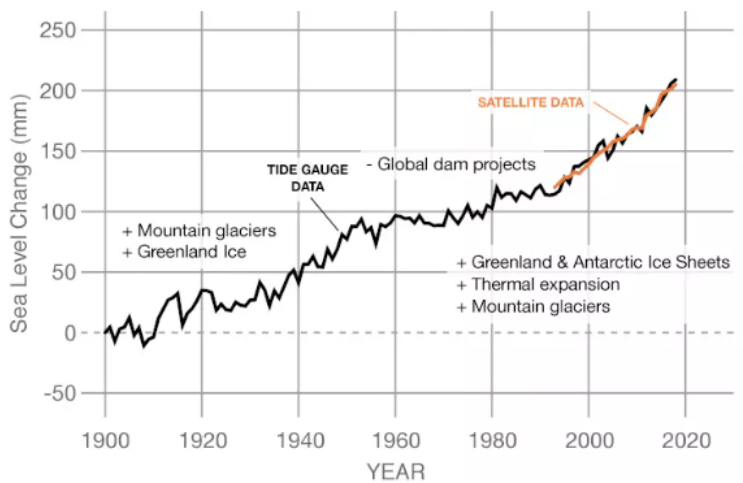


CSS-33a Sea Level Rise – Is There Acceleration? – Global Tide Gauge Average

More detail? climatechangeandmusic.com

SOURCE DATA: 1900-2018

Data source: Frederikse et al. (2020)
Credit: NASA's Goddard Space Flight Center/PO.DAAC

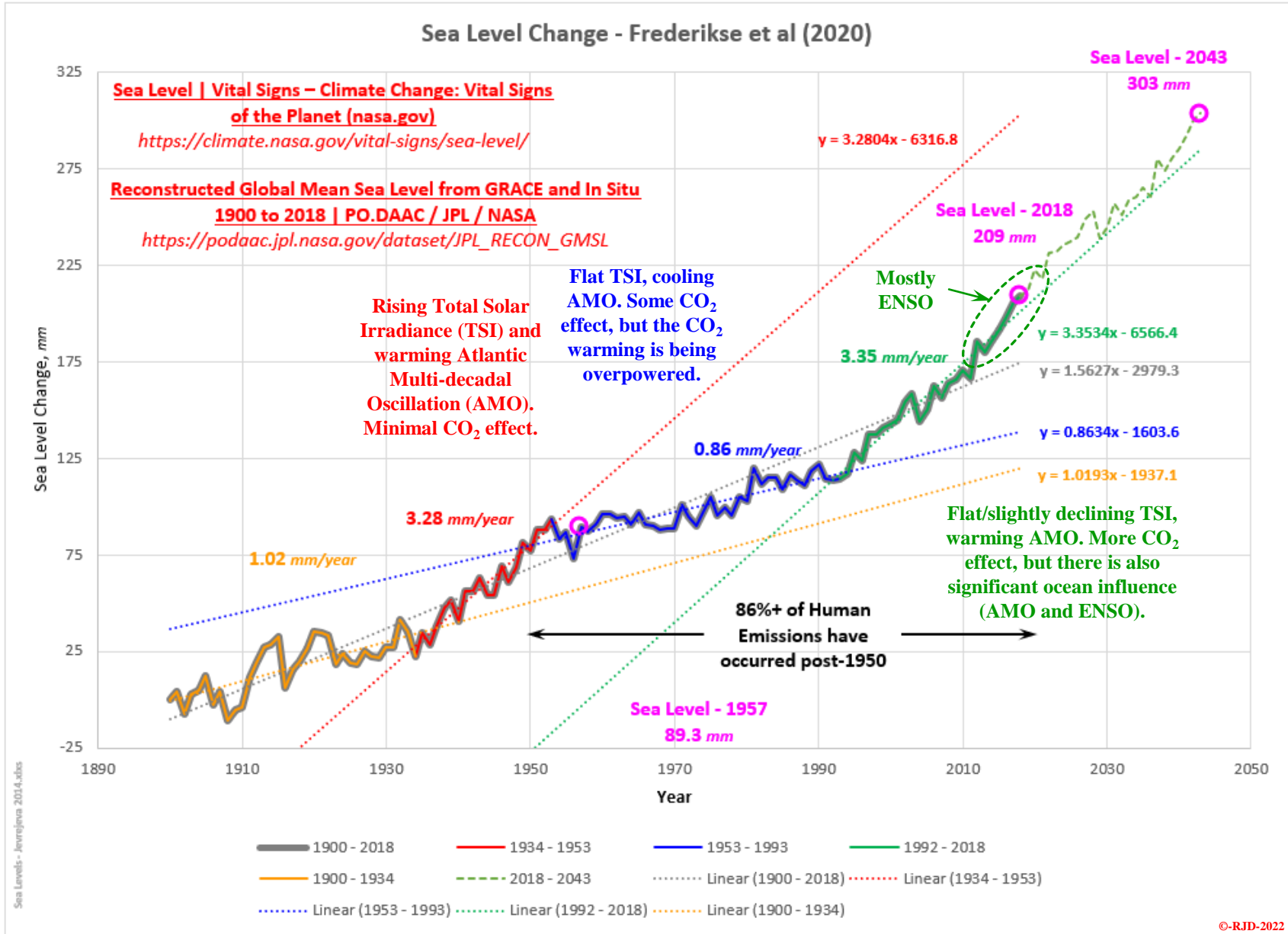


The rise from 1934 to 1953 (3.28 mm/year) is statistically the same as the 1992 to 2018 (3.35 mm/year). Most of human emissions (86%+) occurred post-1960. So, most of that 1934 to 1953 sea level rise would be natural (rising TSI (as a proxy) and a warm AMO phase). The 1992 to 2018 Sea Level rise likely has a CO₂ component, but the AMO and ENSO were also large contributors (capable of producing most of that rise without CO₂ assistance).

Sea Level NASA Tide Gauge Data

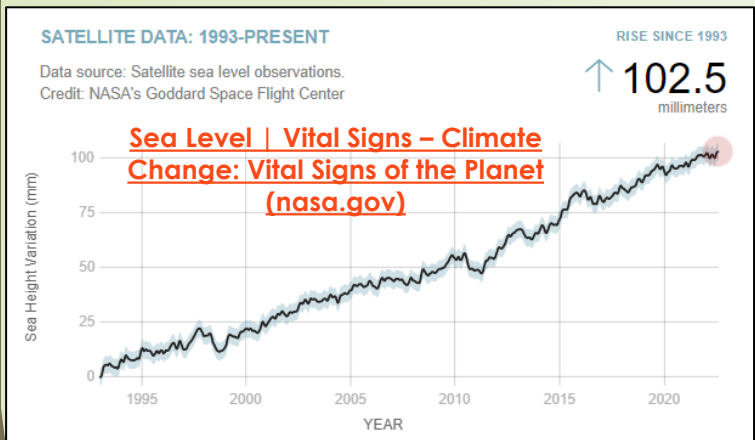
I just added on a 1992 – 2018 like increase to see where we might end up in 2043. But will that really happen? Temperatures have dropped since 2018. Sea Level rise has dropped (current levels are now similar to 2010 based on tidal gauges, NOAA examples presented later). What will really happen to sea level rise as the AMO moves into its cool phase and the Grand Solar Minimum cooling accelerates? Sea Levels will flatten or drop.

The chart to the left is a screen shot from NASA (Frederikse et al 2020). That data is available and was reproduced below with some additional analysis. Sea Level has generally risen from 1900 to the present. But that rise does not correlate directly with CO₂. Sea Level rise speeds up and slows down often, while CO₂ is generally a steady increase.

