

Rising Sea Level: Unstoppable & Unpredictable

Just the tip of the iceberg

US Harbors Webinar
November 17, 2021
John Englander

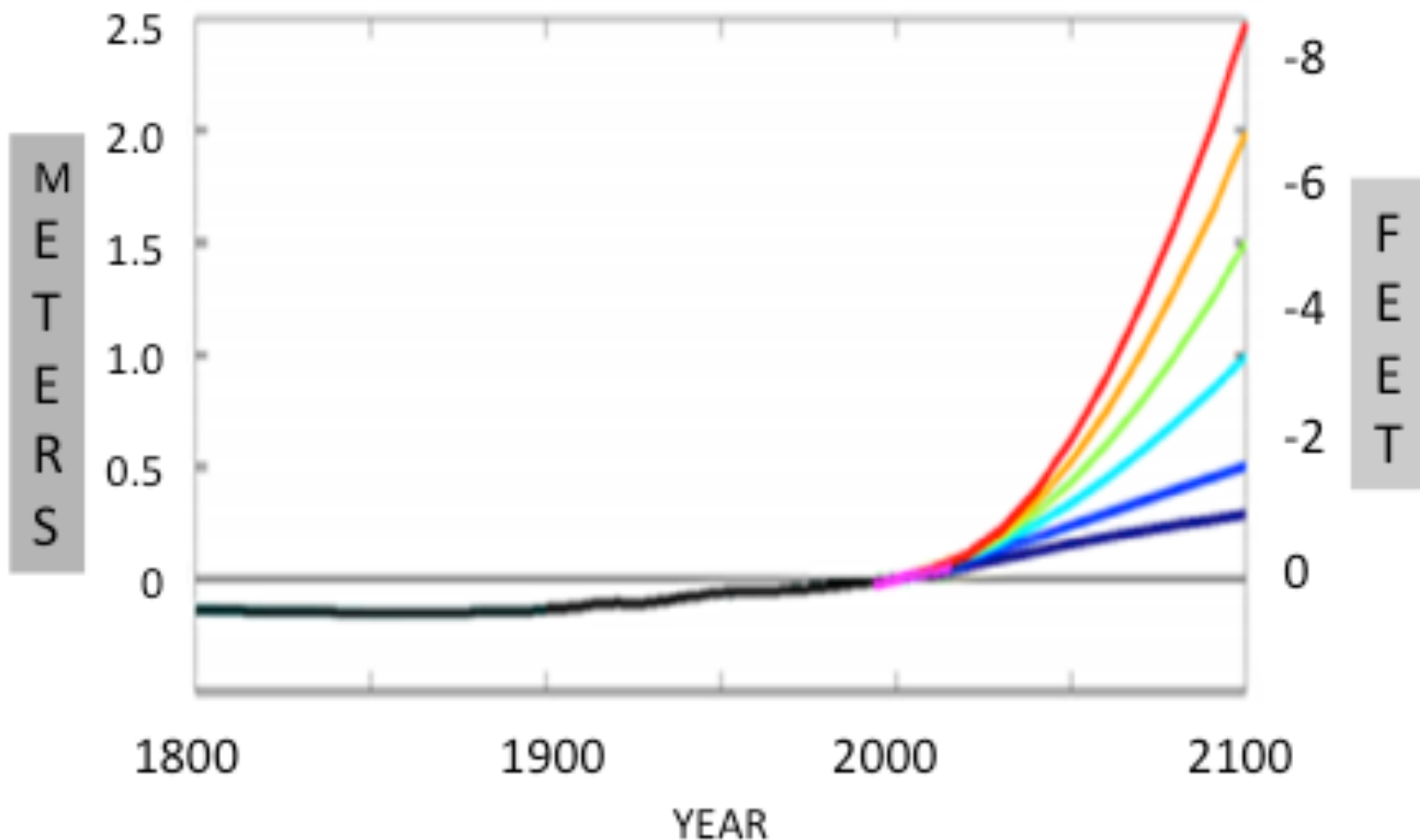
To Cover:

1. Water level = sea level + weather + tides
2. Why SLR (sea level rise) is unstoppable....and unpredictable
3. Clarify v latest IPCC projections
4. Confusion re: Flooding & Erosion
5. Answer Questions



Typical SLR projections are misleading and misunderstood but show the huge uncertainty

