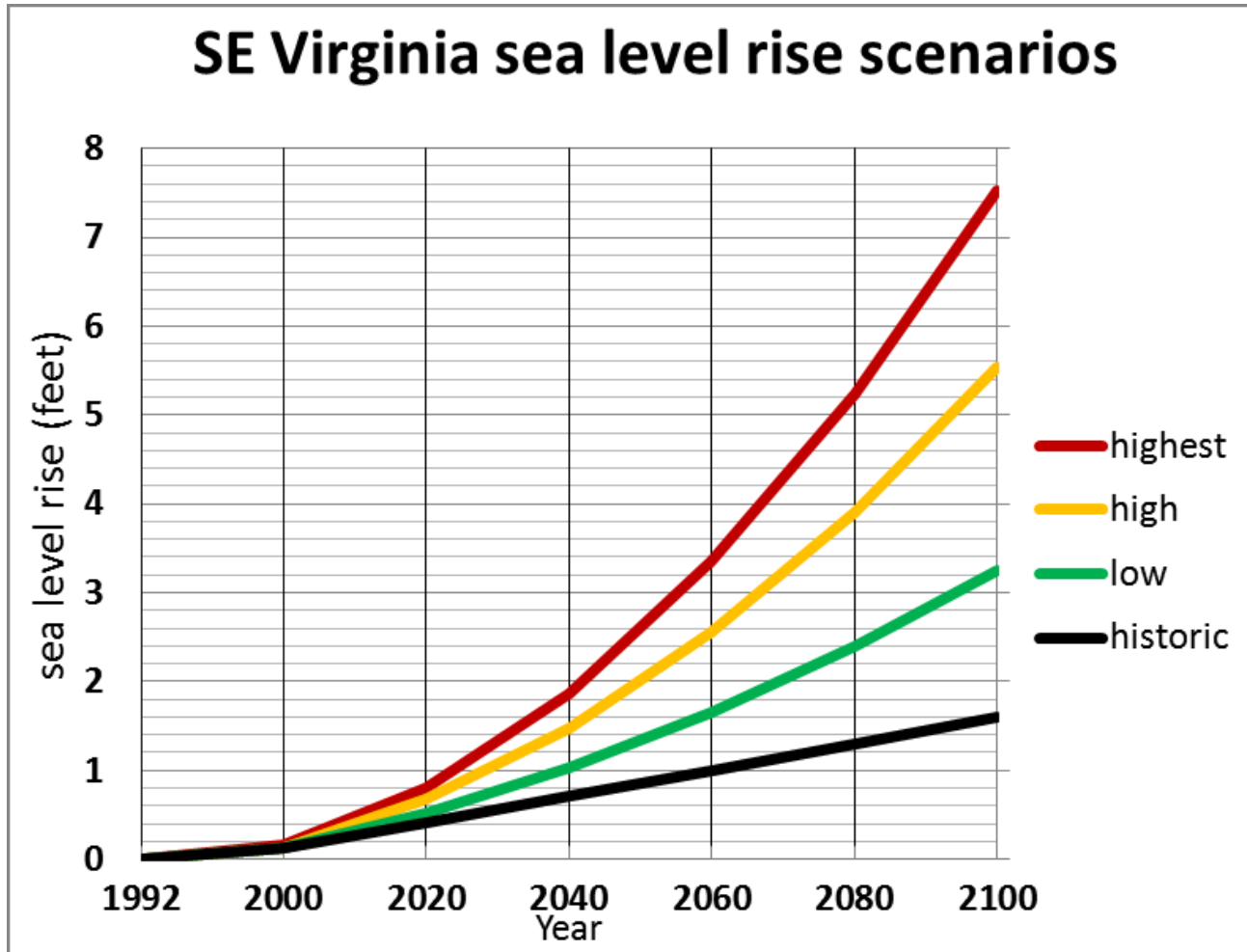
Mayflower Road at Norfolk's Colonial Place neighborhood was mostly underwater as high tide approached in November 2009 (Stephen M. Katz- Virginian Pilot file photo).

We are experiencing more coastal flooding



Our cities are experiencing more hours of flooding every year. Not just Storms – but unusual high tides.