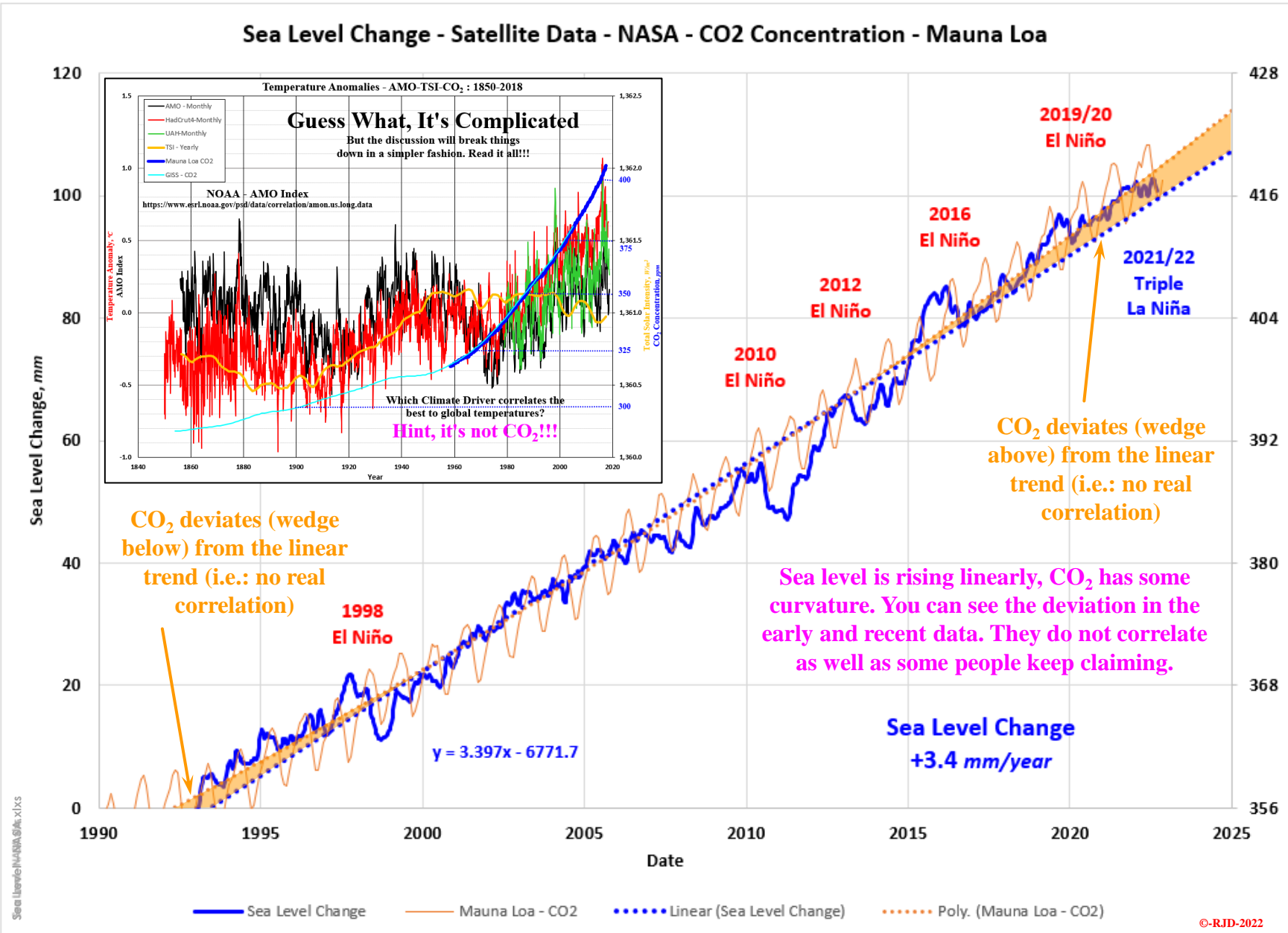


GSM – Grand Solar Minimum. The real “Climate Change” existential threat is right around the corner. Do the Research!

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The NASA satellite data (1993 to August 2022) has been rising on average at 3.4 mm/year (in line with the Frederikse et al interpretation). Given that the rise over this period is close to linear, you can make a case for CO₂ correlation.

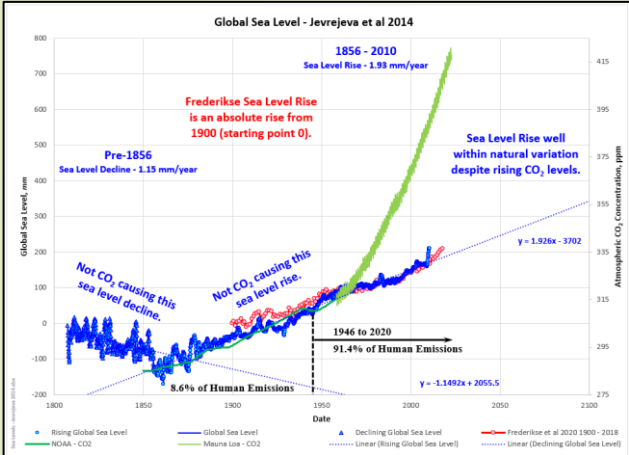


But is CO₂ really correlating with Sea Level Change? If you fit the data over the 1993 to 2022 period, there is no correlation pre-1993. A much better correlation exists between the AMO (black inset curve) and the HadCRUT4 surface temperature (red inset curve). A larger version of the It's Complicated graph is available in my [Open Letter Addendum](#) post. You can see temperature impacts (although minor) in this satellite data. Every significant El Niño since 1993 appears as a small sea level increase, followed by a sea level drop. Sea Levels have been flat since mid-2021, likely due to the triple La Nina (ENSO cooling) we are currently experiencing. The CAGW alarmist crowd is happy to take the simplistic unscientific approach of extrapolating current trends. What they ignore (knowingly) is the natural forcings (primarily solar) that have always driven the climate, routinely overpowering any minor warming that CO₂ may be providing. The AMO and solar activity (TSI, as a proxy) are both heading into a cooling phase. Ignore at your own peril!

Sea Level NASA Satellite Data

Sea Level NASA Satellite Data

GSM - Grand Solar Minimum. The real "Climate Change" existential threat is right around the corner. Do the Research!



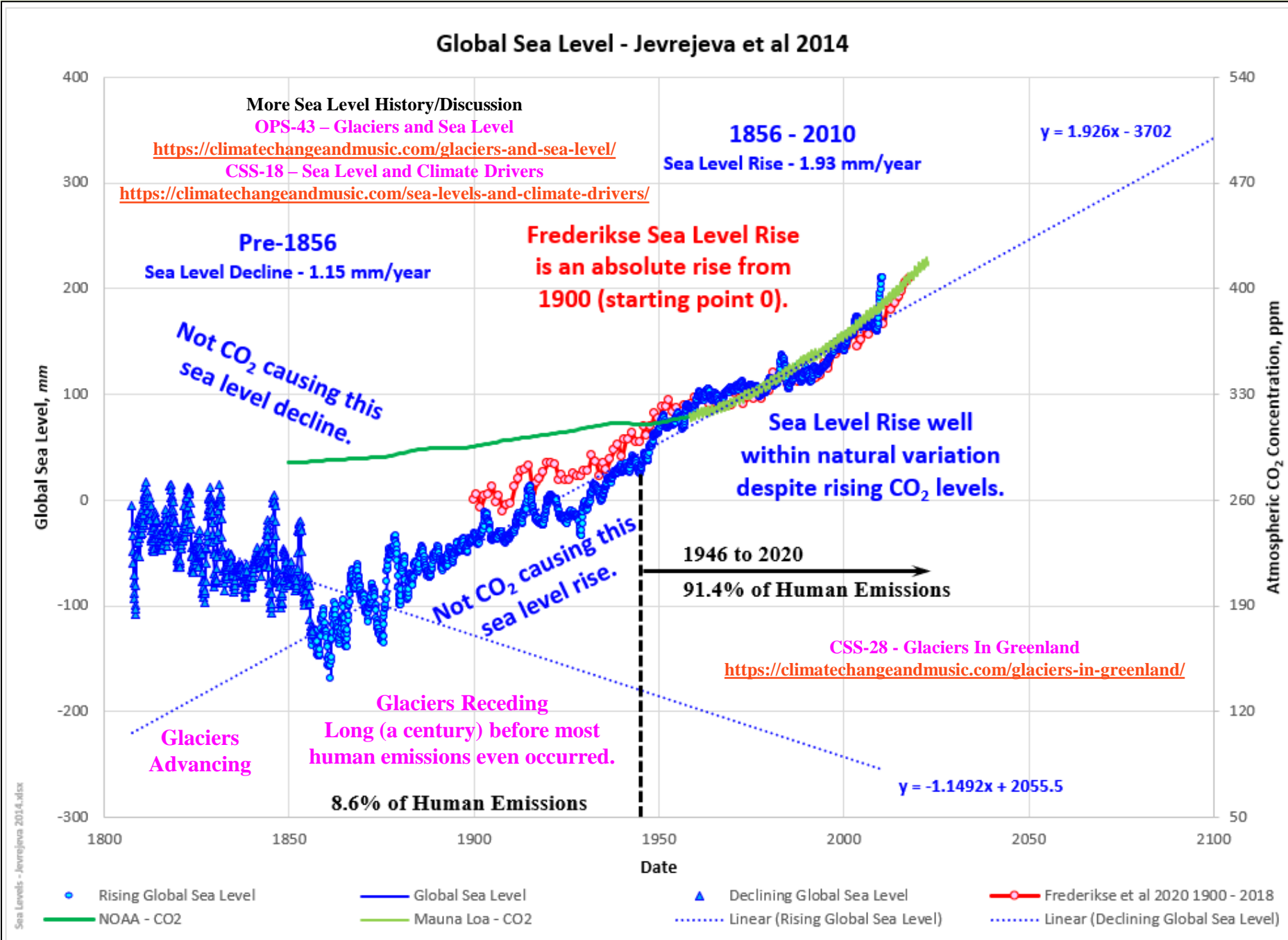
There are longer Sea Level datasets than Frederikse et al 2020 (plotted here in red against the Jevrejeva et al 2014 data plotted in blue). You will generally not see pre-1850 data in a news reports, IPCC documents, etc. Why? That data does not fit the narrative. Sea Level rise does not correlate with CO₂ rise. You can correlate the two over short periods, but not the entire dataset.

Sea Level Jevrejeva et al 2014

These two plots are the same except for the CO₂/Sea Level correlation period.

Whether you

correlate over the 1850 to 1950 or post-1950 periods the remaining data deviates dramatically. There is also that little correlation problem (pre-1850), when sea levels were dropping as CO₂ increased slowly. Glaciers were also advancing pre-1850, as temperatures were dropping. How is that possible when CO₂ is the only driver!



GSM – Grand Solar Minimum. The real “Climate Change” existential threat is right around the corner. Do the Research!