Six Projections for Rising Sea Level
2017 NOAA Technical Paper 083



Latest IPCC report (August 2021):

- Planet already warmed 1.2 Celsius (2.2 F.)
- New goal to cap warming at 1.5 degrees C. *a 20% increase in warming.*
- All the proposals at latest climate conference (COP26) cause warming to double, to 2.4 °C



Coastal Flooding

1.Storms

2.Rain

3.Runoff

4.Extreme Tides

5.Rising Sea Level

6.Erosion

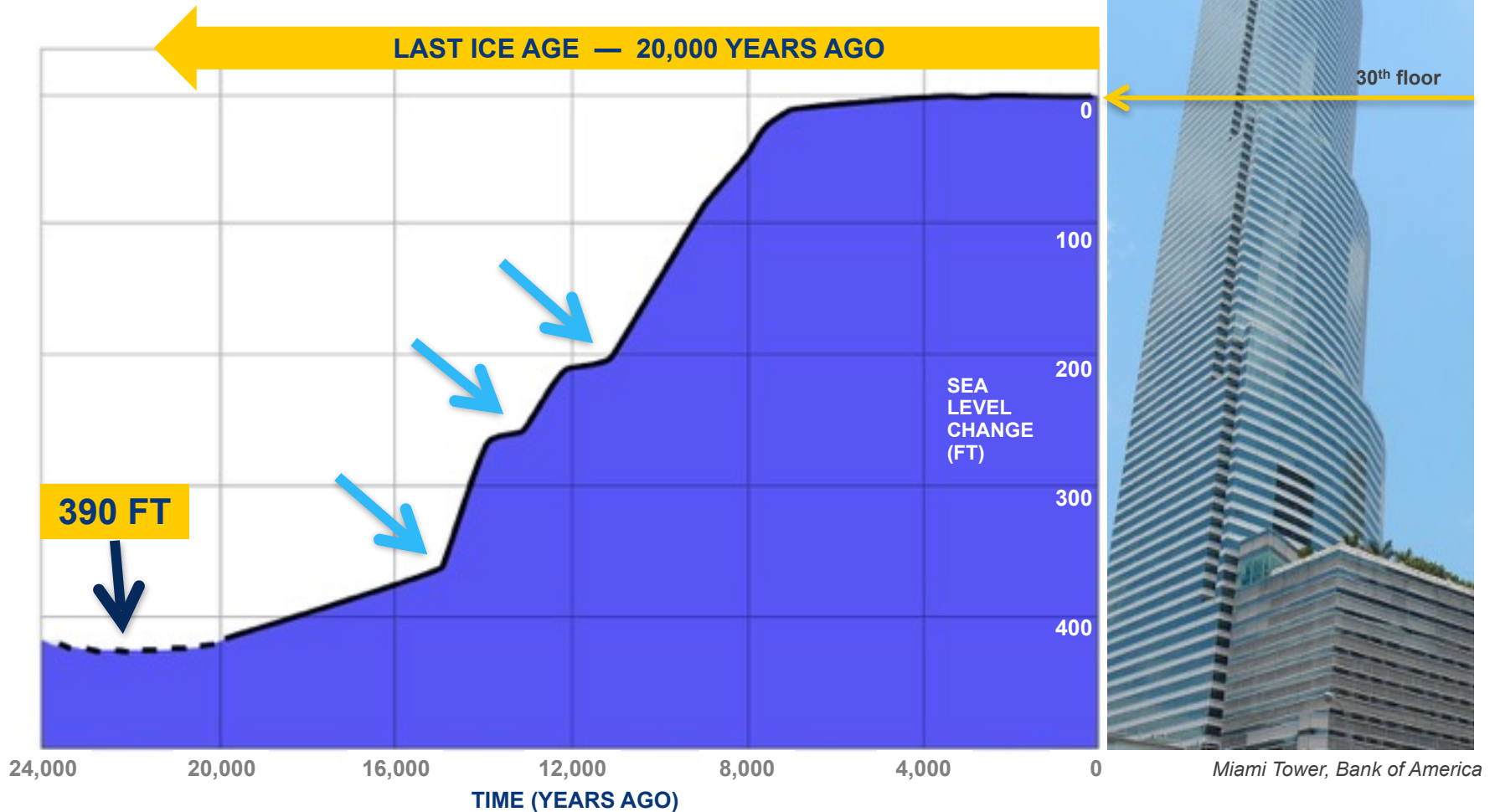
MELTING ICEBERGS ARE LIKE ICE CUBES



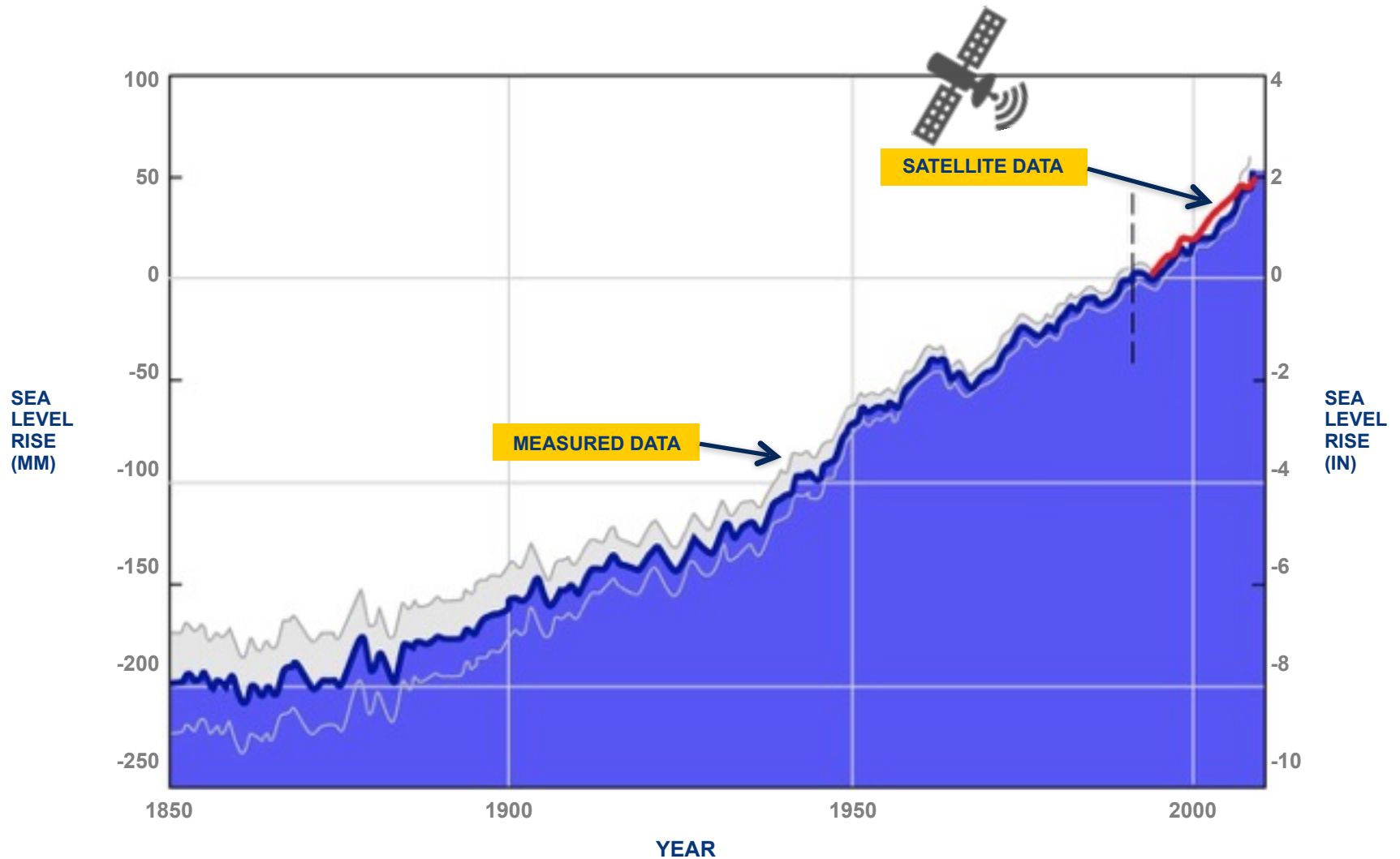
ICE ON LAND: MAIN CAUSE OF SEA LEVEL RISE