Sea Level is Rising

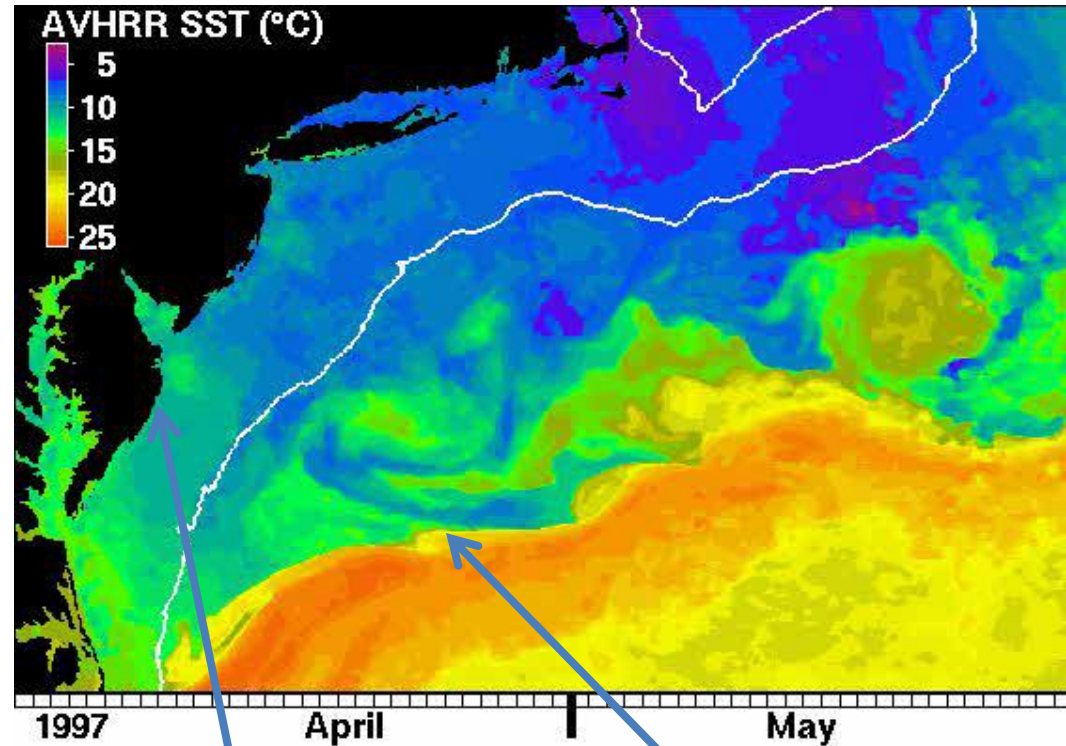


Mid-Atlantic areas look similar but not such high SLR's

Why?

The Gulf Stream has been slowing down and our coastal sea level has been going up. This is causing the increasing rate of SLR.

This is climate change affecting coastal sea level and causing more flooding



Cause sea level to go up here

Gulf Stream slows down here

Coastal Storms Changing

- Example Superstorm Sandy
 - More energy from warmer ocean
 - Effect of less ice in Arctic Ocean
 - Moisture from Gulf of Mexico



New paths and strength of storms –

Why Predict Sea Level Rise along our Coasts?