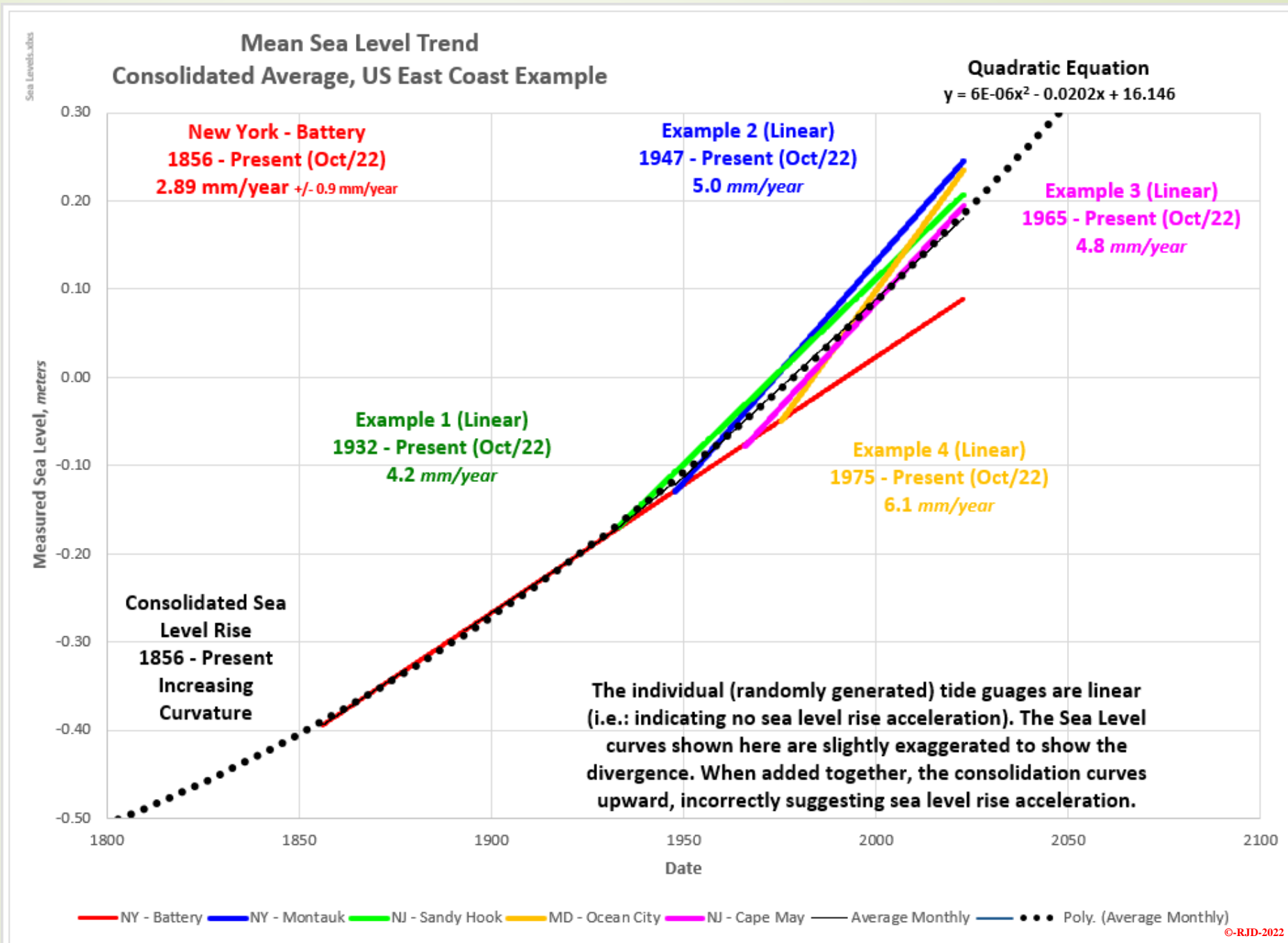
In general, sea level rise at individual tidal gauges over the last century and half has been linear. A linear trend (whether rising or falling) indicates that the sea level rise is constant, not accelerating. This chart is just a schematic that shows how consolidating a number of linear Sea Level rise trends could lead to a group average that appears to have an accelerating Sea Level rise. The base case (red) is the linear trend from the Battery in New York. The full Battery data set is shown in the upcoming slides. The additional examples (all linear) are shorter time periods with higher sea level rise rates. The values shown here are adjusted and exaggerated slightly to show the concept a little more clearly. The real life examples are presented over the next few slides. Is this how the Frederikse graph (shown on the NASA site) developed?

Sea Level Curvature Schematic

Is this how the Frederikse graph (shown on the NASA site) developed?

I suspect/hope that they have a more complicated procedure for aggregating the individual tidal gauges into a global average.

But based on the manipulation (i.e.: homogenization) liberties that are taken with temperatures, I hope you can forgive me for being skeptical. Individual tidal gauges have little, if any long-term indications of acceleration (many have flattened since 2010).



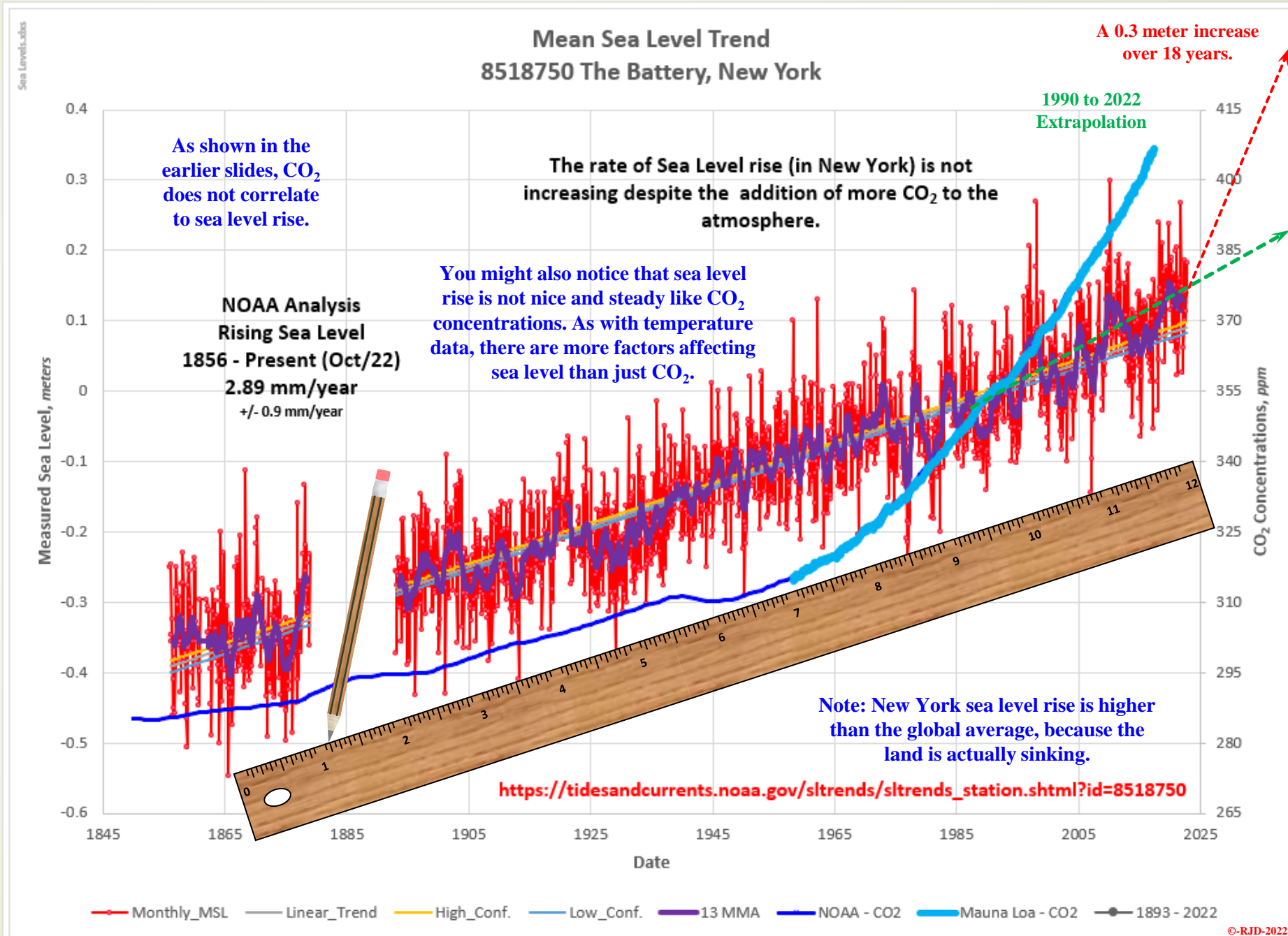
GSM - Grand Solar Minimum. The real "Climate Change" existential threat is right around the corner. Do the Research!

This slide shows the tidal gauge data from The Battery in New York (1856 to October 2022). I am using this tidal gauge as the base to produce a real life example of the schematic shown on the preceding slide. A Grade Eight student in the early 20th century could have used a ruler and pencil and came up with a better estimate of New York's current Sea Level, than the "climate scientists" of the late 20th century. The last time I checked, New York's sea level has to start climbing much more aggressively to meet Dr. James Hansen's 1988 prediction that the "The West Side Highway [which runs along the Hudson River] will be under water" in 40 years (originally quoted as 20 years). That would require a sea level rise of roughly 3 meters (10 feet). In the first 22 years, there has only been a 0.125 meter rise. I

do not see a realistic scenario where New York's Sea Level rises 2.875 meters over the next 18 years. A rise

of 0.3 meters (over 18 years) would be an aggressive prediction. You can argue that there is a minor upward curvature, but you can also argue that the cooling we will experience over the next few decades, as the AMO goes into its 30-year cool phase and solar activity drops into the forecasted Grand Solar Minimum, will flatten sea levels and/or likely drop them significantly.

