“Climate Change Making Days Longer,” studies say

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Cruces Atmospheric Sciences Forum

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Outline

Introductory Comments

Recent articles and posts on this subject

Notions and Measurements of Time

Solar Constant…and Now it is Variable? Yes!

Geologic Processes and Sea Level

Planetary Ice Sheets

Sea Level Measurements

Sea Level History

Sea Level History
- Tide Gage Records

Alarmist Sea Level Fraud

Introductory Comments

This story, “Climate Change Making Days Longer,” and variations on it, were published Summer 2024 by mainstream media outlets. I mention some of their Alarmist views, as well as some Contrarian views by Heartland and some views from our skeptical friends in the blogosphere.

I explore, using a wide series of facts, measurements, observations and data, easily looked up, typically ignored by the Alarmist press.

I cite some of both sides of this story. I widen the discussion by including many more data sources, especially those which include historical and geologic data rather than the “nearsighted” views of the Alarmists.

Their world view seems to start the day of their birth, when they graduated from school, or otherwise became aware, in the most recent times.

In short, they are ignorant but try to convince us with blather.

Recent Articles and Posts on

“Climate Change Making Days Longer,” studies say.

NPR

https://www.npr.org/2024/07/18/nx-s1-5042001/climate-change-ice-melt-earth-longer-days

CLIMATE

Days are getting slightly longer — and it's due to climate change

Ice melting from Greenland and the polar regions is causing sea levels to rise, shifting mass around the planet in a way that's starting to slow its spin, scientists are finding.

NASA

https://www.npr.org/2024/07/18/nx-s1-5042001/climate-change-ice-melt-earth-longer-days

"Now, rapidly melting ice at the poles is shifting the planet's mass, raising the level of the ocean at the equator. Since 1993, global sea levels have risen by 4 inches on average and will likely rise by 2 feet or more by the end of the century, depending on how much humans curb the climate pollution generated from burning fossil fuels."

We're supposed to believe that Ice has never melted at this rate before, that CO2, including some the product of human respiration, and the source of ALL the CARBOhydrates we use for food, **is pollution?**

https://www.npr.org/2024/07/18/nx-s1-5042001/climate-change-ice-melt-earth-longer-days