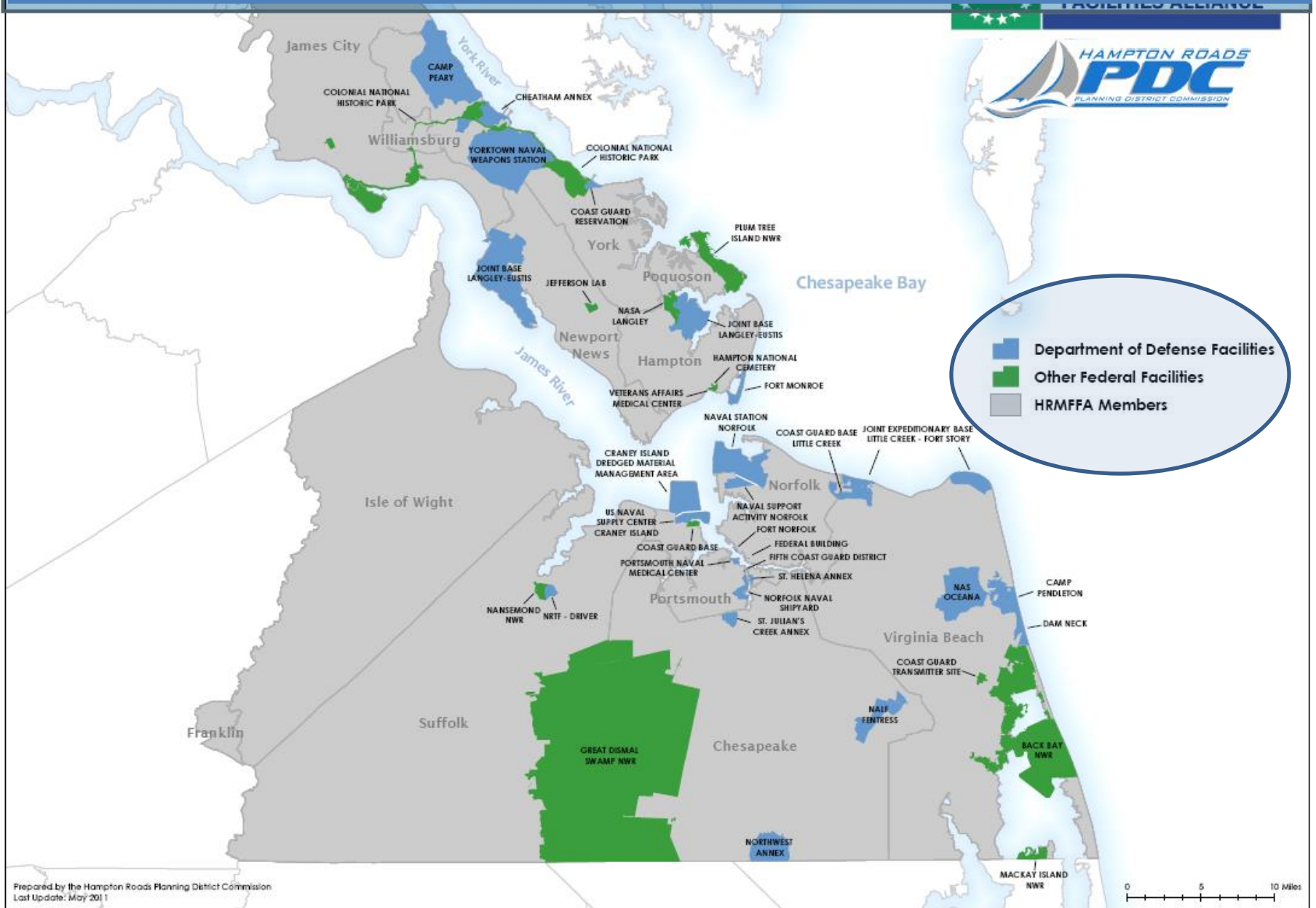
Information to coastal engineers, city planners, emergency managers.