Sea Level The Battery New York



GSM - Grand Solar Minimum. The real "Climate Change" existential threat is right around the corner. Do the Research!

CSS-33f Sea Level Rise - Is There Acceleration? - Battery, NY - Regressions

More detail? climatechangeandmusic.com

This slide breaks The Battery's sea level data up into a few different time intervals. Sea Level reacts (logically) to global temperature changes. When global temperatures increase, sea levels will also increase (but more subtly).

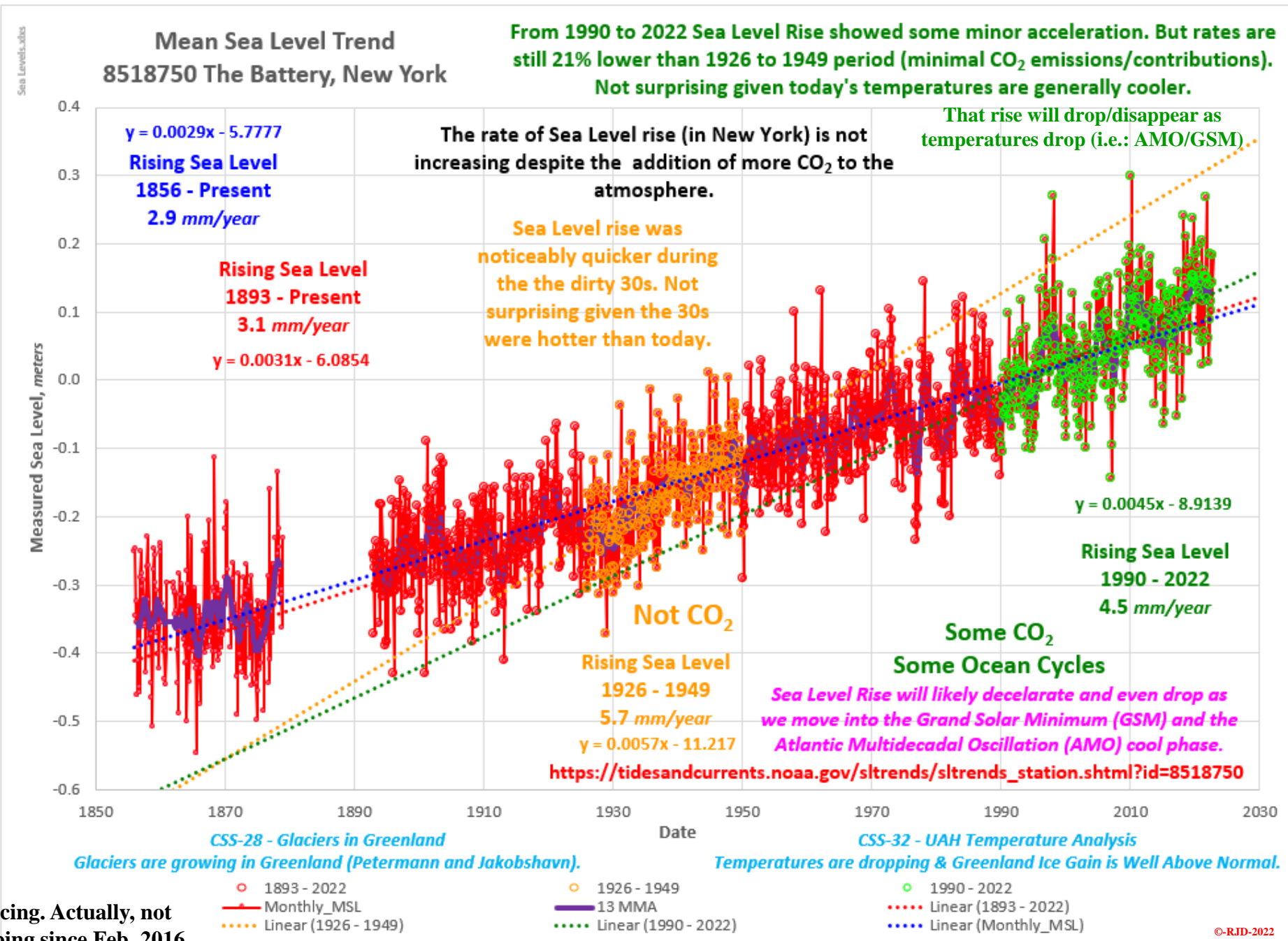
New York's Sea level rise was much faster over the 1926 to 1949 period (5.7 mm/year) than the more recent satellite period (1990 to 2022, 4.5 mm/year). You might ask why? With a little common sense, you might realize that the 1926 to 1949 period includes the Dirty 30s.

Despite the "official" homogenized (i.e.: manipulated) temperatures you are routinely shown, the 30s measured temperatures (the ones we experience in real life) were actually much higher overall than the current "HOTTEST YEARS EVER". This dataset begins in 1856, but still shows a bit of the global declines shown in the Jevrejeva et al 2014 data set (pre-1856). Remember, when temperatures

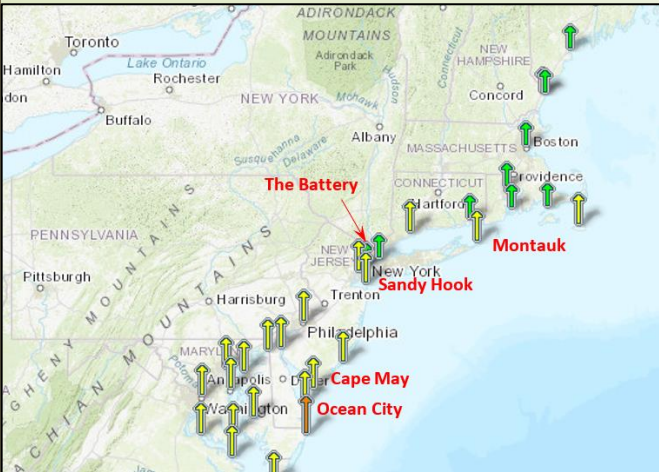
Sea Level Battery, NY Regressions

were dropping and glaciers were advancing along with the sea level dropping. Strange that many of our recently receding glaciers are exposing old forests and human settlements. Also, strange that many of the poster child glaciers (like Petermann and Jakobshavn in Greenland) have recently started advancing. Actually, not

strange, since temperatures have been dropping since Feb. 2016.



GSM – Grand Solar Minimum. The real “Climate Change” existential threat is right around the corner. Do the Research!