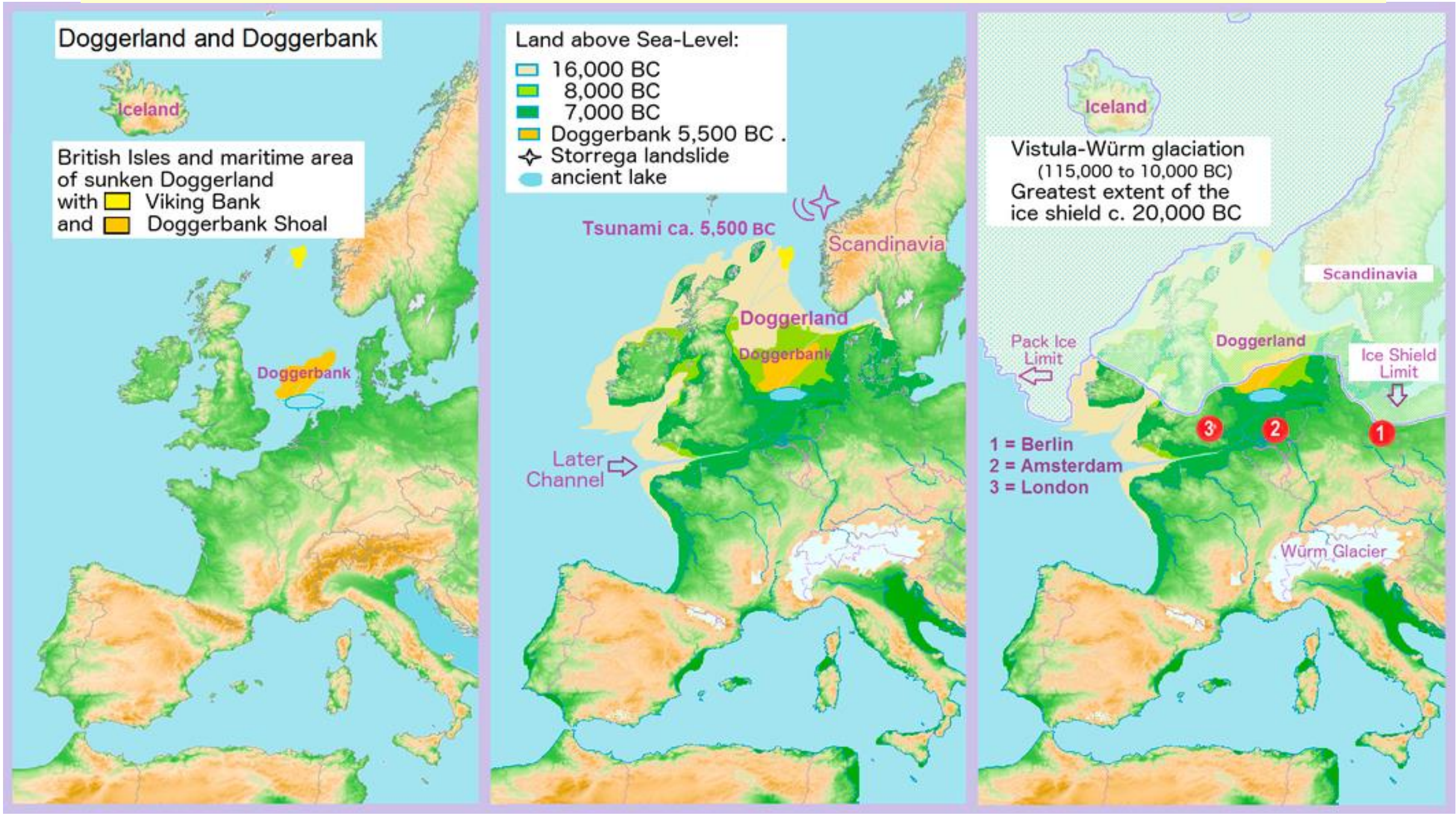
Now, experts say climate change will need to be factored into those decisions. But melting ice has far more serious consequences for the planet than time. Millions of people face losing their homes as polar ice melts and sea levels keep rising.

This happened in Antiquity and Biblical times in the Levant and when Doggerland, between Holland and England disappeared beneath the rising seas.

"If you live in a low-lying coastal area, then you're not concerned about leap seconds," Levine says. "That's the least of your worries. You have much more serious problems to deal with."

NPR writes this as if humans control the level of the sea.

https://en.wikipedia.org/wiki/File:Doggerland3er_en.png



From the NPR post, https://www.npr.org/2024/07/18/nx-s1-5042001/climate-change-ice-melt-earth-longer-days
"*Since 1993, global sea levels have risen by 4 inches on average*"
…< 4in/12in > = 1/3 foot in 31 years, or a foot a century.

These are the measured data from Dave Burton, https://sealevel.info/
Green Squares are where NPR's claim is true, Red Squares are where it is NOT true.

The rate of sea level rise at the Battery, NYC, is 0.97 ft in 100 years, …

The rate of sea level rise at Portland, ME, is 0.64 ft in 100 years, …

The rate of sea level rise at Mayport, FL, is 0.95 ft in 100 years, …

^^^

The rate of sea level rise in San Diego, CA is 0.73 ft in 100 years, …

The rate of sea level rise in San Francisco, CA is 0.50 ft in 100 years, …

The rate of sea level rise at Honolulu, HI, is 0.51 ft in 100 years. …

From the NPR post, https://www.npr.org/2024/07/18/nx-s1-5042001/climate-change-ice-melt-earth-longer-days

"…sea levels keep rising," "…and will likely rise by 2 feet or more by the end of the century"

*<2 ft of rise in the 75 years til year 2100 is **2.66 ft/100 years…>** **NPR EXXAGERATES***

These are measured data from Dave Burton, https://sealevel.info/

The rate of sea level rise at the Battery, NYC, is 0.97 ft in 100 years,

The rate of sea level rise at Portland, ME, is 0.64 ft in 100 years,

The rate of sea level rise at Mayport, FL, is 0.95 ft in 100 years,

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The rate of sea level rise in San Diego, CA is 0.73 ft in 100 years,

The rate of sea level rise in San Francisco, CA is 0.50 ft in 100 years,

The rate of sea level rise at Honolulu, HI, is 0.51 ft in 100 years.