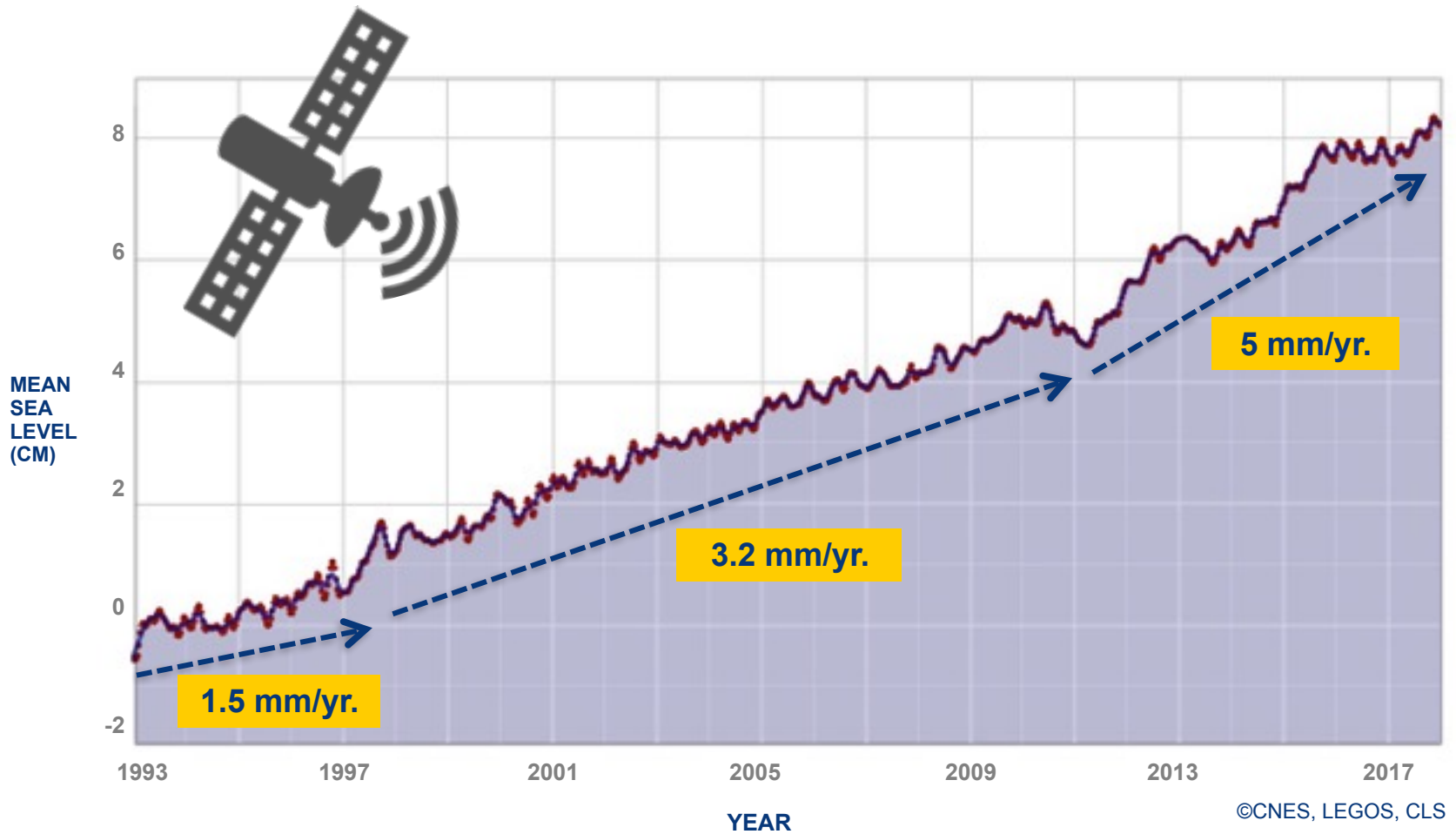
LAST ICE AGE SEA LEVEL



20TH CENTURY SEA LEVEL RISE

