

Sea Level Rise

Krishna AchutaRao

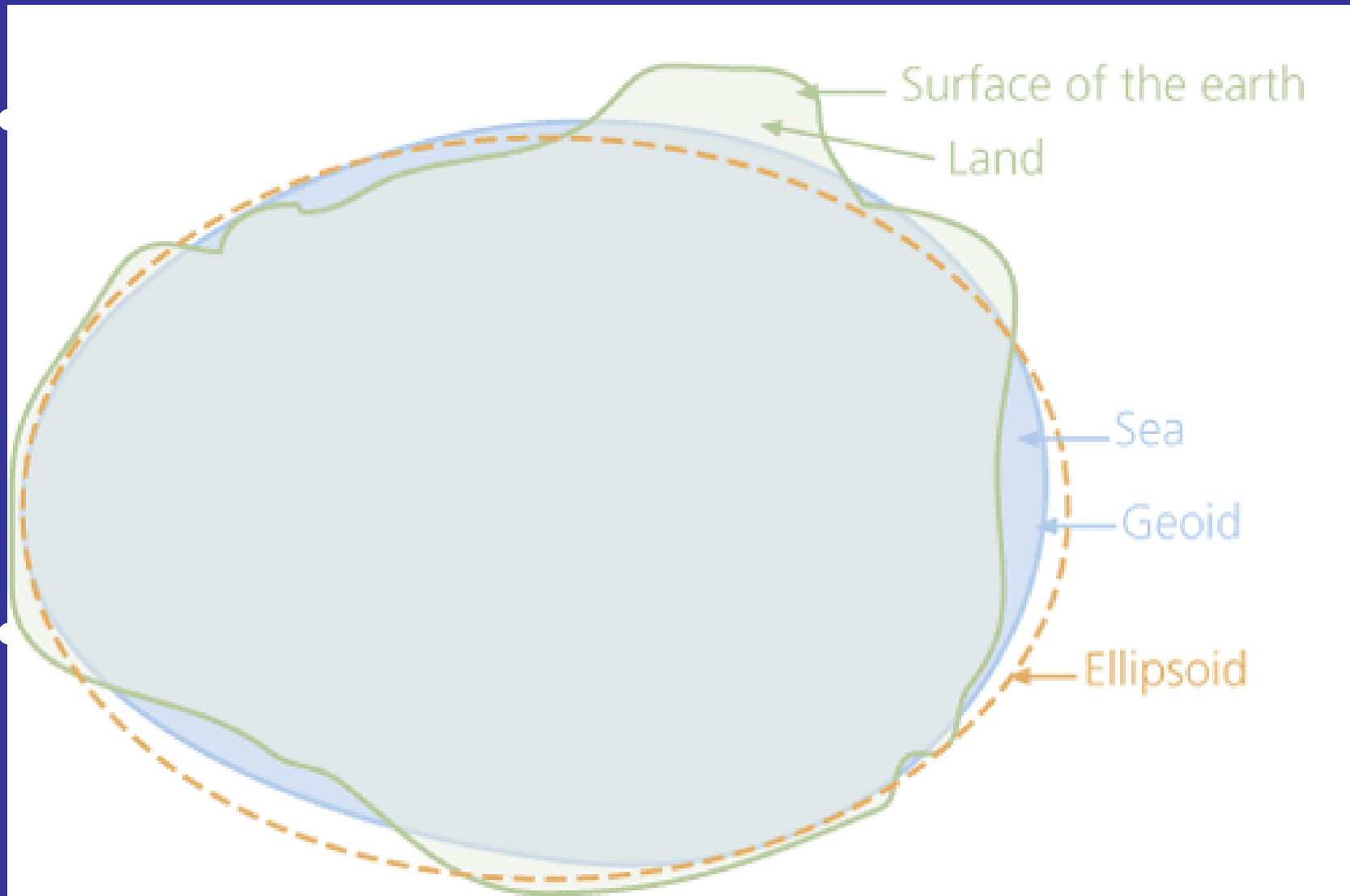
**Centre for Atmospheric Sciences
Indian Institute of Technology Delhi**

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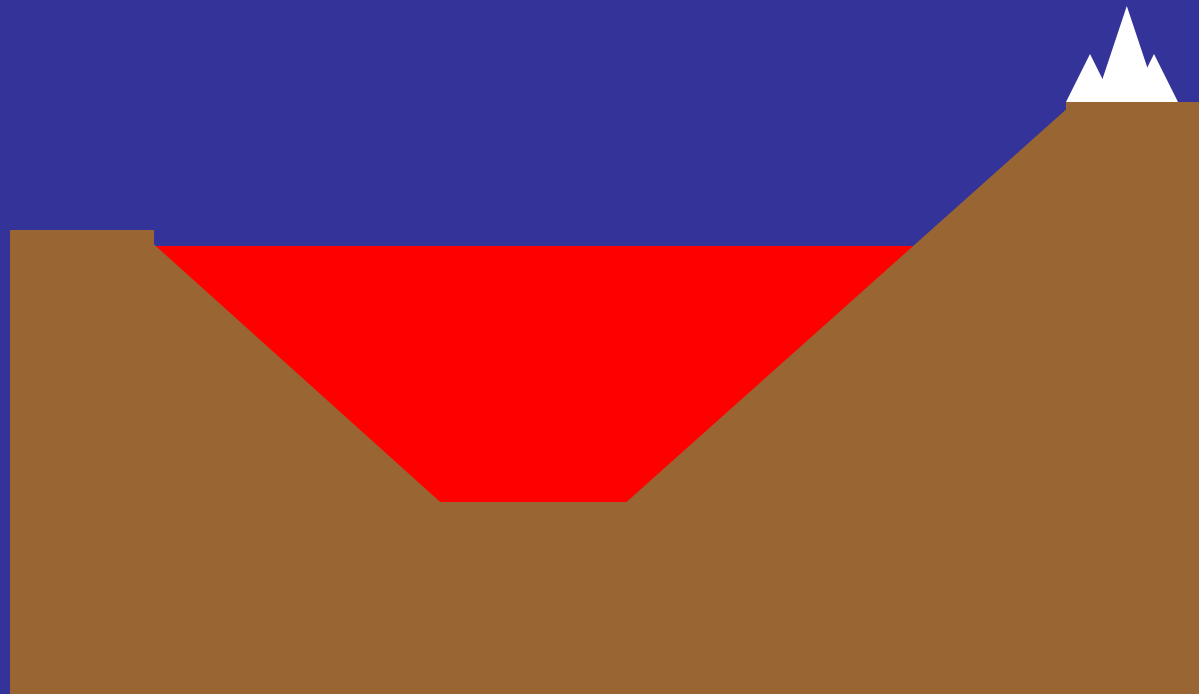
Outline

- What is sea level?
- How can sea level change?
- What do the observed records show?
- What does the future hold?