THIS NPR CLAIM IS DEMONSTRABLY FALSE

These are measured data from Dave Burton, https://sealevel.info/

The rate of sea level rise at the Battery, NYC, is 0.97 ft in 100 years,

The rate of sea level rise at Portland ME, is 0.64 ft in 100 years,

The rate of sea level rise at Mayport FL, is 0.95 ft in 100 years,

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The rate of sea level rise in San Francisco, CA is 0.50 ft in 100 years,

The rate of sea level rise at Honolulu, HI, is 0.51 ft in 100 years.

Reasons why the East Coast sites might differ from the Pacific Ocean sites:

Continental North America might be floating on the mantle rock not quite on an even keel.

The collision of the Pacific Plate against the North American Plate might be "boosting" North America's west coast with a little more upward force than exists on the Gulf and East Coasts where collision is not occurring.

Stronger happened when the Farallon Plate hit North America, 100 MYA. Other ideas out there?

PNAS

https://www.pnas.org/doi/abs/10.1073/pnas.2406930121

RESEARCH ARTICLE | EARTH, ATMOSPHERIC, AND PLANETARY SCIENCES

The increasingly dominant role of climate change on length of day variations

Mostafa Kiani Shahvandi, Surendra Adhikari, Mathieu Dumberry, +1, and Benedikt Soja Authors Info & Affiliations

Edited by Anny Cazenave, Centre National d'Etudes Spatiales, Toulouse Cedex 9, France; received April 6, 2024; accepted June 5, 2024

July 15, 2024 | 121 (30) e2406930121 | https://doi.org/10.1073/pnas.2406930121

https://www.pnas.org/doi/abs/10.1073/pnas.2406930121

Underlining added, discussed, following

Significance

Modern climate change is unprecedented. In recent decades, it has accelerated the melting of glaciers and polar ice sheets, leading to a rise in sea level. This pole-to-equator mass transport has significantly increased the Earth's oblateness and length of day (LOD) since 1900. We show that the present rate of increase is higher than at any point in the 20th century. Under high emission scenarios, the climate-induced LOD rate will continue to increase and may reach a rate that is twice as large as at present, surpassing the impact of lunar tidal friction. These findings signify the unprecedented effect of climate change on planet Earth and have implications for precise timekeeping and space navigation, among others.

https://www.pnas.org/doi/abs/10.1073/pnas.2406930121

PNAS | NOW READING:
The increasingly dominant role of climate change on length of day variations

Significance

Modern climate change is unprecedented. In recent decades, it has accelerated the melting of glaciers and polar ice sheets, leading to a rise in sea level. <underscore added>

What a load of manure! This reference refutes this junk:
https://casf.me/wp-content/uploads/2019/10/All___Climate-History-2-and-History-Falsifies-Climate-Alarmist-Sea-Level-Claims_15_Oct_2019.pdf

Following slides show how bad the PNAS article's premise is…
"Modern climate change is unprecedented"…
We'll look at Easterbrook's analysis of the GISP2 ice cores

"Melting…Polar Ice Sheets"….."Rise in sea level…."
Sea Level is dynamic property of the earth, if you look at historical sea level data.
https://wattsupwiththat.com/2013/12/02/history-falsifies-climate-alarmist-sea-level-claims/

Sea Level **was a lot higher** in Antiquity, the Roman Warm Period, & MWP, 1000 years ago.
Arctic ice sheets are showing little change recently, and south polar temperatures are falling.

https://www.pnas.org/doi/abs/10.1073/pnas.2406930121

Significance

Modern climate change is unprecedented. In recent decades, it has accelerated the melting of glaciers and polar ice sheets, leading to a rise in sea level.

That this publication would get through peer review shows me how broken the notion of Peer Review as a gatekeeper of scientific integrity has become.

Has it become “Pal Review?”

Has PNAS become as corrupt as the AMS and the APS on topics relating to climate and climate change?

