

Claim: Global warming is resulting in rising sea levels as seen in both tide gauge and satellite technology

REBUTTAL

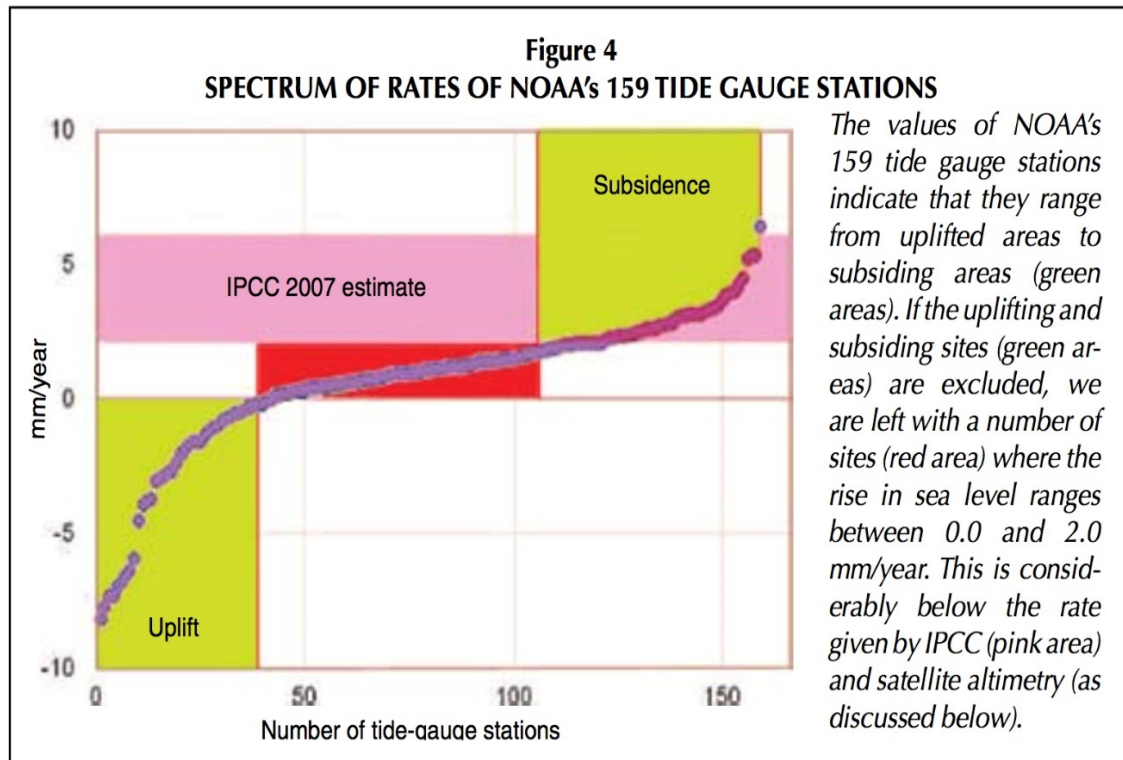
This claim is demonstrably false. It really hinges on this statement -- "Tide gauges and satellites agree with the model projections." The models project a rapid acceleration of sea level rise over the next 30 to 70 years. However, while the models may project acceleration, the tide gauges clearly do not.

All data from tide gauges in areas where land is not rising or sinking shows instead a steady linear and unchanging sea level rate of rise from 4 up to 6 inches/century, with variations due to gravitational factors. It is true that where the land is sinking as it is in the Tidewater area of Virginia and the Mississippi Delta region, sea levels will appear to rise faster but no changes in CO₂ production would change that.

The implication that measured, validated, and verified Tide Gauge data supports this conclusion remains simply false. All such references rely on "semi-empirical" information, which merges, concatenates, combines, and joins, actual tide gauge data with various models of the reference author's choosing. Nowhere on our planet can a tide gauge be found, that shows even half of the claimed 3.3 mm Sea level rise rate in "Tectonically Inert" coastal zones. These are areas that lie between regions of geological uplift and subsidence. They are essentially neutral with respect to vertical land motion, and tide gauges located therein show between 1 mm/yr (3.9 inches/century) and 1.5 mm/yr (6 inches/century rise). The great Swedish Oceanographer, Nils-Axel Mörner, has commented on this extensively, and his latest papers confirm this 'inconvenient truth.'