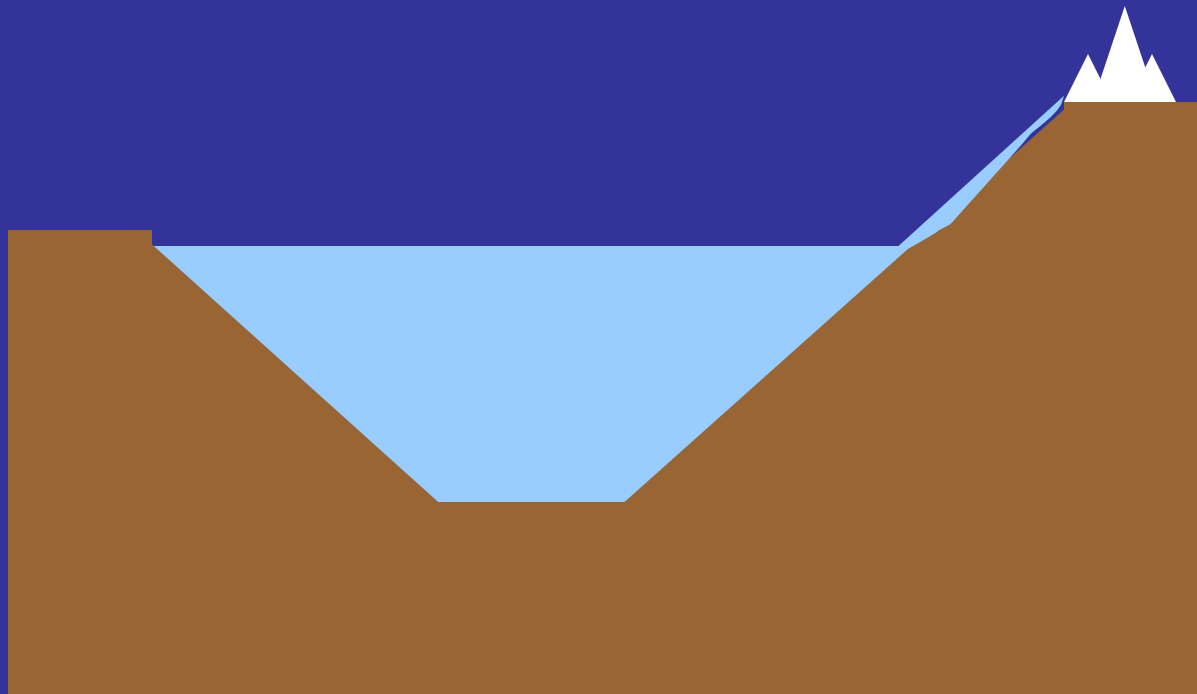
What is Sea Level?



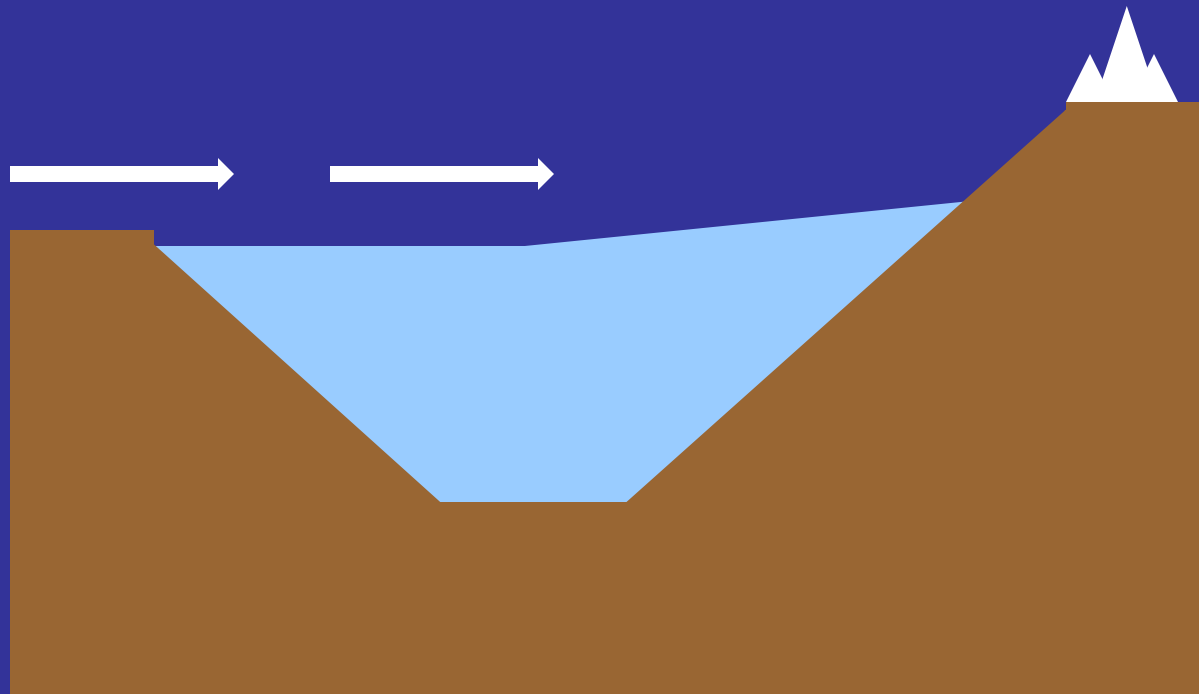
1. Thermo-steric (Warming Oceans)