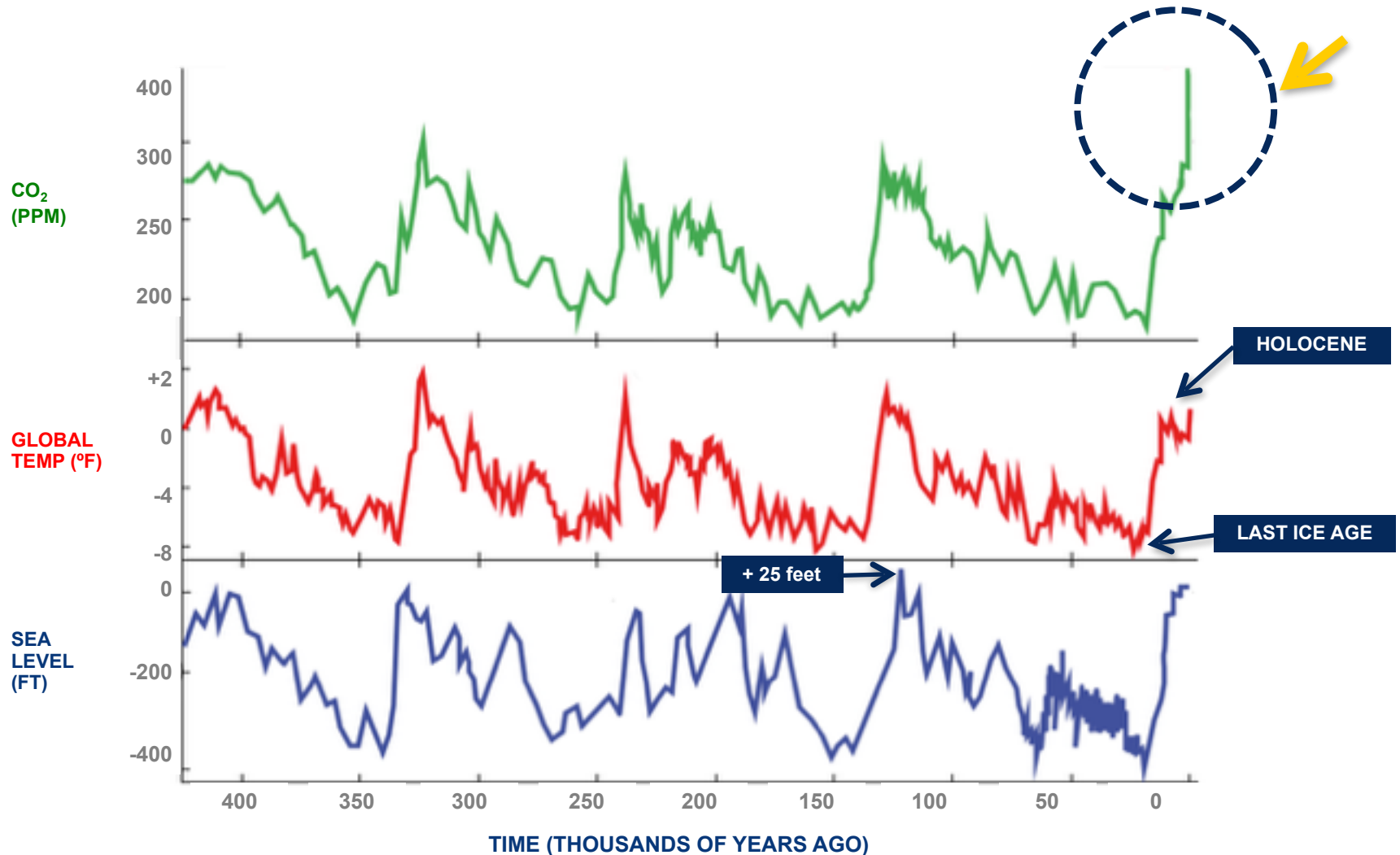


RATE IS ACCELERATING



FOUR ICE AGE CYCLES

Until recent years, CO₂, temperature and