Further, alarmist claims that "Satellites agree with the model projection" are false. Satellite technology was introduced to provide more objective measurement of the sea level rise because properly adjusted tide gauge data was not fitting Alarmists' claims. However, the new satellite and radar altimeter data lacked the resolution to accurately measure sea levels down to the mm level. Moreover, the raw data from this technology also conflicted with Alarmists' claims. As a result, adjustments to this data were also made – most notably a Glacial Isostatic Adjustment (GIA). GIA assumes that basically all land is rebounding from long ago glaciations and oceanic basins are deepening. The assumption is that this rebounding is masking the true sea level rise. Alarmists continue to proclaim that their models project a rapid acceleration of sea level rise over the next 30 to 70 years, when those same models have failed to even come close to accurately measuring the past 25 years.

The following chart depicts the range of tide gauge annual sea level rises in categories of locations where the land surface is rising, tectonically inert or undergoing subsidence.



Source: Morner

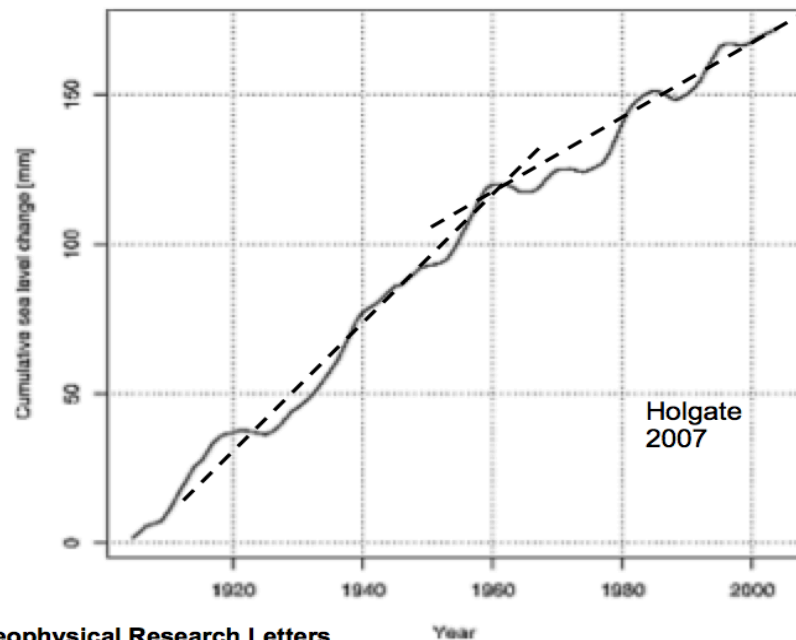
Nils-Axel Mörner has studied sea level and its effects on coastal areas for some 45 years. Recently retired as director of the Paleogeophysics and Geodynamics Department at Stockholm University, Mörner is past president (1999-2003) of the INQUA Commission on Sea Level Changes and Coastal Evolution, and leader of the Maldives Sea Level Project. In a [2010 paper](#) in *21st Century Science and Technology* Mörner said:

“While the IPCC and its boy scouts present wilder and wilder sea level predictions for the near future, the real observational facts demonstrate that sea level rise has remained virtually stable for the last 40-50 years”.

This is in sharp contrast with the model projections, similar to the way temperatures are defying the models.

[Holgate \(2007\)](#) showed a slowing began in the late 20th century.