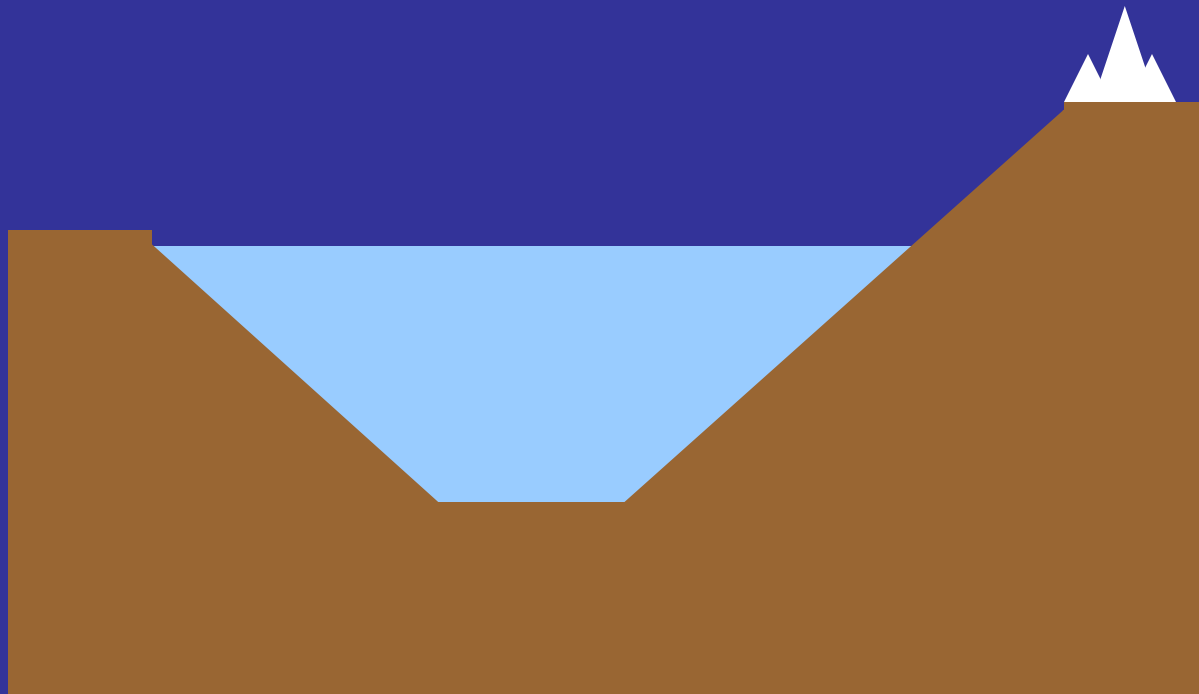
2. Increased Runoff & Glacier / Ice-sheet Melt