We heard this claim of “unprecedented” back in 2010

FT.com
FINANCIAL TIMES

COMMENT
Letters

What’s happening to the climate is unprecedented

Print

Published: April 9 2010 03:00 | Last updated: April 9 2010 03:00

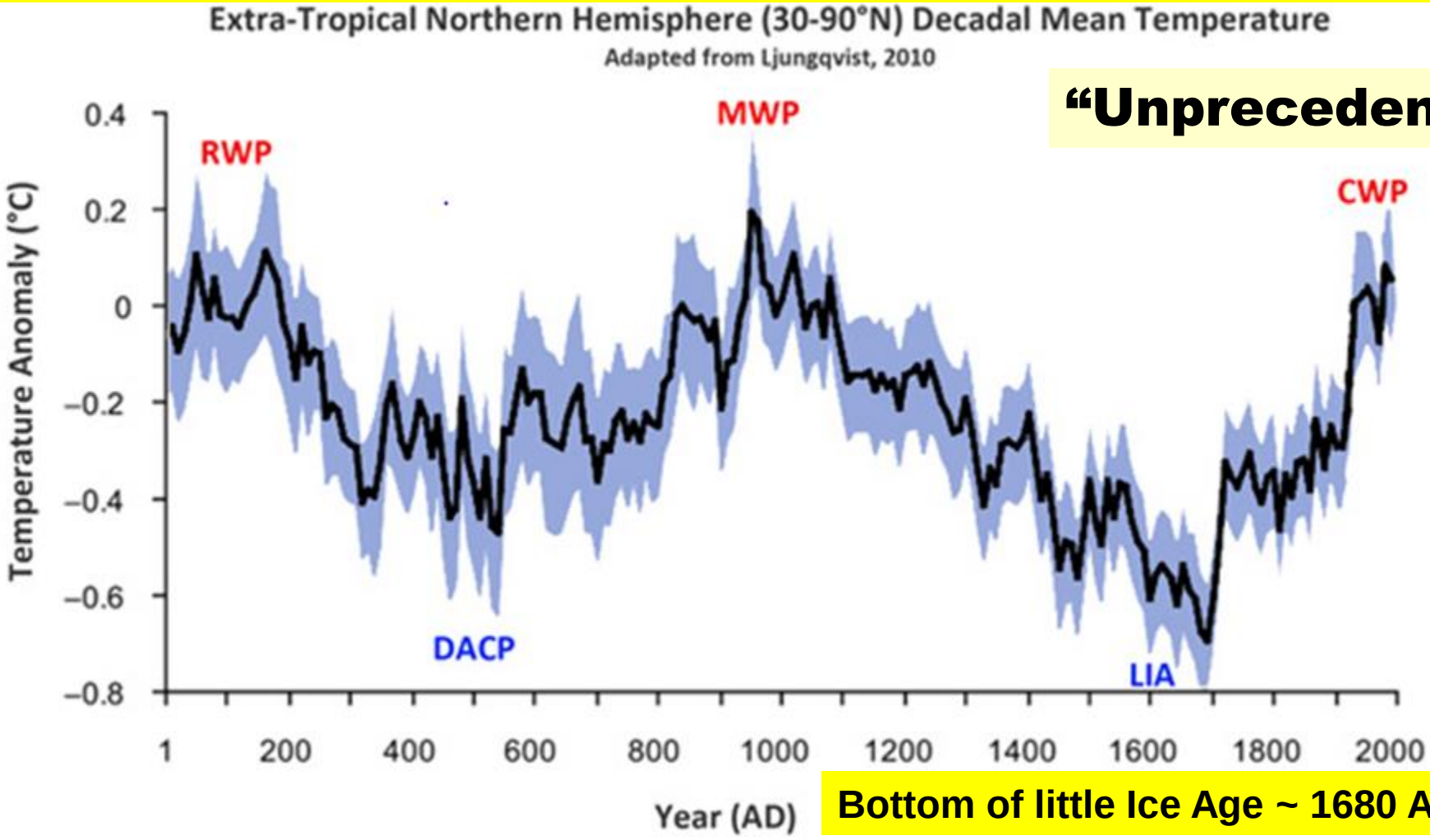
From Prof Martin Rees and Dr Ralph J. Cicerone.

Unprecedented?

Prof Rees is president of the Royal Society in the UK,

Dr Cicerone is the President of the US National Academy of Science

Ljungqvist, F.C. 2010. A new reconstruction of temperature variability in the extra-tropical Northern Hemisphere during the last two millennia. *Geografiska Annaler Series A* 92: 339-351.