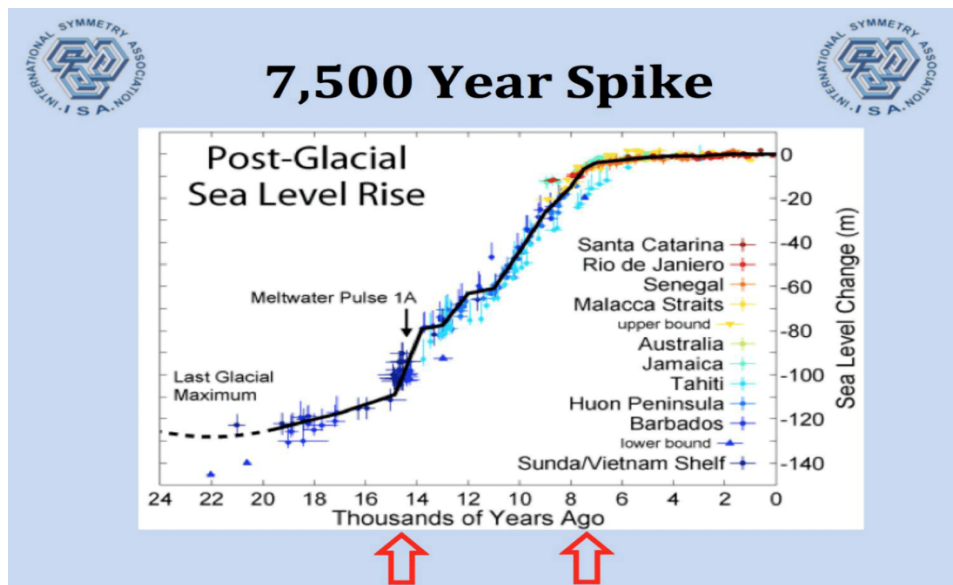
Decadal rates of sea level change during the twentieth century



Geophysical Research Letters
 Volume 34, Issue 1, L01602, 4 JAN 2007 DOI: 10.1029/2006GL028492
<http://onlinelibrary.wiley.com/doi/10.1029/2006GL028492/full#grl22592-fig-0004>

Source: Holgate (2004)

The current trend slope pales in comparison to the long-term trends. Note the slower rises beginning 7,000 years ago!



Source: Fairbanks, R.G. 1989

TECHNOLOGY TO THE RESCUE – BUT DISAPPOINTS – SO ADJUSTMENTS WERE MADE

Because of local factors affecting gauges, technology was introduced to provide more objective measurement of sea level rise. In all cases the new satellite and radar altimeter data showed flat or even decreasing sea levels. Since these results conflicted with previous alarmist model forecasts and claims, adjustments to this data were made - including a Glacial Isostatic Adjustment (GIA). GIA assumes that shore land is rebounding from long ago glaciations and thus is masking the true sea level rise.

GRACE satellite data suggest a contribution of melted ice-mass of +1.9 mm yr⁻¹ BUT note the large adjustments to the raw data!