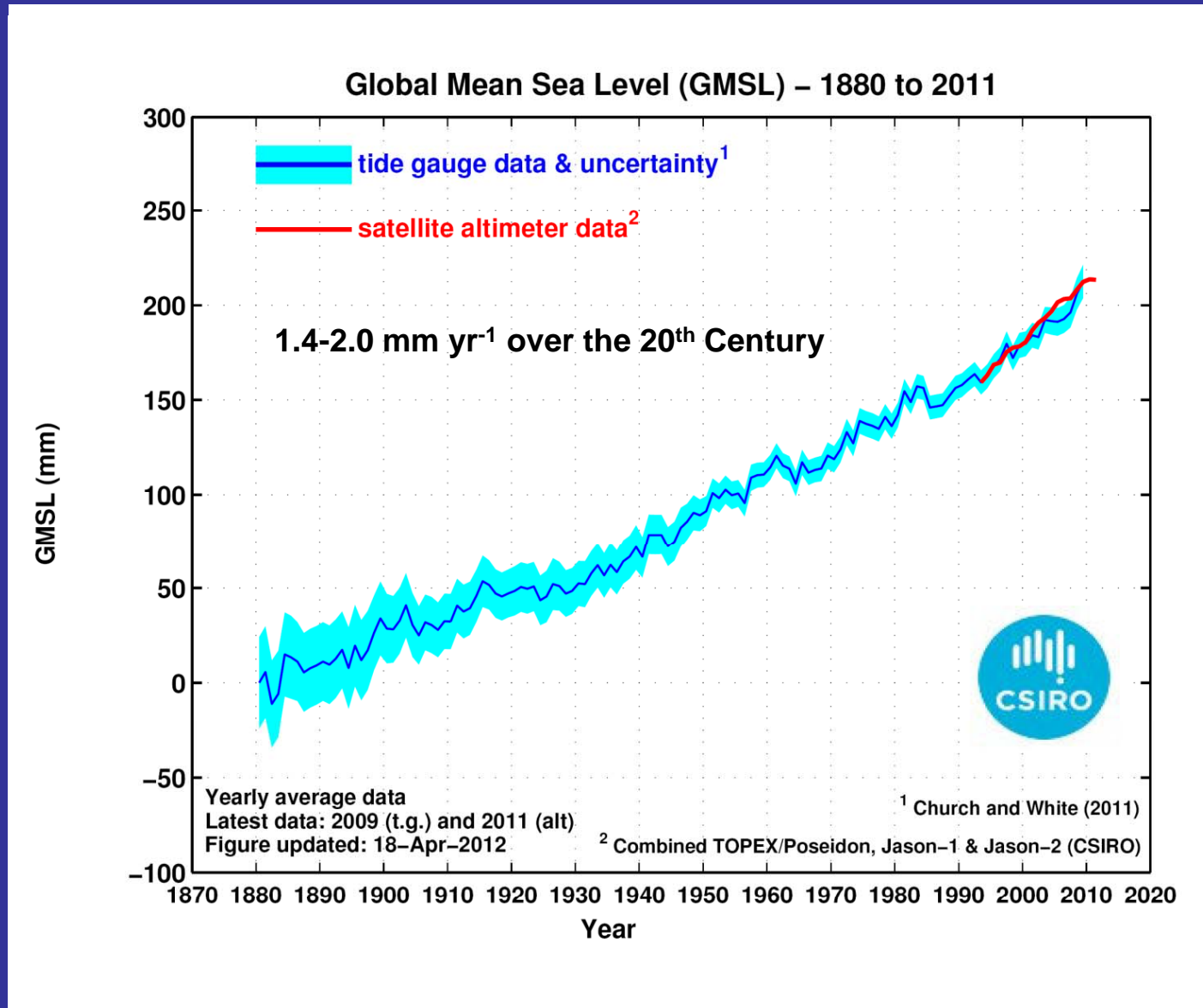
3. Wind & Pressure Changes



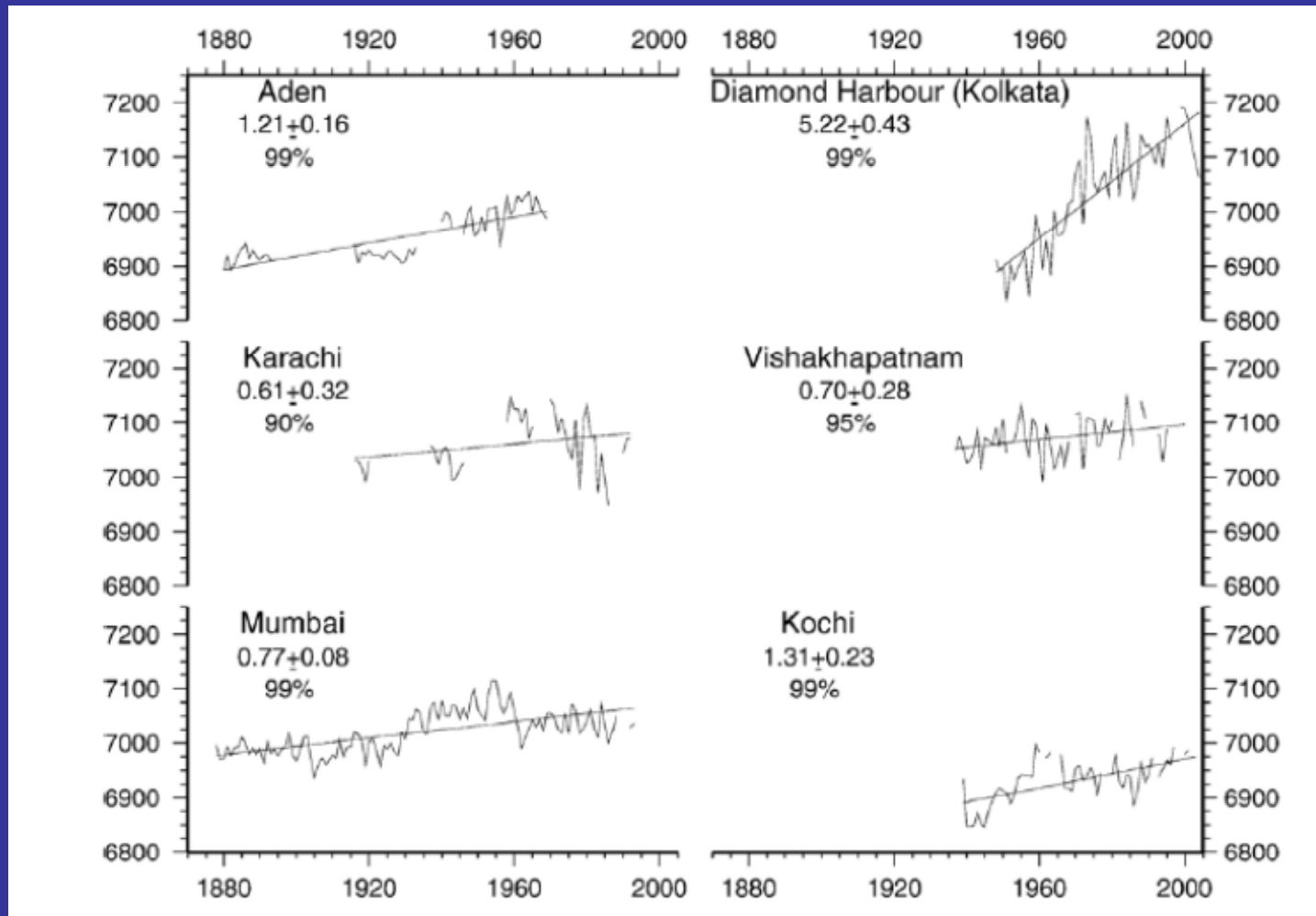
Land Subsidence



Observed Global Mean Sea Level

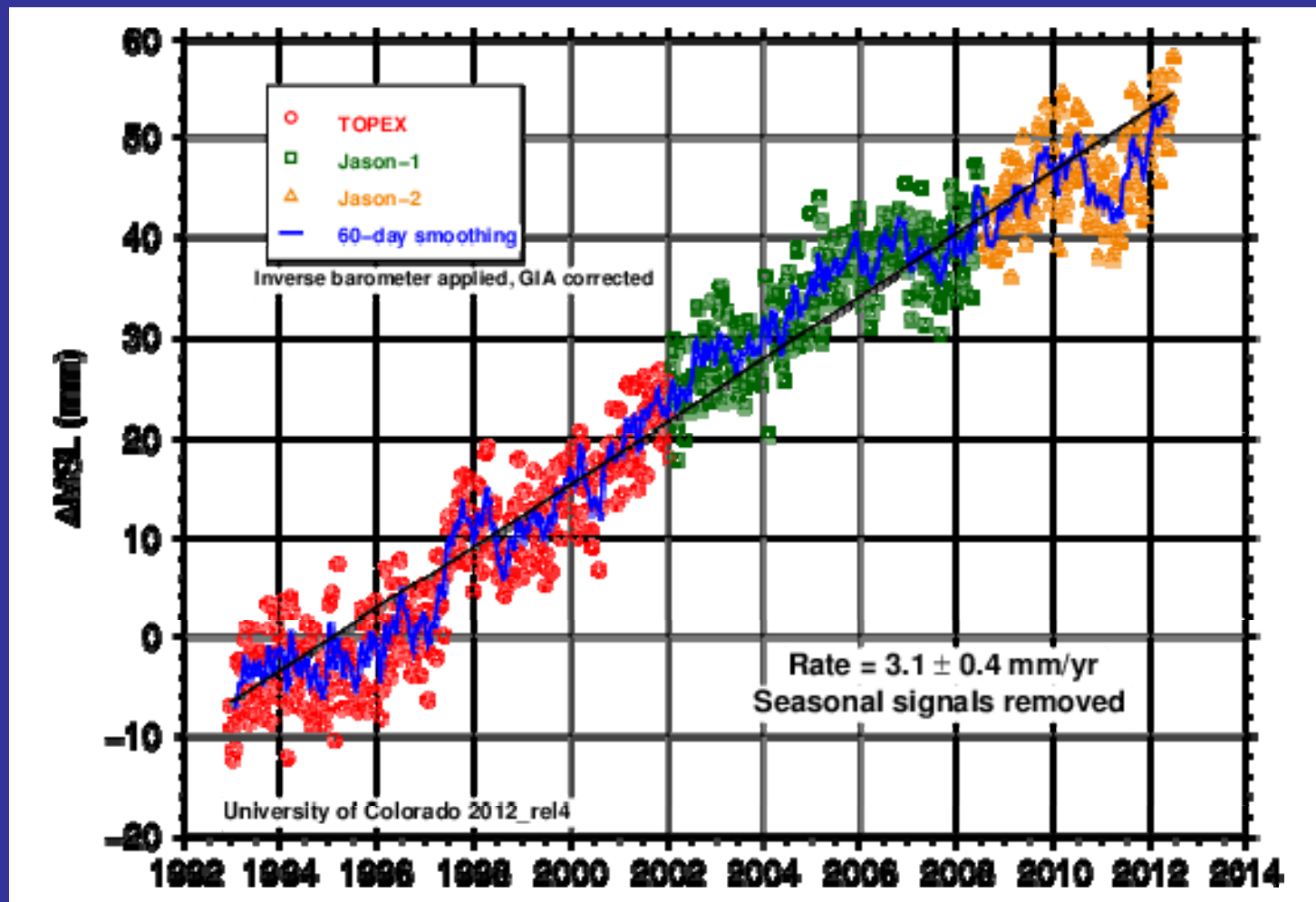


Tide Gauge Record (Northern Indian Ocean)