sea level moved together

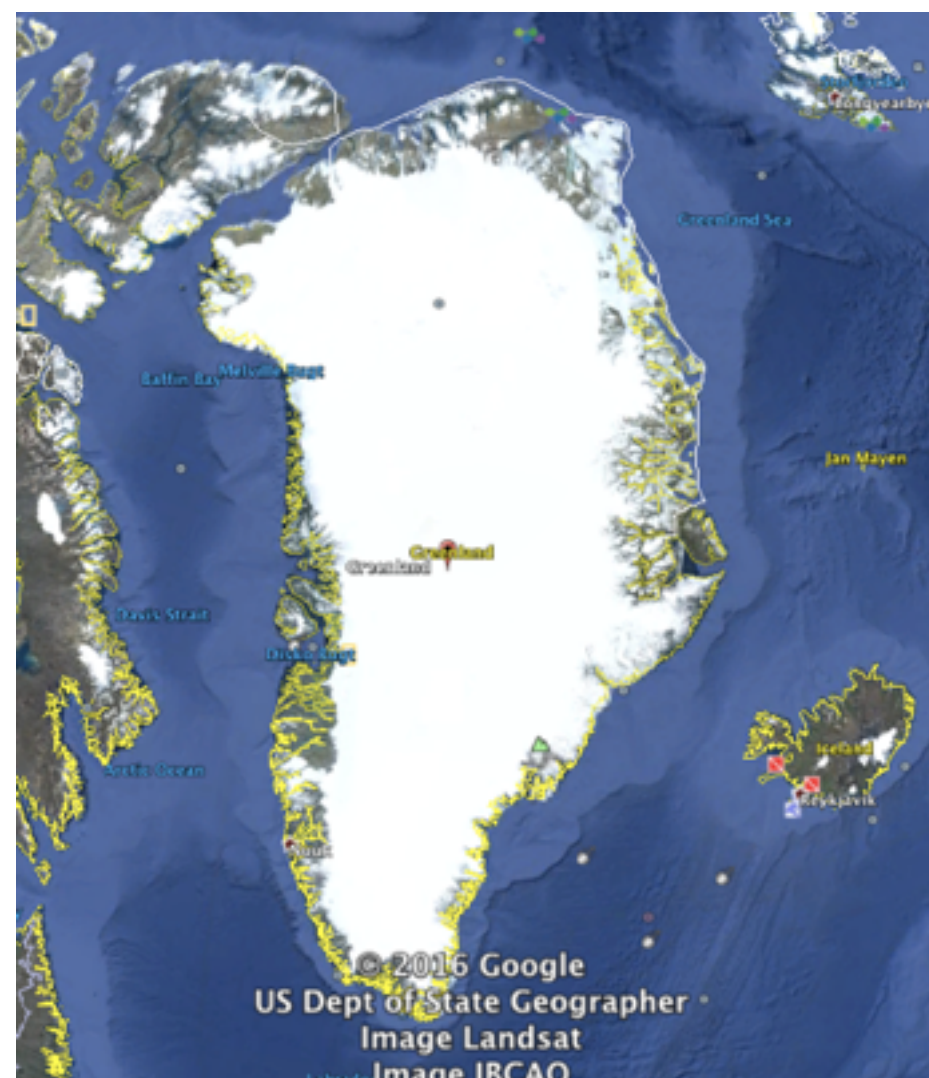
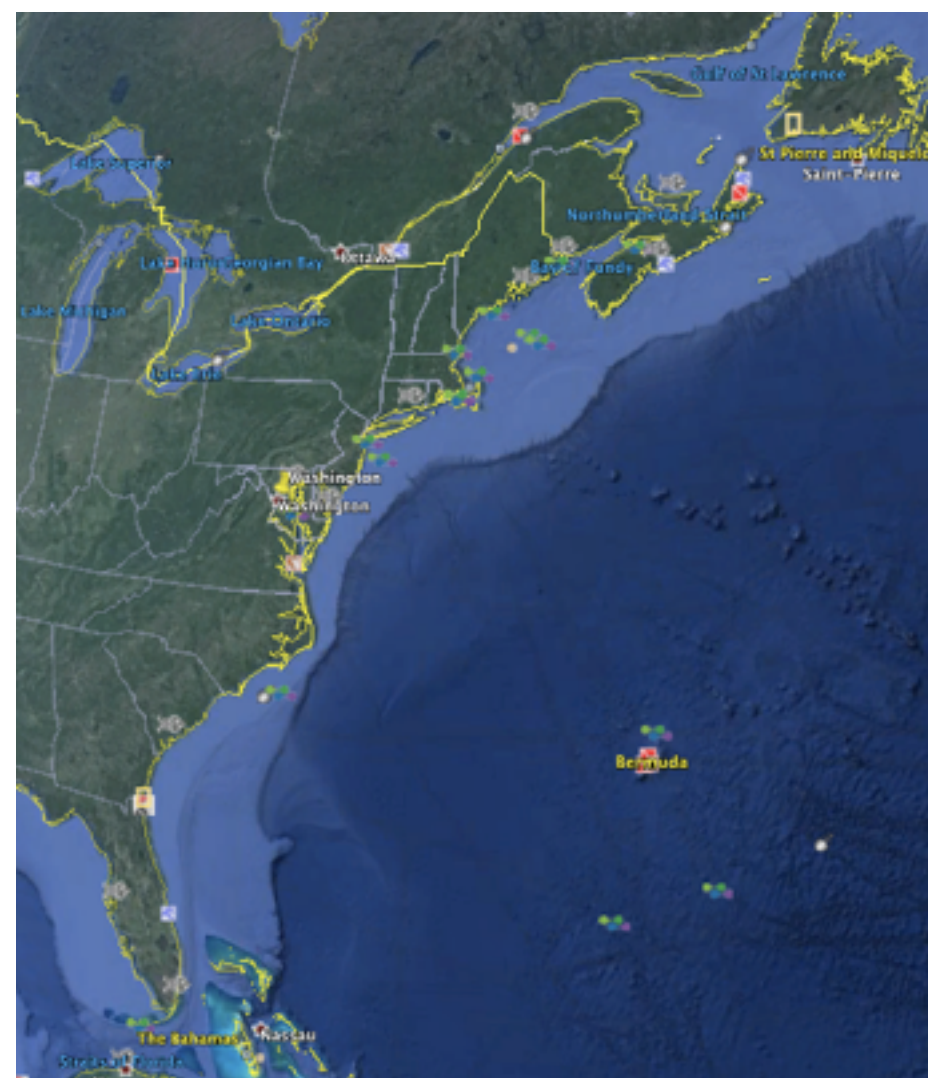