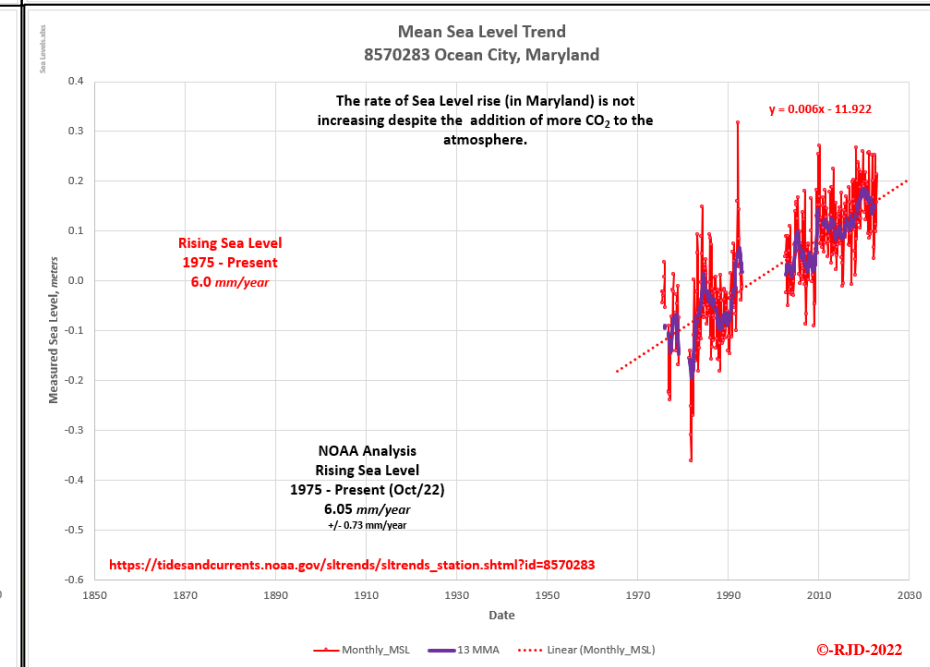
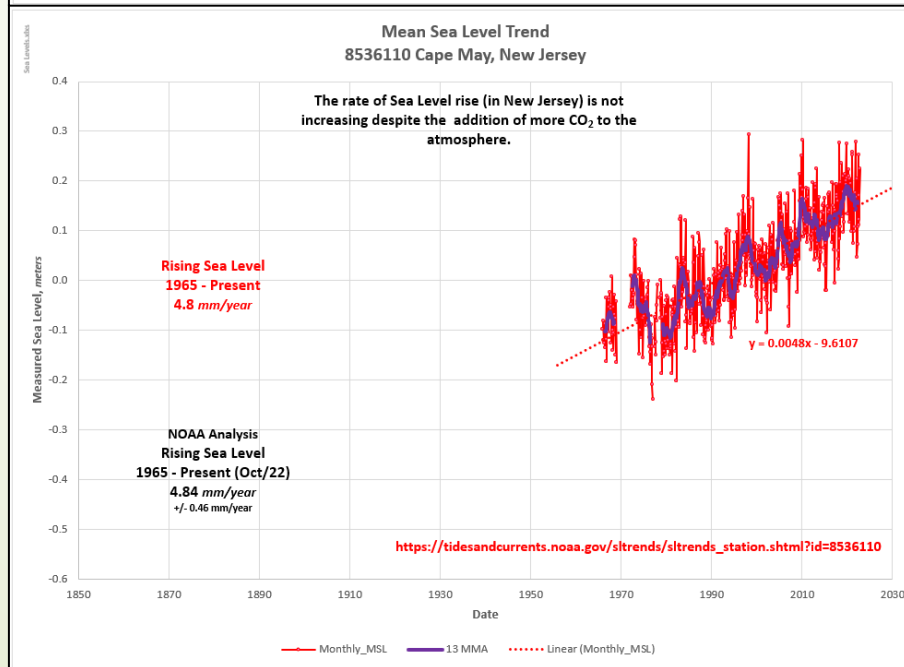
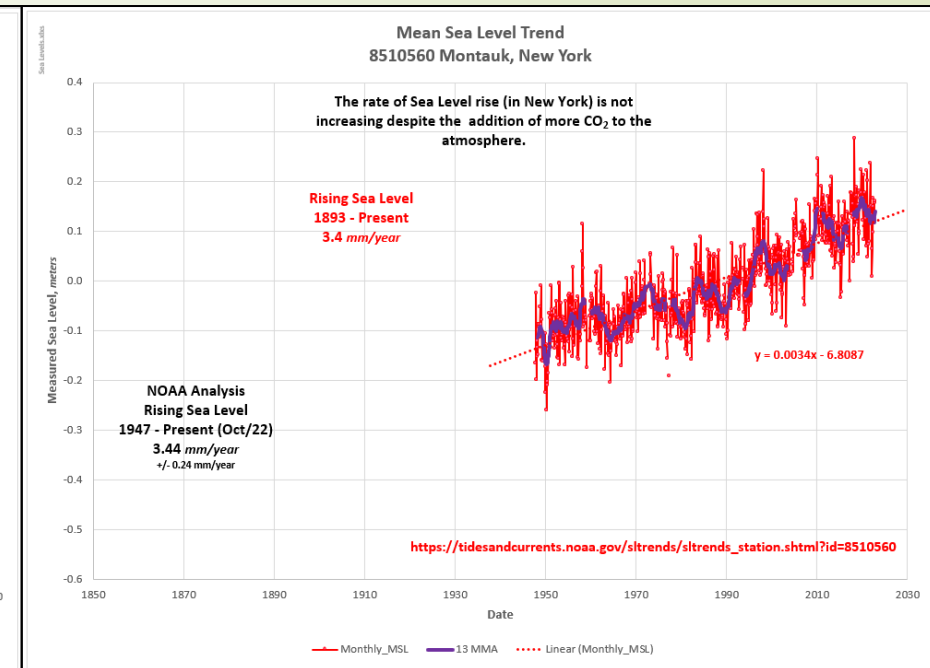
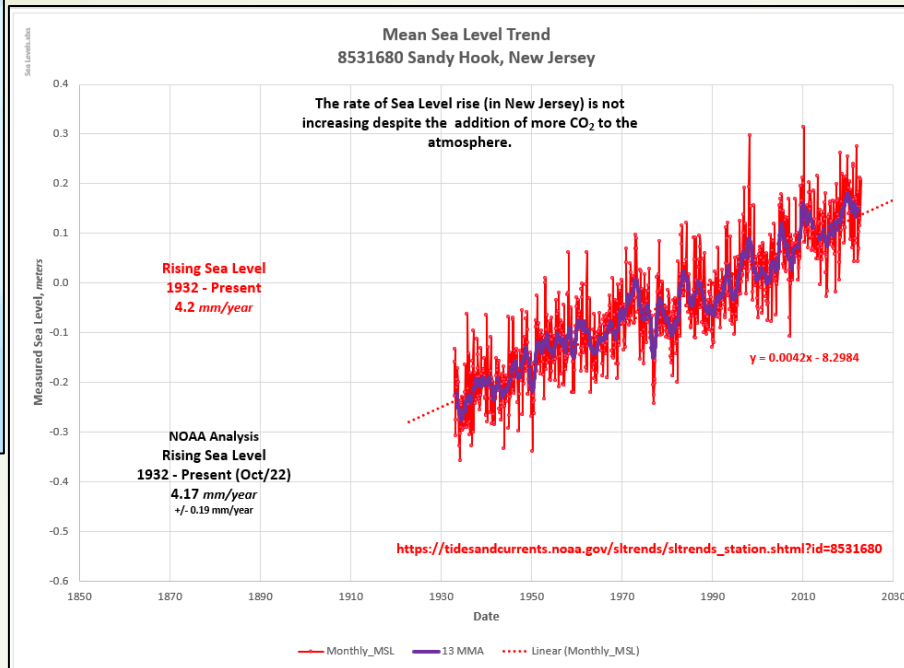


There are many shorter term tidal gauges spread across the planet. If these tidal gauges are just averaged with The Battery’s longer history, the consolidated curve will have some curvature, incorrectly indicating that the sea level rise along this part of the East Coast is accelerating. Remember these locations are just being used as an example.

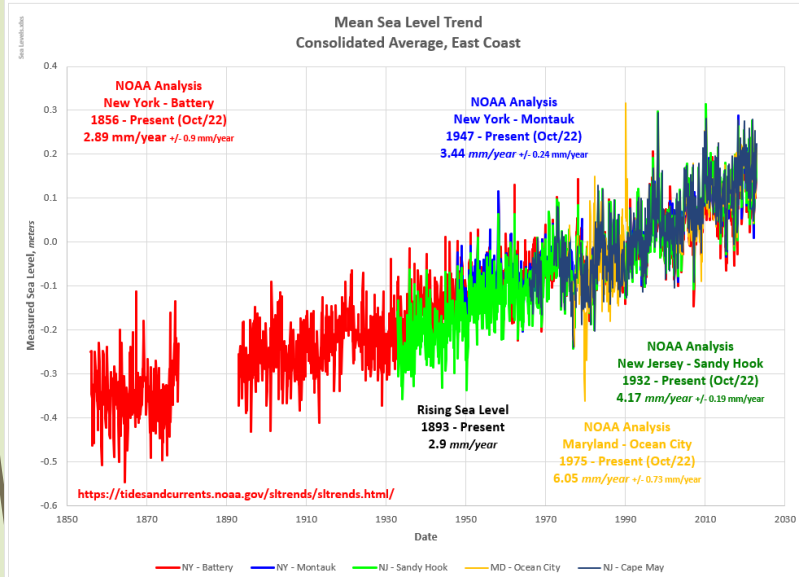
Sea Level Shorter Term Tide Gauges

All of these tidal gauges shown a linear sea level rise. That is extremely typical around the world. My

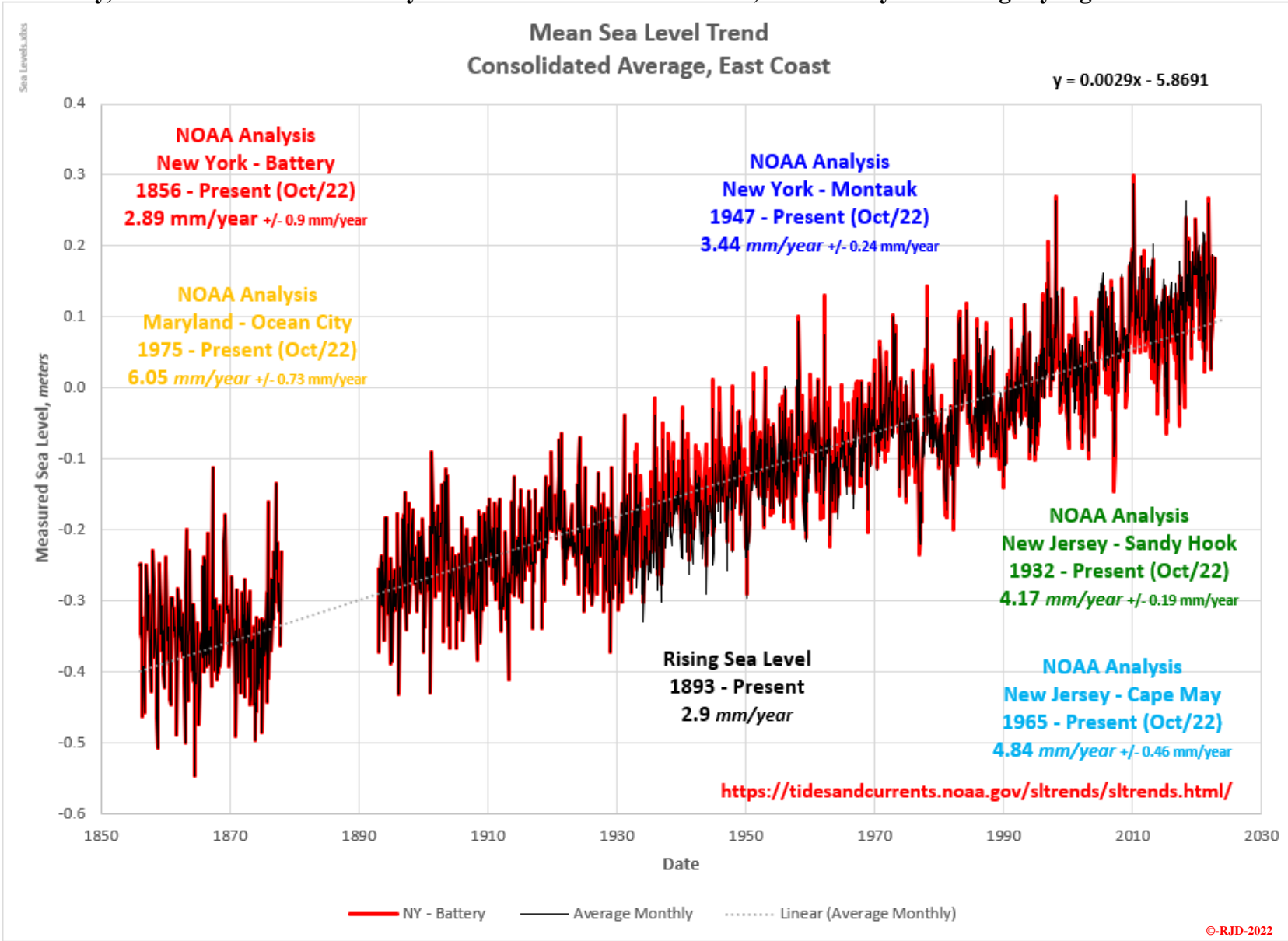
OPS-23 – Sea Level post shows a few tidal gauges from around North America. All with linear trends. The [NOAA website](http://noaa.gov) can be easily used to look at examples from around the world. Vaasa, Finland sea level is declining (the land is rising) at 7.21 mm/year (linearly). Kwajalein in the Marshall Islands is rising at 2.03 mm/year (linearly). Sydney, Australia (0.75 mm/year, linearly), etc.