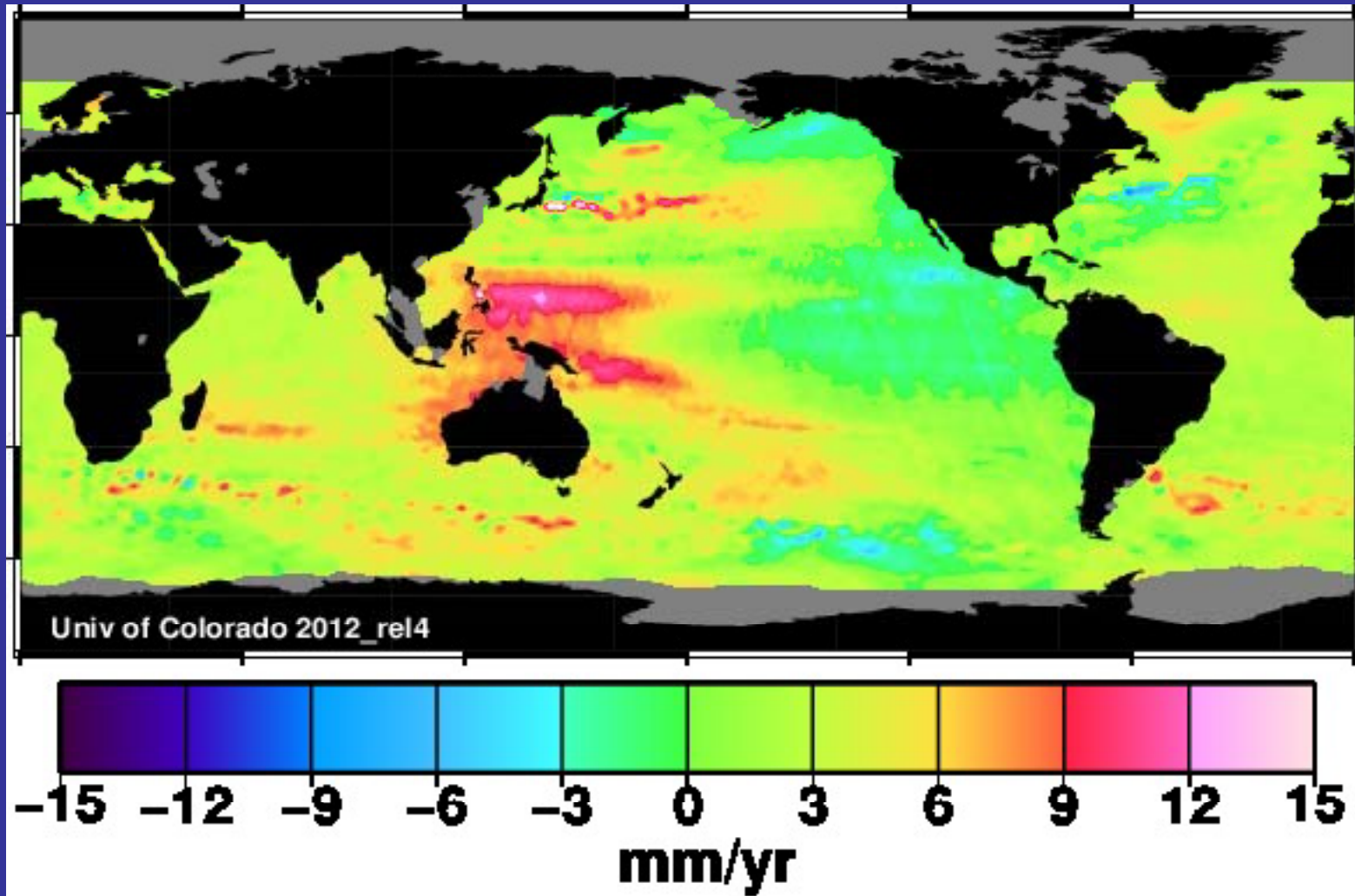


Are sea-level-rise trends along the coasts of the north Indian Ocean consistent with global estimates? A.S. Unnikrishnan and D. Shankar, Global and Planetary Change 57 (2007) 301–307