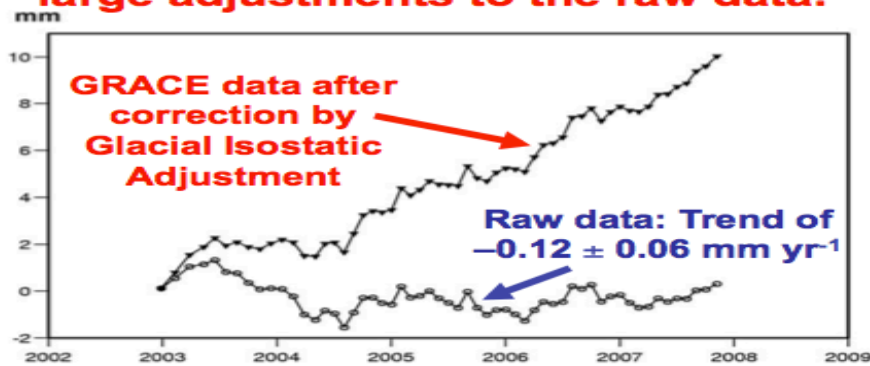
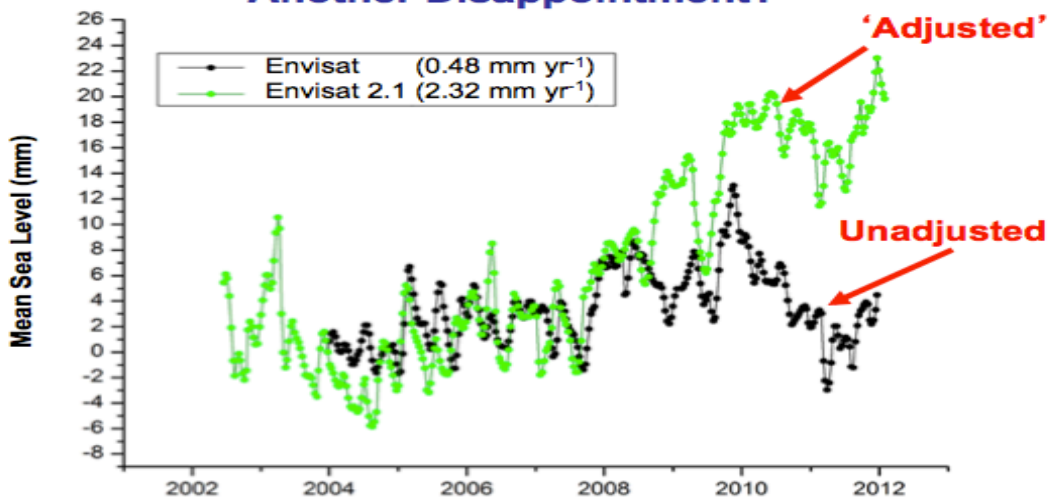


Fig. 1. Ocean mass change from GRACE over 2003–2008. The open circled curve is the raw time series. The black triangles curve corresponds to the GIA corrected time series.

Cazenave et al. (2009) Global and Planetary Change, vol. 65, 83-88

“Environmental Satellite”/Envisat’s Radar Altimeter 2: Another Disappointment?



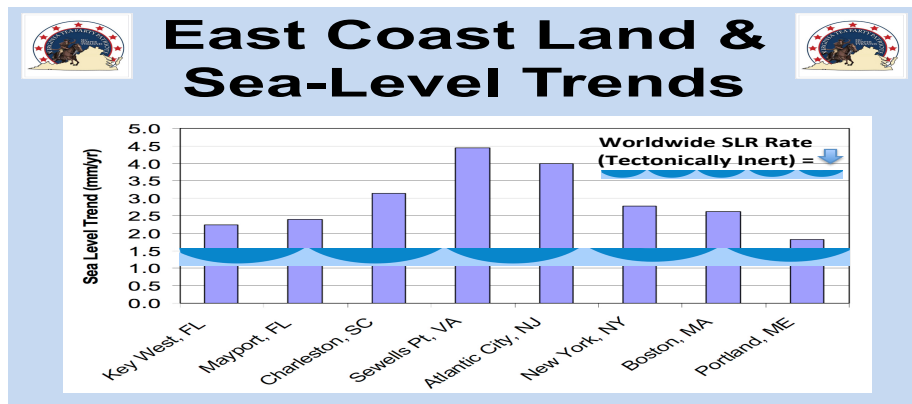
Source: Rudolf Kipp – April 13, 2012

<http://www.science-skeptical.de/blog/was-nicht-passt-wird-passend-gemacht-esa-korrigiert-daten-zum-meeresspiegel/007386/>