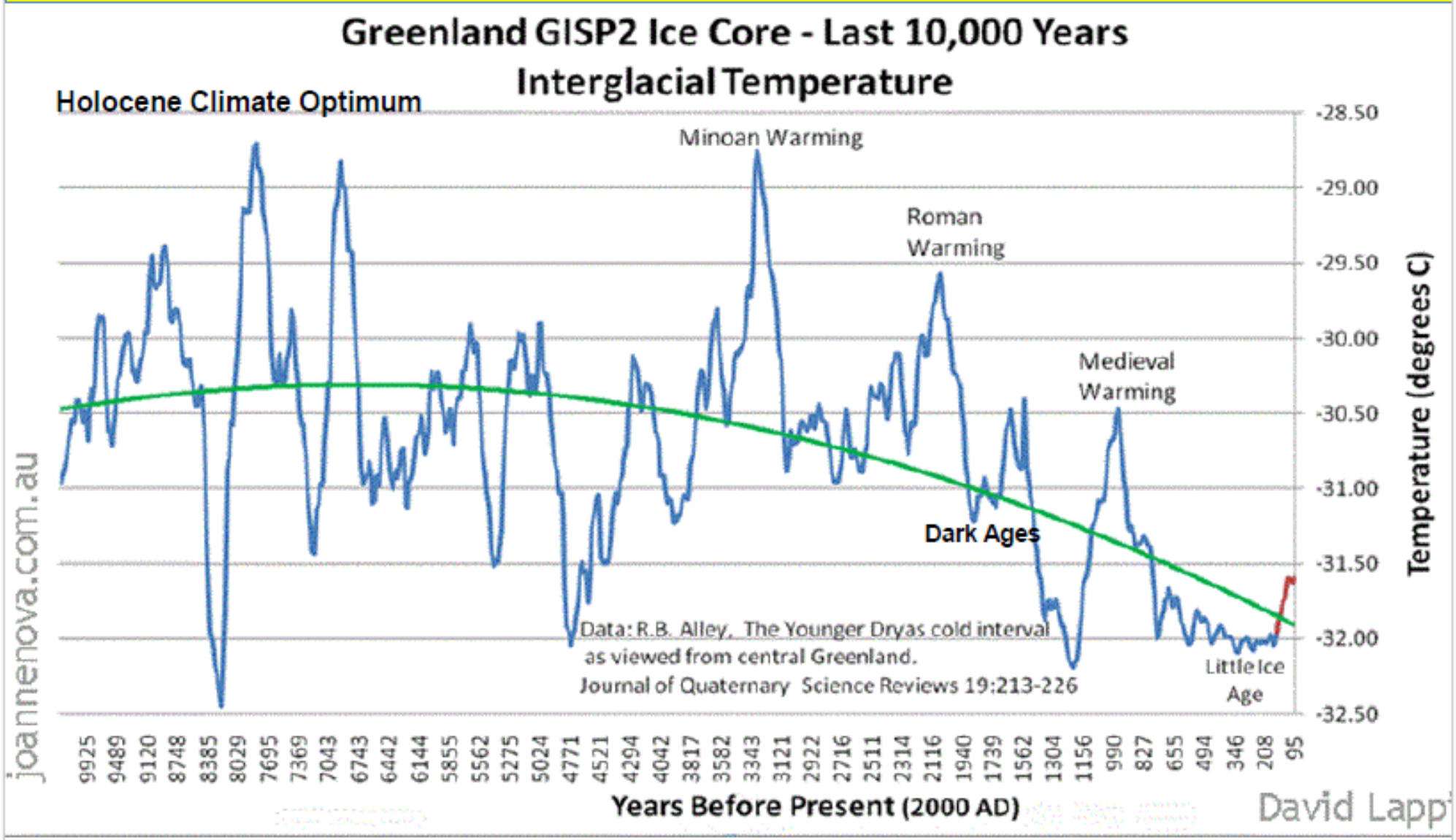


Reconstructed extra-tropical (30-90°N) mean decadal temperature variations relative to 1961-1990 mean of the variance-adjusted 30-90°N CRUTEM3+HadSST2 instrumental temperature data of Brohan et al.(2006) and Rayner et al. (2006).