Need planning horizons out 20, 40, 60, 80, 100 years



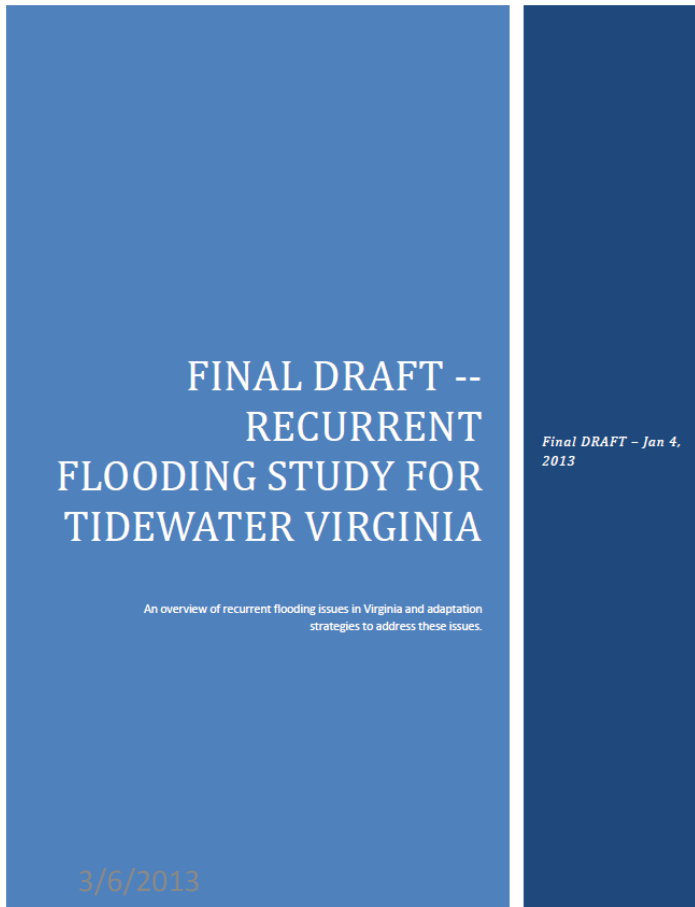
How high to jack up the house? What about the road, utilities, storm drains?

Huge Federal Presence – most cannot move (easily)

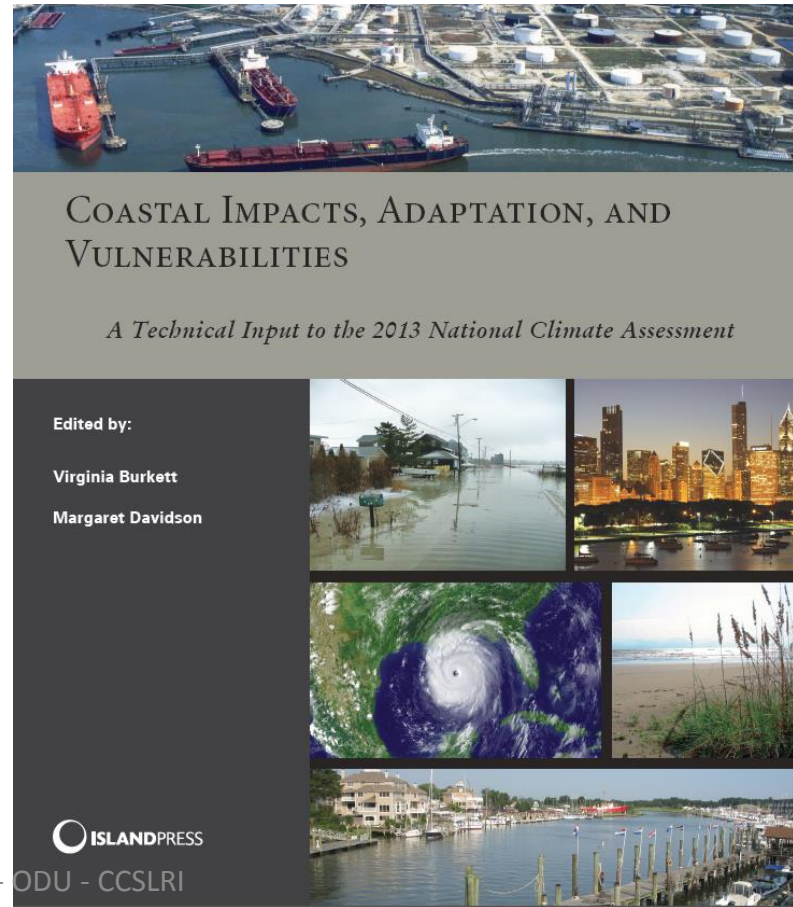


“Potential relative sea-level change must be considered in every USACE coastal activity as far inland as the extent of estimated tidal influence.” US Army Corps of Engineers (2011)

Virginia Report



Federal Report



Research can help

- Better planning, emergency preparation, and more effective adaptation
- Examples –
 - Is the Gulf Stream slowing down?
 - Is less ice in the Arctic changing our storm tracks and strength?
 - Flooding predictions – what areas to protect?