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The plot to the far left lays the monthly shorter duration tidal gauges over The Battery tidal gauge data (monthly). As you would suspect, given their close proximity, they have somewhat similar sea level rise indications. But they are all still rising at slightly different rates. The plot below lays the consolidated shorter stations over The Battery data. At this data density, the differences are relatively hard to see. From 1930 to 1970, The Battery data is slightly higher. From 1990 to



October 2022, the Consolidated curve begins to continuously deviate from The Battery data. Without knowing the building blocks (all linear trends), the consolidated curvature could be incorrectly interpreted as a sea level rise acceleration. The principle could be applied to the entire NOAA dataset. Could the curvature in the Frederikse et al 2020 data be a relic of the averaging process? Ultimately that does not matter, because the individual tidal

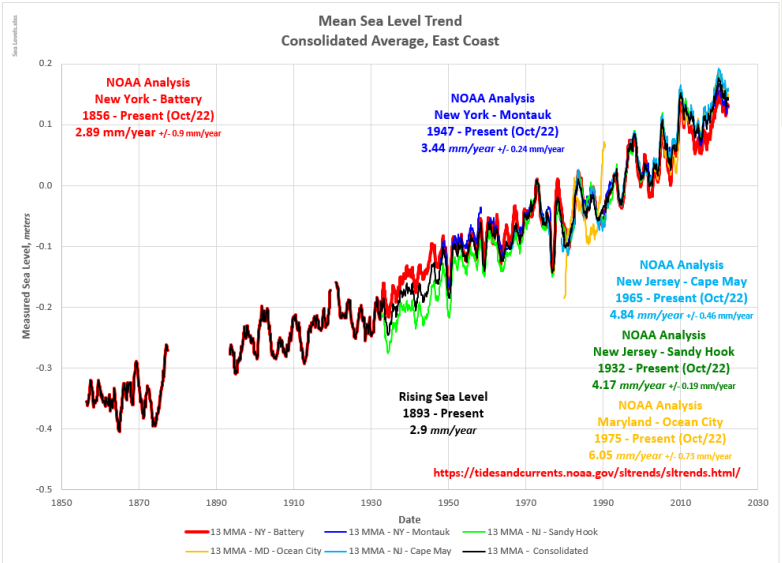
stations do not show any acceleration. And the analysis does not factor in the sea level rise deceleration that will occur as our planet’s temperatures continue to drop during the AMO cool phase and the forecasted GSM (OPS-52 – Solar Activity – NOAA Forecast and CSS-29 – Climate Model – TSI-AMO-CO₂). As with all “Climate Change” topics, the science is complicated and not limited to a simplistic, unscientific CO₂ focus. Ignoring the cooling that is coming is just stupid!

Sea Level Multiple Tide Gauges

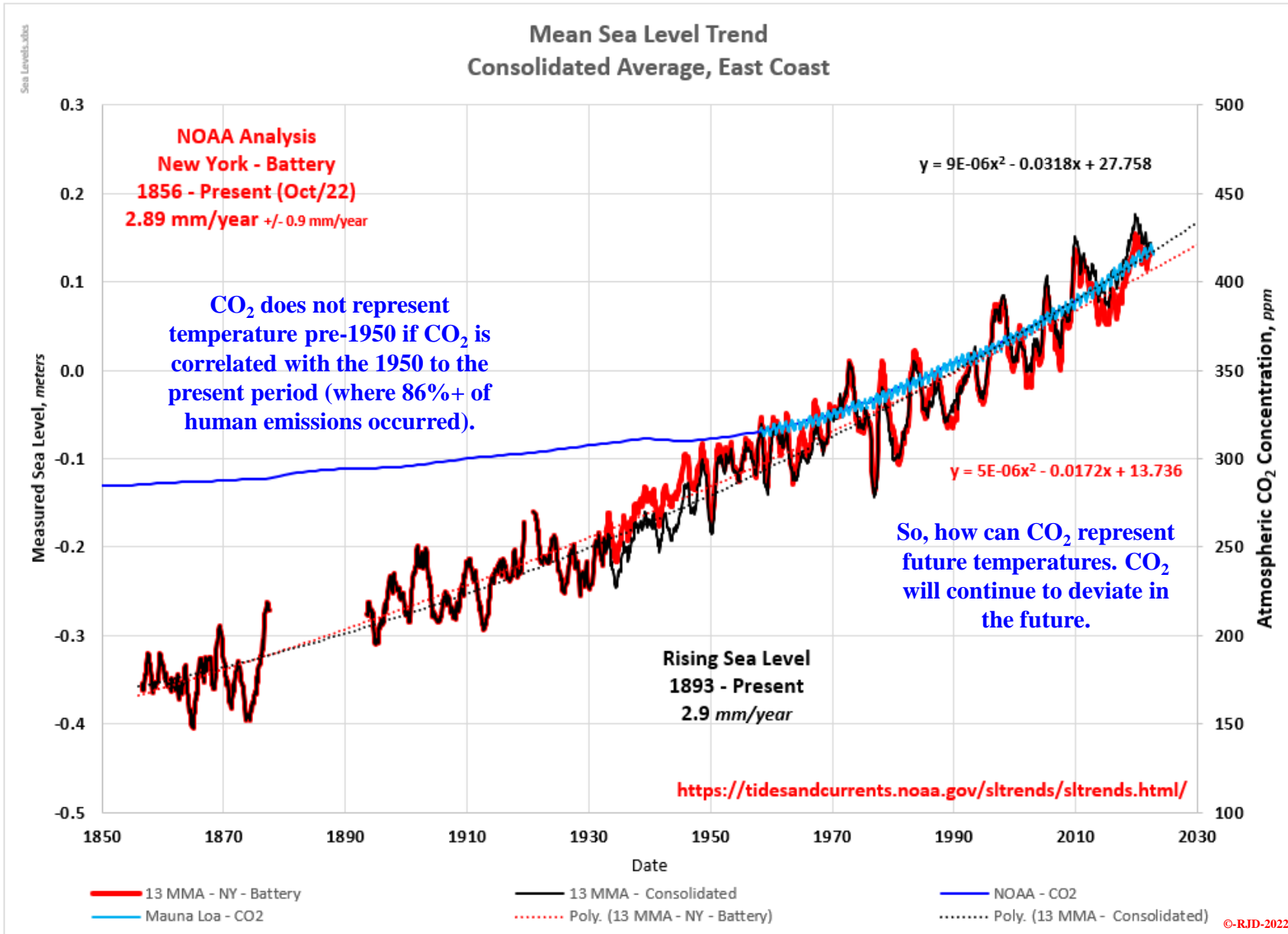
GSM – Grand Solar Minimum. The real “Climate Change” existential threat is right around the corner. Do the Research!

CSS-33i Sea Level Rise – Is There Acceleration? – The Battery & Consolidated

More detail? climatechangeandmusic.com



These curves use the same datasets laid out in the previous slides. To take out some of the noise (the wild fluctuations), the data has been reduced using a 13 Month Moving Average (MMA). The curvature deviation is now becoming more



apparent. The two curves (The Battery and the consolidation) were modelled using quadratic equations. The curve separation begins around 1990 and continually grows over time. The CO₂ concentration data has been included again to show how little sea level rise and CO₂ correlate.