TWO MAJOR SOURCES

of potential sea level rise



Greenland - Approximate Size Comparison



GREENLAND FACT-FINDING TRIPS

A photograph showing three men standing on the deck of a ship. On the left, an older man with a white beard and balding head wears a red jacket. In the center, another older man with grey hair and a mustache also wears a red jacket. On the right, a younger man in a dark blue U.S. Coast Guard uniform, including a cap and a jacket with 'U.S. COAST GUARD' and 'ZIMMY' on it, is gesturing with his hands while talking to the other two. The background shows a grey sky, a body of water with several large white icebergs, and a green chain-link fence. A crane is visible on the far left.

WITH SENATOR ANGUS KING AND
ADMIRAL PAUL ZUKUNFT



SALTY TRUTHS

- Rising seas and shifting shorelines are unstoppable, regardless of GHG reduction
- Every inch makes short term flooding worse
- Impossible to predict precisely
- Vulnerable property values will be discounted before they go underwater

WE MUST RISE WITH THE TIDE

A photograph of two young women sitting on a sandy beach at sunset. They are both wearing one-piece swimsuits and have wet hair. The woman on the left is looking down at something in her hands, while the woman on the right is looking towards the ocean. Waves are breaking on the shore to their right, and the sky is a mix of orange and blue. The overall mood is serene and contemplative.

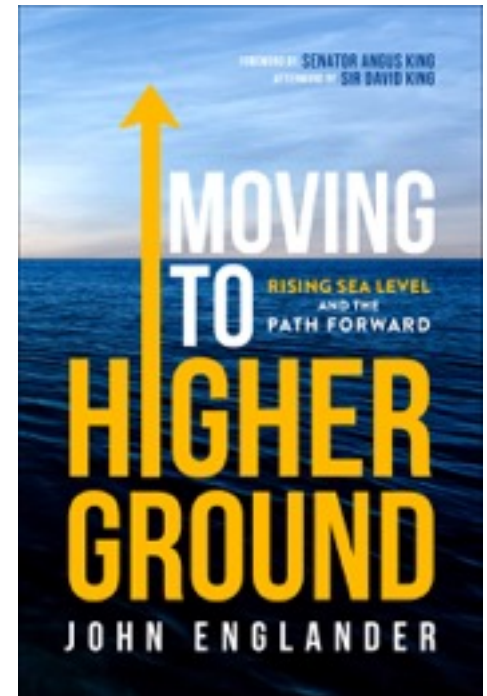
WE MUST RISE WITH THE TIDE

**WE HAVE TIME TO ADAPT...
...BUT NO TIME TO WASTE.**



John Englander

- www.johnenglander.net
- www.risingseasinstitute.org
- Twitter: @johnenglander
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