Adapted from Ljungqvist (2010).

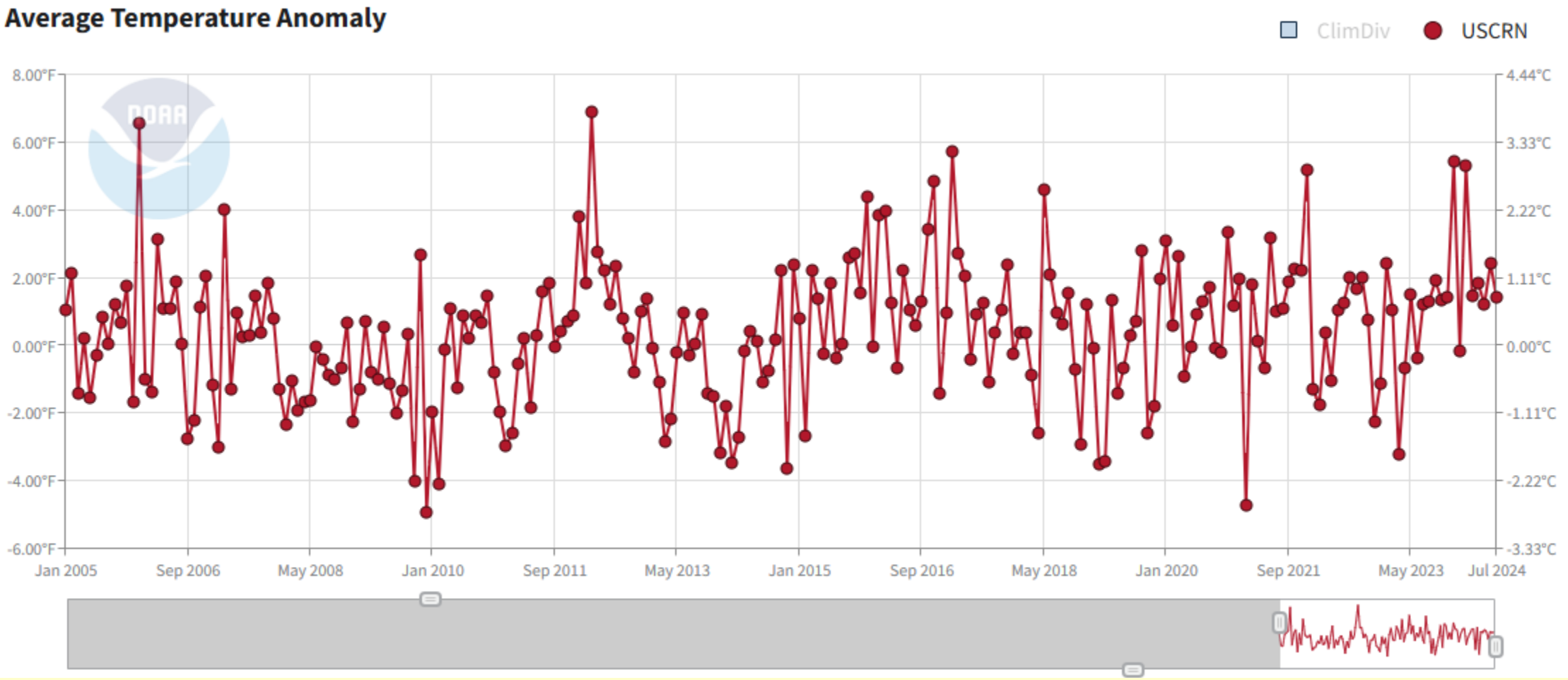
Unprecedented?

The jog, in RED, on the right, is the "Unprecedented" temperature increase



Northern Hemisphere Ice Core Data from the Holocene Interglacial

https://www.ncei.noaa.gov/access/monitoring/national-temperature-index/time-series/anom-tavg/1/



NOAA's time series for the US Climate Reference Network, from 114 CONUS stations selected and sited to avoid urban heat island thermal contamination so common with most NOAA stations.