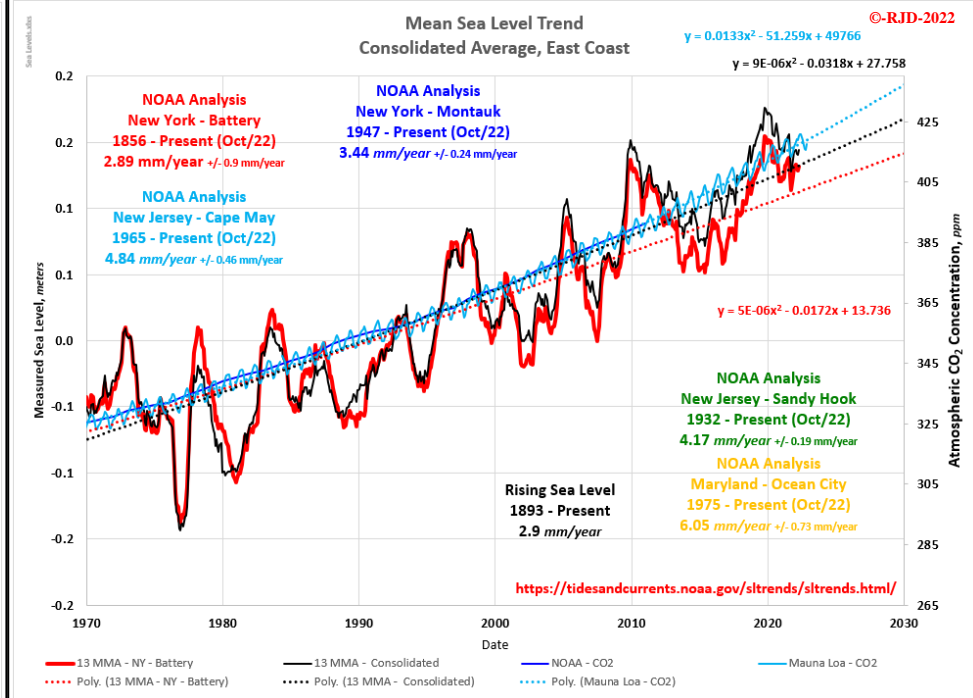
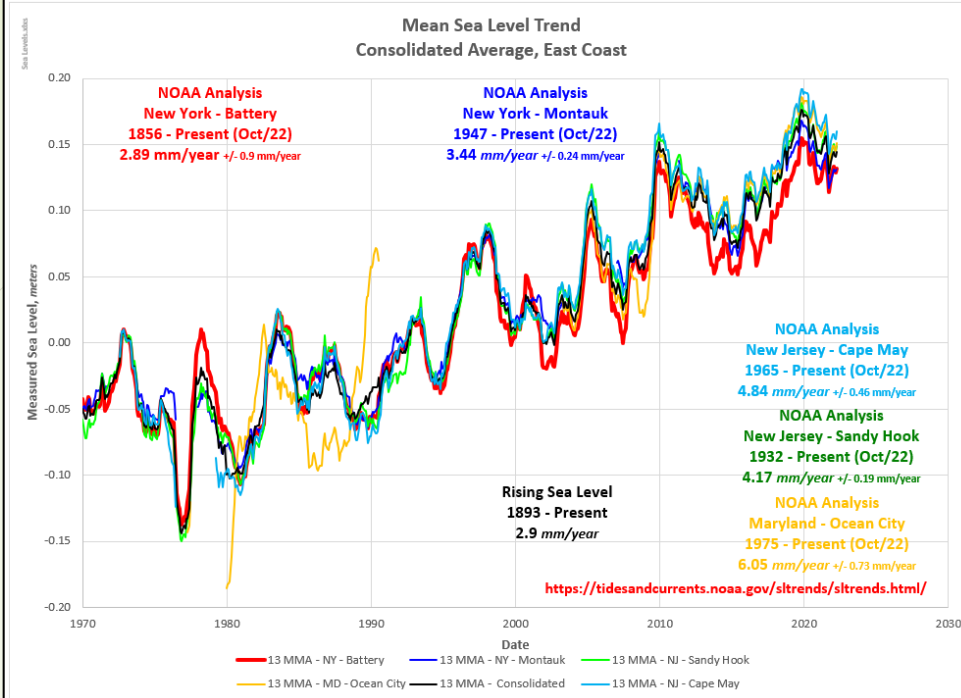
Sea Level Consolidated & Battery

You can get the sea level rise and CO₂ to generally correlate over the 1950 to the present period (where 86% of human emissions occurred), but the datasets (CO₂, The Battery and the Sea Level Consolidation) will continue to deviate from one another. And that will happen even if the AMO and GSM were not part of the picture (they are). Generally, fitting a curve to a straight line is not a good indication of correlation. Looking back in time, CO₂ is not representative of temperature. Using CO₂ to represent future temperatures is therefore suspect at best. Much like computer temperature projections.

GSM - Grand Solar Minimum. The real "Climate Change" existential threat is right around the corner. Do the Research!

Sea Level Rise Is There Acceleration? Short/Long Term Extrapolations

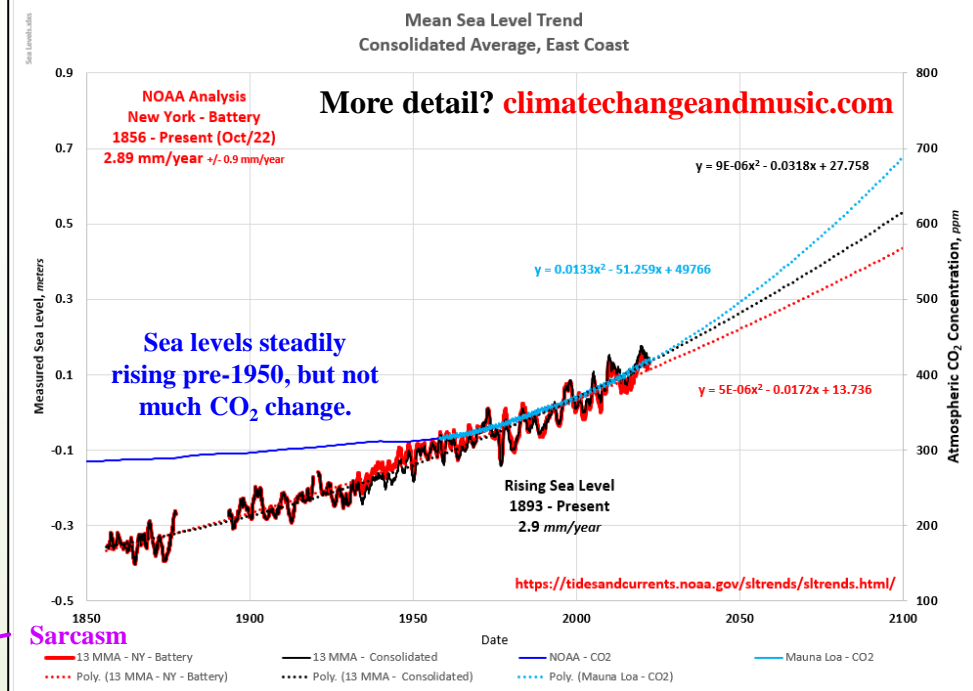
The two plots to the right just focus in on the post-1970 period. A little more detail can be seen on the individual tidal stations (near right) and the deviation between CO₂, The Battery and the Consolidated curves (far right). The plot (right, below) just extrapolates the three curves out to 2100. The CO₂ curve has a much more prominent curvature than the sea level rise curves (whether a linear or a polynomial (quadratic) fit is used).



So, no CO₂ is not driving sea levels. Sea levels are driven by temperature (primarily through glacial melt and thermal expansion). Pre-1856 that would have been glacial advance and thermal deflation. But if temperature drives sea levels, how can CO₂ drive temperature when CO₂ does not correlate with (let alone drive) sea levels? What a conundrum. But the answer is simple. Climate Change is complicated. There are many more powerful natural forcings than CO₂ that are continually and knowingly ignored by the

Curve Extrapolations Sea Level

CAGW alarmist community. You can even see these other influences (strong El Niños/La Niñas, the AMO and solar activity in particular) in the sea level data. The strong ENSO impacts are visible in the satellite sea level data (CSS-33b). The AMO is expressed in the sea level acceleration from in the early 20th century, followed by a deceleration and then another acceleration. These sea level acceleration/decelerations generally line up with the 30-year cold and warm phases of the AMO (again, CSS-33b, Climate Change is Complicated). Does ocean cycle contribution to sea level fluctuations really surprise anyone? The ocean is a much bigger CO₂/heat sink than the atmosphere. The oceans have massive influence on atmospheric conditions. Atmospheric conditions have only minor influence on the ocean. But let us not forget solar activity. Temperatures started rising centuries before CO₂ (especially human generated CO₂ (86%+ of which were emitted post-1950)), could have had any measurable effect on the climate. Temperatures were significantly colder during the middle of the Little Ice Age (LIA) when solar activity was at 7,000-year lows. The sea level rise shown here correlates with the temperature increase out of the Dalton Minimum cold and the pre-1950 solar activity rise to 7,000-year highs. Must be a coincidence. How could solar activity (directly or indirectly) have anything to do with the "HOTTEST YEARS EVER"? Just because temperatures fluctuated significantly throughout the last 10,000+ years with CO₂ essentially flat, doesn't mean those forcings are still active?