Source: Kipp 2012

BAD DATA LEADS TO BAD POLICY

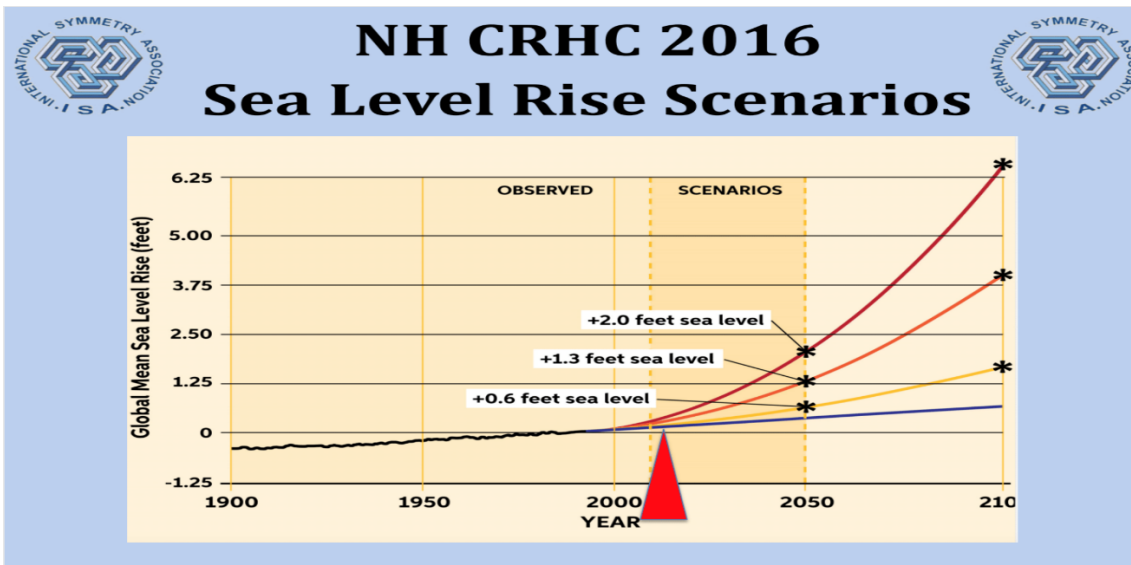
The US East Coast has one, and only one, ocean. The entire East Coast is subsiding (exhibiting what might be called a regional eustasy as the global eustasy has diminished after 1976). However not all locations are sinking at the same rate. The hinge point between uplift and subsidence is not yet well defined. You have to get to Nova Scotia, Canada, before you reach a definitive tectonically inert area that neither rises nor subsides. Besides this isostatic warping factor, there are strong local factors, especially from local (or site-specific) sediment compaction. Virginia is sinking faster than other places due to a meteor hit about 35 million years ago that busted up the bedrock, making it “frangible,” and extracting groundwater from that structure just makes it sink faster.



Source: Wysmuller

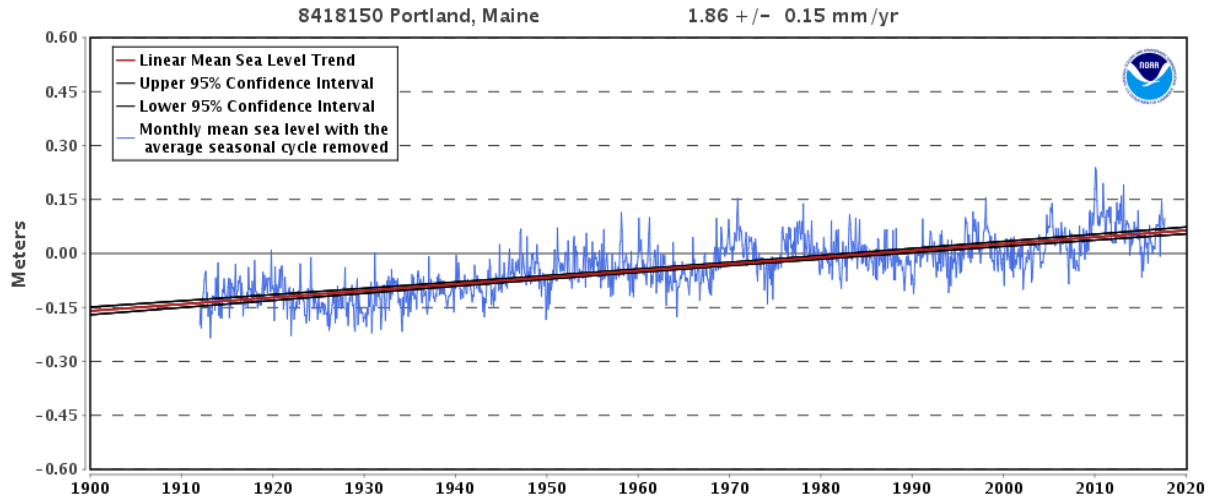
Further north, the NH Coastal Risk and Hazards Commission is using models and projecting 1 to over 6 feet sea level rises by 2100. According to actual data in this [detailed reanalysis](#), the current rate is 7 inches/century, which is below any scenario line.