Satellite Observed Global Mean Sea-level Change



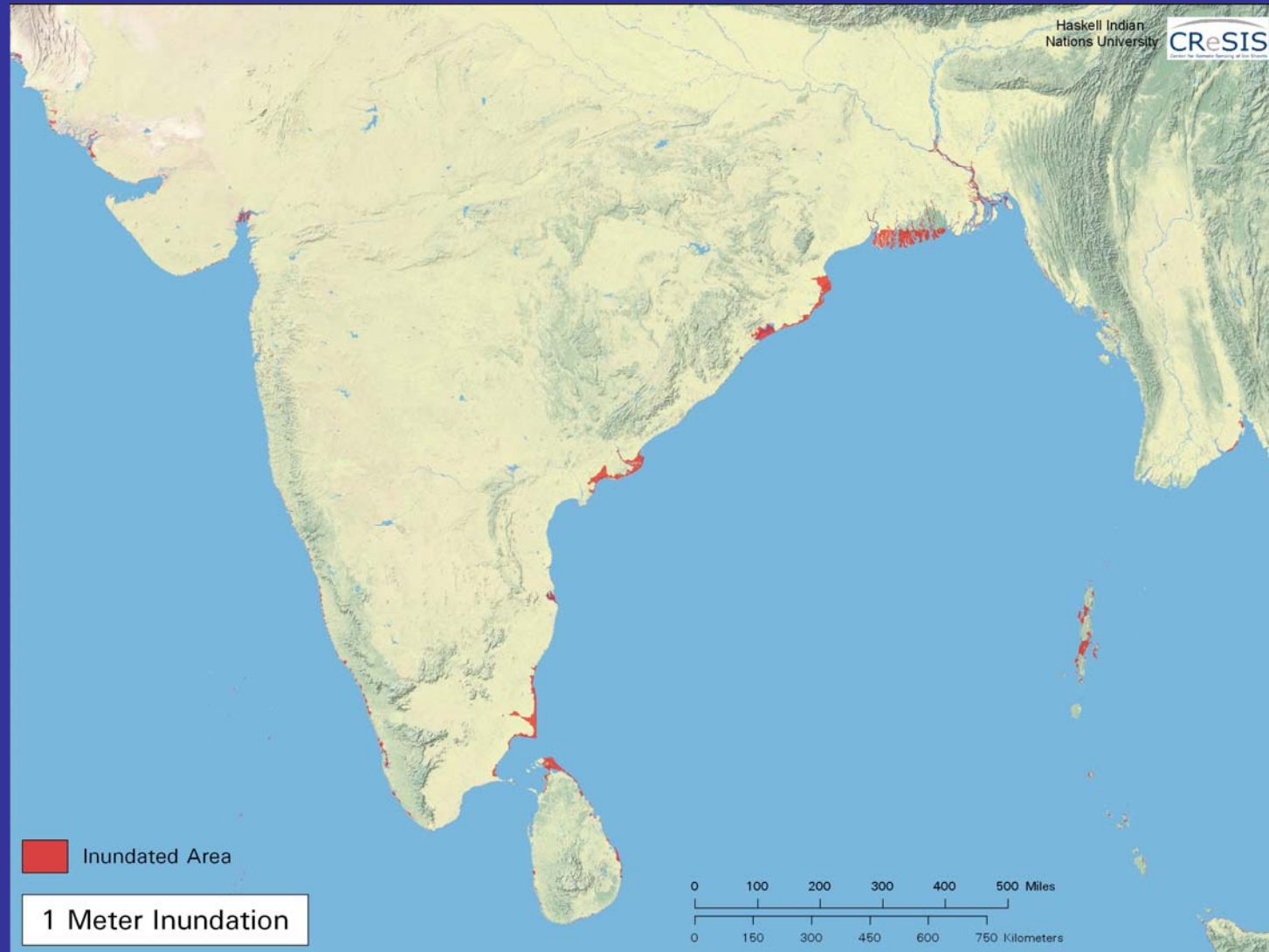
Trends in Sea Level Rise (since 1993)



Summary

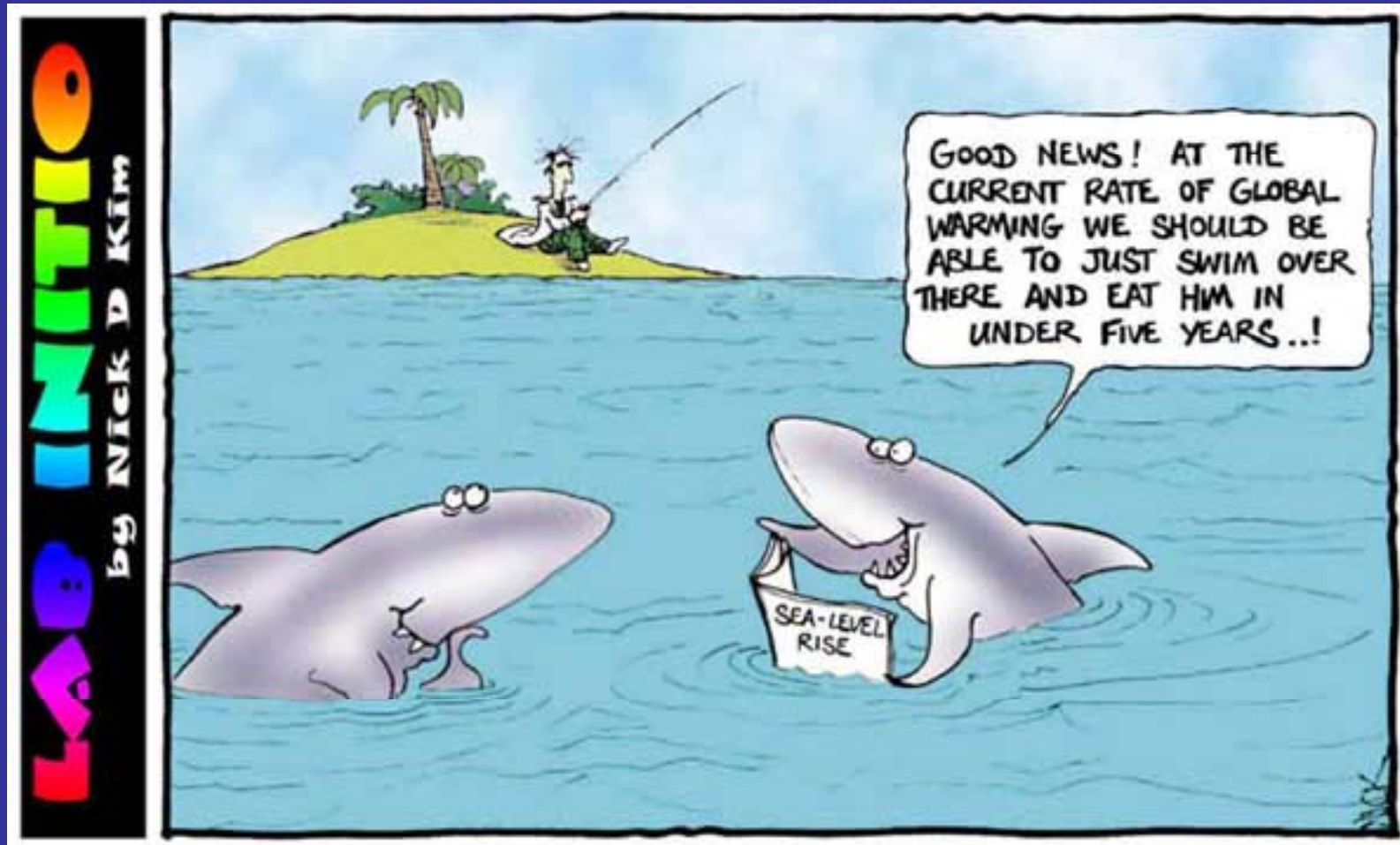
- Recent Global Mean Sea Level Change (since 1993):
 - ~80% from thermal expansion & melting glaciers. Remainder from ice-sheets.
- Future Sea Level Change:
 - A Global Mean Sea Level may rise of about 0.3-0.9 meters (compared to 1990) by the end of the 21st Century.
- What does that mean locally?