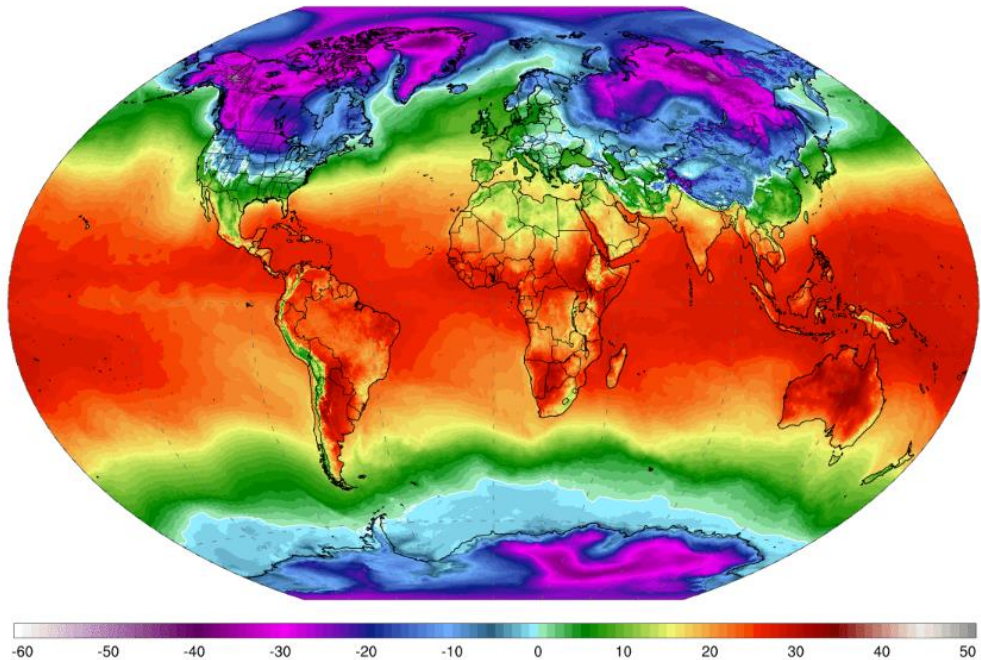


Sarcasm

GSM - Grand Solar Minimum. The real "Climate Change" existential threat is right around the corner. Do the Research!

GFS 2m Temperature (°C)
1-day Avg | Wed, Dec 21, 2022

ClimateReanalyzer.org
Climate Change Institute | University of Maine



CSS-33k Sea Level Rise - Is There Acceleration?

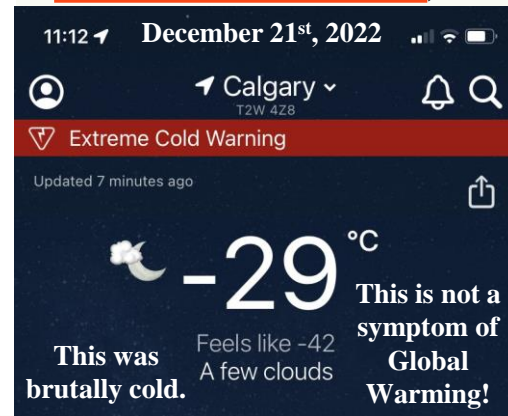
More detail?

climatechangeandmusic.com

Current Temperatures

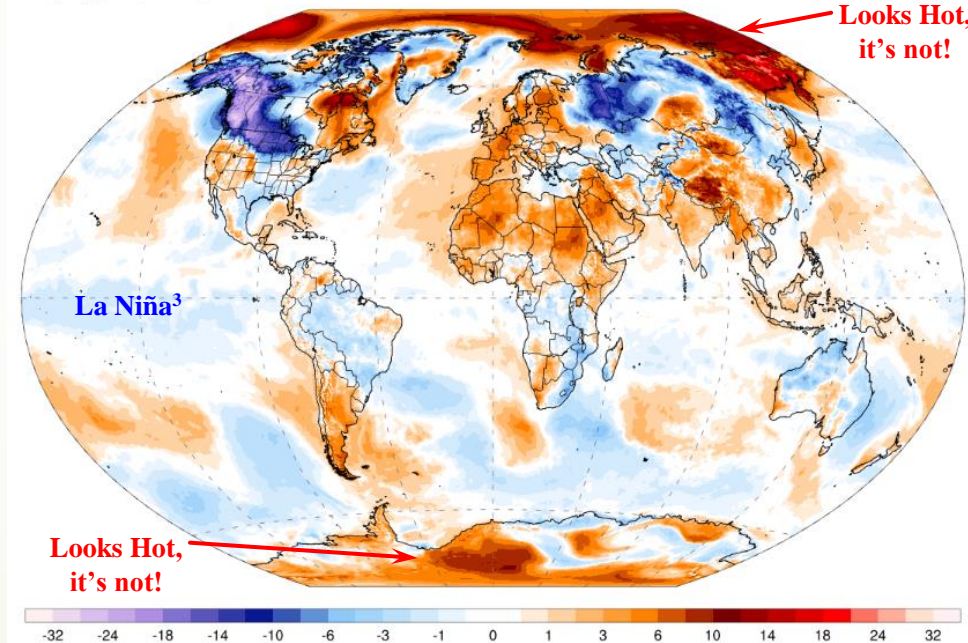
Sea Level rise acceleration requires higher temperatures. But are global temperatures increasing? Not over the 2015 to 2022 period. Over that 8 year period, the UAH Lower Troposphere temperatures have dropped at a rate of 0.67 °C/century and the HadCRUT5 Surface temperatures have declined at 0.76 °C/century (despite the regular homogenization (i.e.: manipulation, [CSS-25 - Incremental Homogenization - HadCRUT4 to HadCRUT5](#))). CSS-25 temperatures are based on data to April/22. Based on November

2022 data, the UAH decline has dropped to 0.48 °C /century. But given the dramatic cold the world has been experiencing in December 2022 and the continued whammy of an unusual triple La Niña, that decline will likely be higher once December is factored in.



GFS 2m T Anomaly (°C) [CFSR 1979-2000 baseline]
1-day Avg | Wed, Dec 21, 2022

ClimateReanalyzer.org
Climate Change Institute | University of Maine



Average Temperatures will very likely continue their trends down as we move further into the AMO cool phase and the GSM. That downward trend could last decades and reach very dangerous levels.

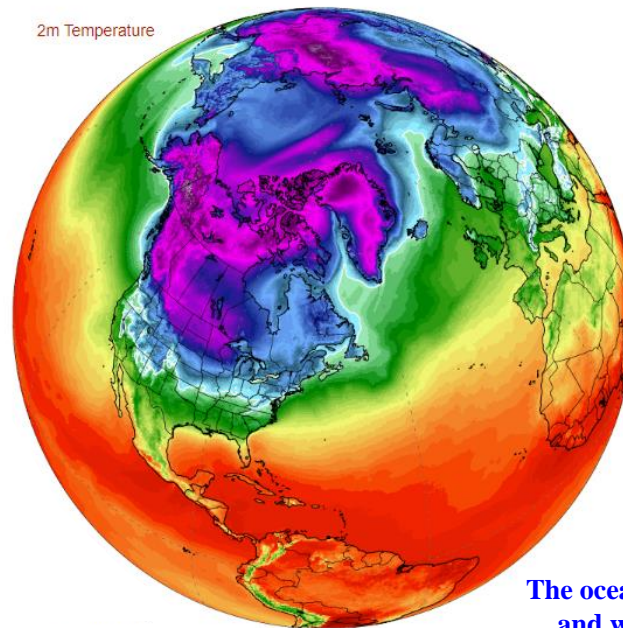
These temperatures are not unprecedented, but they are very unusual for December and they are setting many records around the globe. **Just**

Current Temperatures Sea Level

More Sarcasm remember cold and its new records are weather. Only heat and its new records are climate. Remember the Pacific Northwest Heat Dome in July 2021. When I look at the 2 m temperature anomaly map to the far right, I see a lot of colder than normal ocean and a world where the only significant above normal temperatures are in the Arctic winter. Those Arctic temperatures may be warmer than normal, but they are still bitterly cold (-20 °C below freezing, [DMI Arctic Temperatures](#)).

GFS 2m Temperature (°C)
1-day Avg | Wed, Dec 21, 2022

ClimateReanalyzer.org
Climate Change Institute | University of Maine



The oceans are cooler than normal and will cool the atmosphere!

Latest (2022/12/20) 1-day area-weighted 2m temperature anomalies calculated from the NCEP Climate Forecast System (CFS) and CFS Reanalysis (CFSR). The anomaly values fluctuate day-to-day and week-to-week depending on prevailing weather patterns. For context, daily temperatures for the domains below are available via interactive charts for the entire CFS/CFSR 1979-present record. Anomalies are based on 1979-2000 climatology for the specific day of the year.

World	Northern Hemisphere	Arctic
+ 0.49 °C	+ 0.79 °C	+ 5.21 °C
Tropics	Southern Hemisphere	Antarctic
+ 0.26 °C	+ 0.19 °C	+ 0.56 °C

GSM - Grand Solar Minimum. The real "Climate Change" existential threat is right around the corner. Do the Research!

CSS-33k Sea Level Rise - Is There Acceleration? IPCC - AR6 Projections

Future sea level rise is an obvious extension to the discussion. This plot layers the IPCC sea level projections onto the historic sea level data shown earlier. Every projection (based on the IPCC models that self admittedly run too hot and the implausible SSP emission scenarios), deviate quickly from the overall trends established by the data. Earlier versions of the IPCC sea level projections showed the sea level acceleration beginning earlier. Generally, like every doomsday prediction, the new projections are just moved forward in time

IPCC Projections Sea Level

when the old projections fail. In my opinion (based on historical cycles)

the projections are destined to look really stupid when sea levels start dropping due to the cooler temperatures associated with the AMO cold phase and the GSM. I sincerely hope that this GSM is closer to a Dalton Minimum than the Maunder Minimum. Climate Change (cold) is the real existential threat.