NEW HAMPSHIRE COASTAL RISK AND HAZARDS COMMISSION



Source: Sununu

The scenarios are based upon CO2 emission reductions ranging from no change (highest projected sea level) to draconian CO2 reduction involving no power generation emissions and only electric autos, etc. The projections start in 1992 and actual (remaining linear) measured sea level is just half of the “draconian” projection!



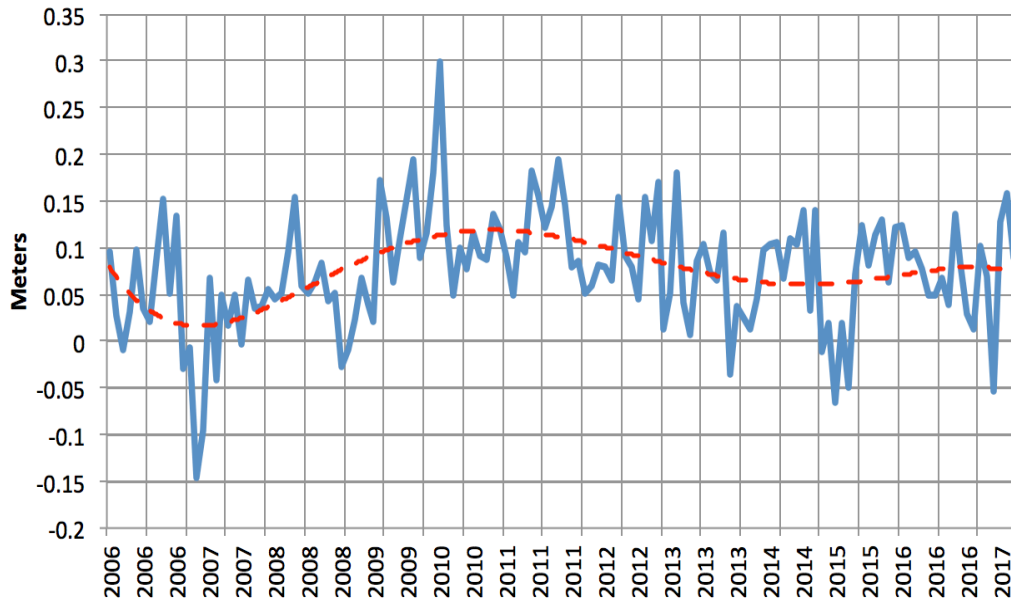
Source: NOAA

Many projections had major flooding already occurring in New York City by now. James Hansen projected that the West Side Highway would be underwater by 2040, implying a 10-foot rise by then. So far it has increased one inch. For his projection to come true another 9 feet, 11 inches by 2040 would be needed. A steady series of inflammatory reports say the rises are exceeding expectation but the data shows otherwise.

Headline: "Manhattan could be underwater sooner than expected"



NOAA Sea Level Gauge Monthly - The Battery, NYC



Source: Source: NOAA

National Geographic, once a reliable reference, went all out and showed the Statue of Liberty wading in the Atlantic water. The level of the water depicted was 214 feet.