What can we expect for the future?



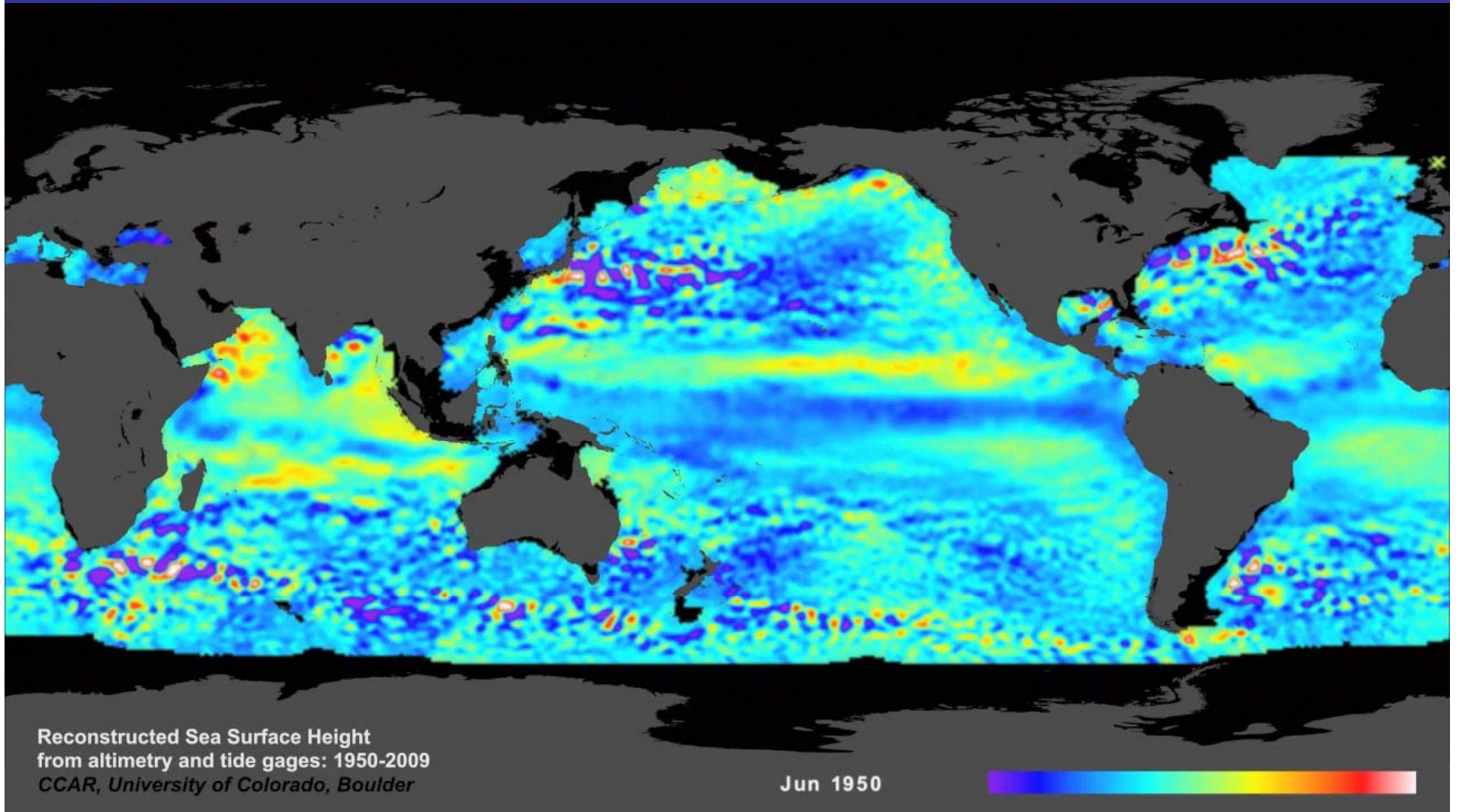
Source: Center for Remote Sensing of Ice Sheets (CReSIS)