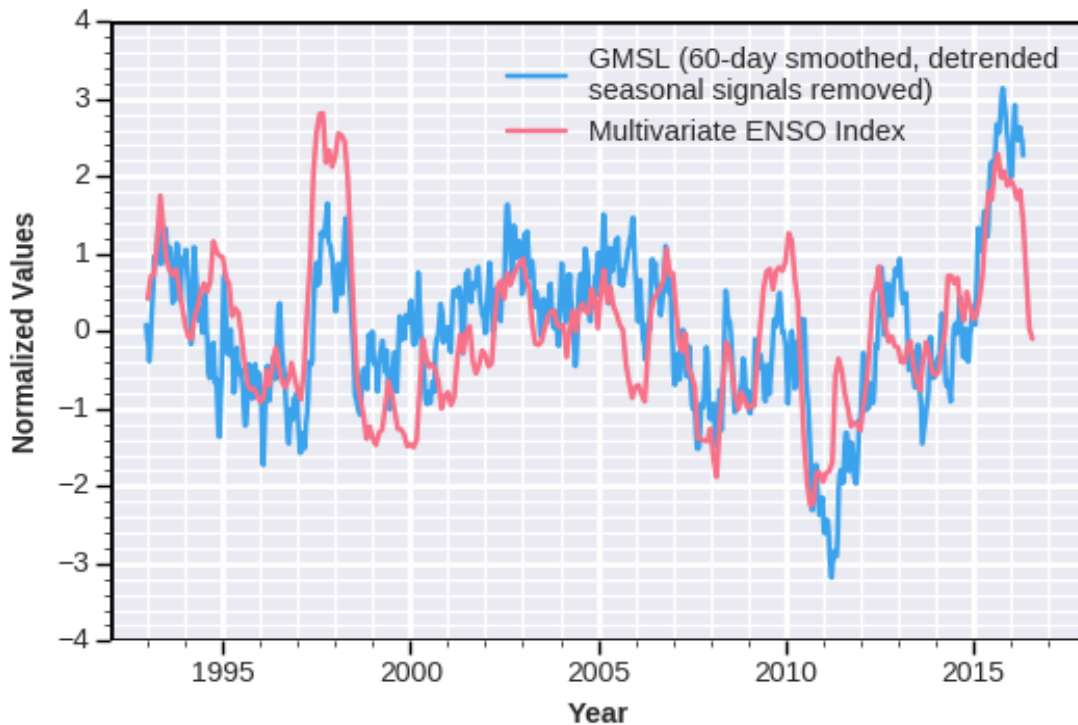


At the current rate of 4 inches/century, it would take 36,000 years to reach that level. We are 10,000 years into the current interglacial. Interglacials historically have lasted 10-20,000 years. Long before Lady Liberty would be swimming, she is more likely to be as depicted in the scene from Day after Tomorrow encased in ice and snow. In the Mississippi Delta, Louisiana tides are rising at 10 times the global average and 5 times faster than the rest of the Gulf of Mexico. Grand Isle sea level is rising at a rate of 41 inches/century. Just to the east in Biloxi, Mississippi, the rise is just 6 inches/century. The rapid rates of sea level rise are due to compaction subsidence in

the Mississippi Delta Plain (estimated to cause 80% of the rise). Also influencing the rise is the Army Corp dredging of the channel to maintain a nine-foot navigation channel to permit ship and barge traffic.

Natural factor Impacts on Sea Levels

Sea level rises are influenced by factors like El Niño and La Niña. El Niño's produce warming and ocean expansion, increasing sea levels rises. La Niña's produce cooling and ocean contraction and slower rises.



Source: [UCO GMSL and the MEI](#)

However, Dr. Morner points out in parts of the western Pacific (e.g. Tuvalu, Vanuatu) the ENSO events see diminishing sea levels from changing winds and a resulting water redistribution. In El Ninos, the water, which was piled up in the west by the equatorial low-level east winds in prior La Nina states, sloshes to the east as the easterlies diminish.

Authors:

Tom Wysmuller

Thomas Wysmuller, who did his college work in meteorology at NYU and Stanford, worked throughout NASA during Apollo's Moon Landings and still lectures at NASA Field Centers. He was highlighted in Horizons, the American Institute for

Aeronautics & Astronautics' special NASA's 50th anniversary issue, and was the meteorologist member of 2012's NASA 49 and NASA 41.

In Nov 2016, Tom chaired the Oceanographic Section at the massive "World Congress of Oceans" in Qingdao, China, as the featured Sea-Level presenter. He keynoted at 2017's Rome Climate Conference.

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