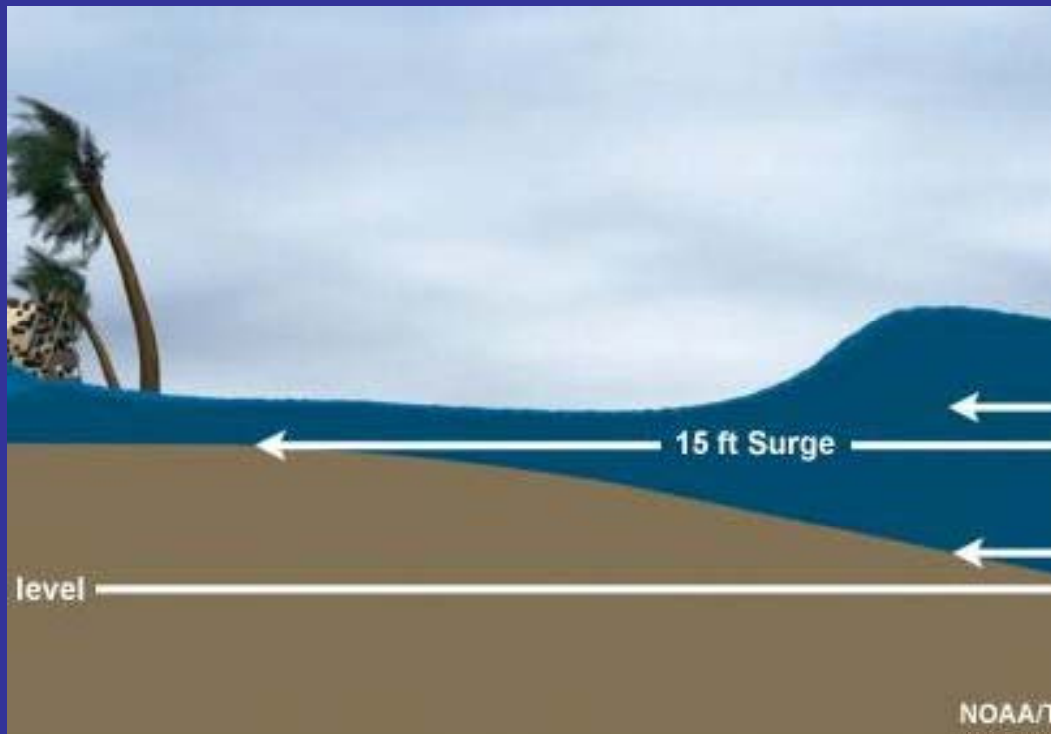
Thanks



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Sea level anomalies 1950-2009



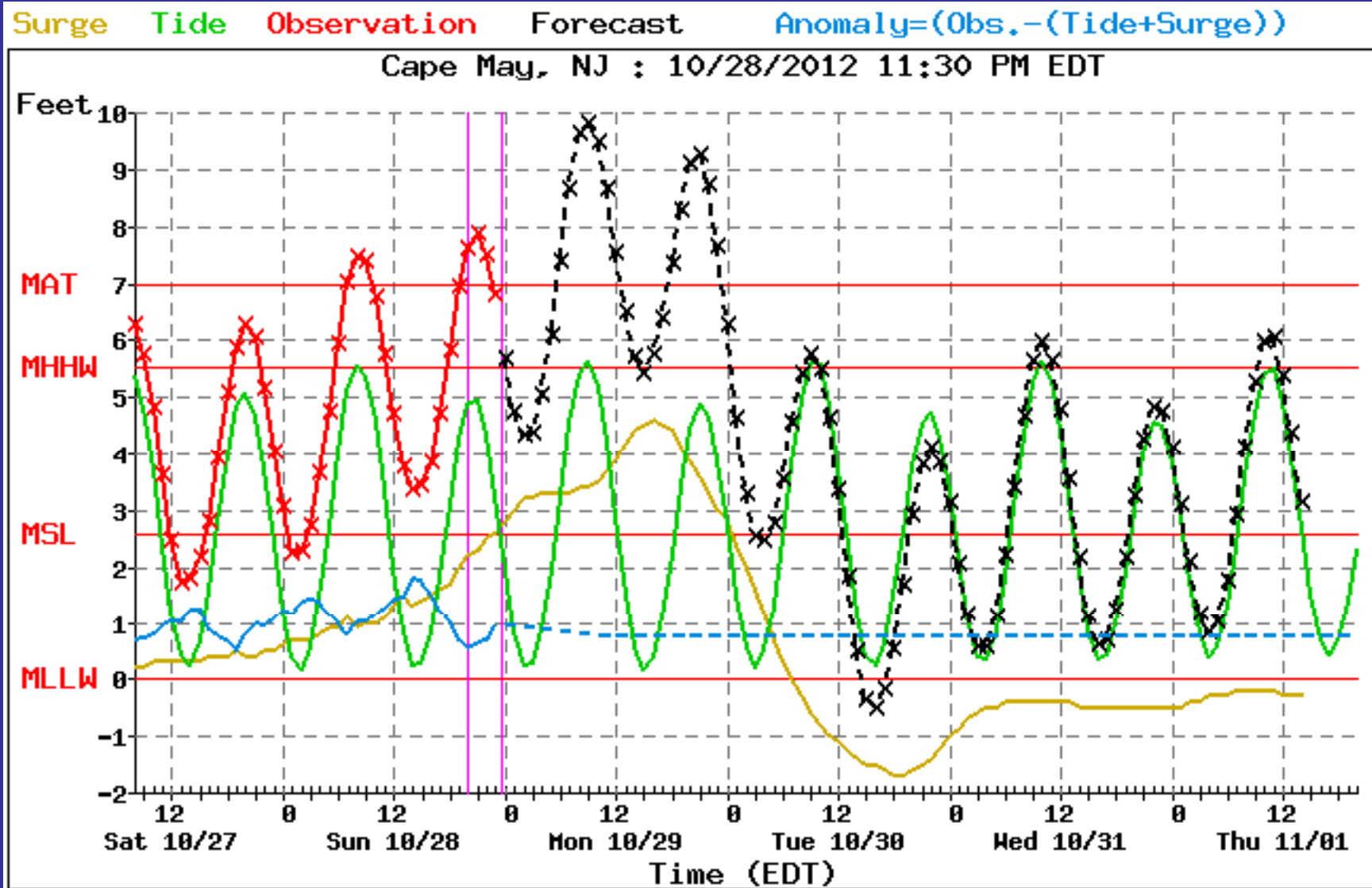


Source: NOAA SSL

Source: Examiner.com



Hurricane Sandy Storm Surge



What can we expect for the future?



Source: Center for Remote Sensing of Ice Sheets (CReSIS)