The period of record starts in 2005 so that period is short, but there is little evidence of "Human-Caused, CO2-fueled Catastrophic Global Warming" predicted by models and climate Alarmists.

From the Germans, contrary data, showing that sea level rise rate is DECELERATING

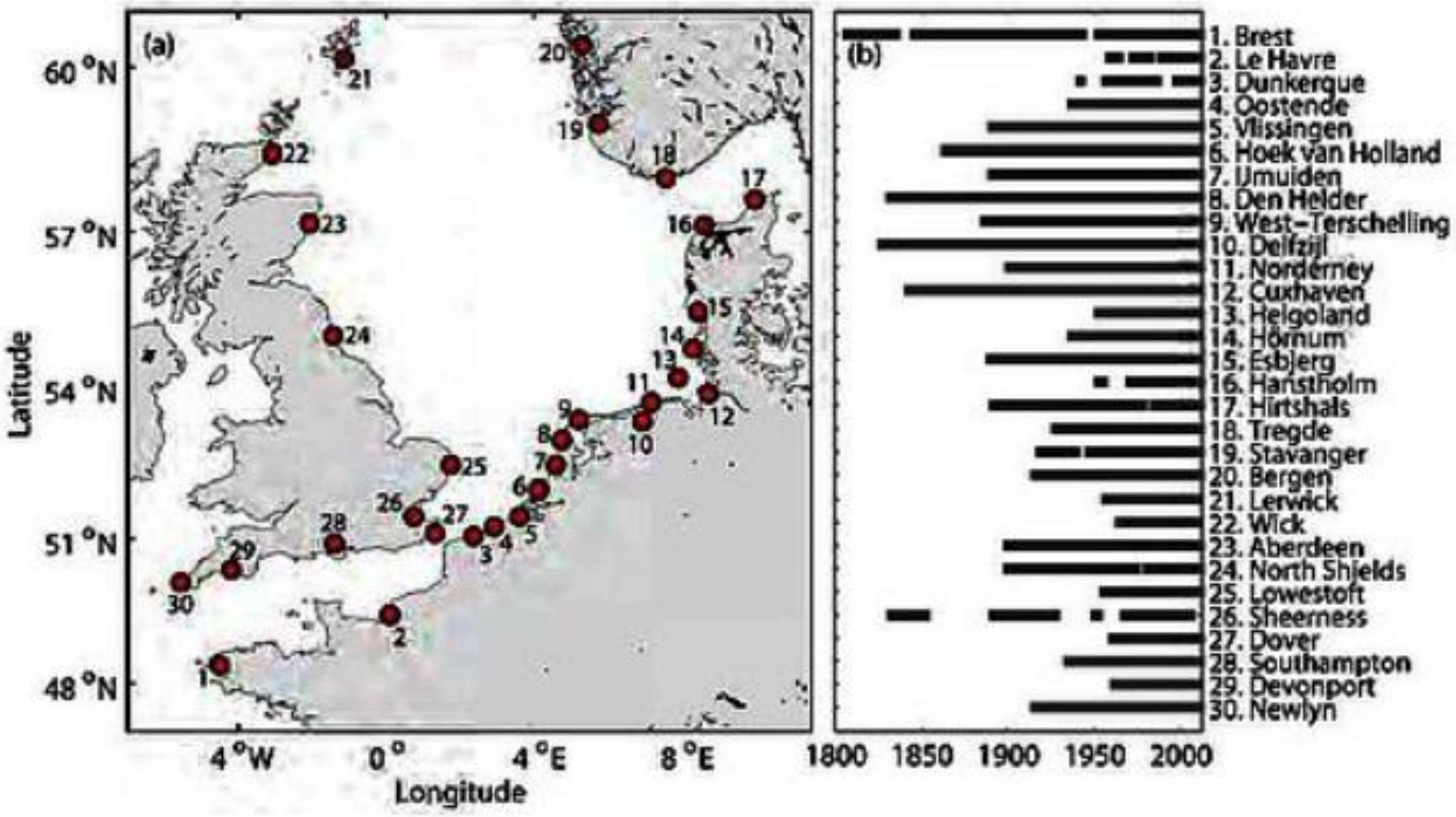


Fig. 1. (a) Locations of the considered tide gauges in the investigation area; (b) duration of the mean sea level data sets.

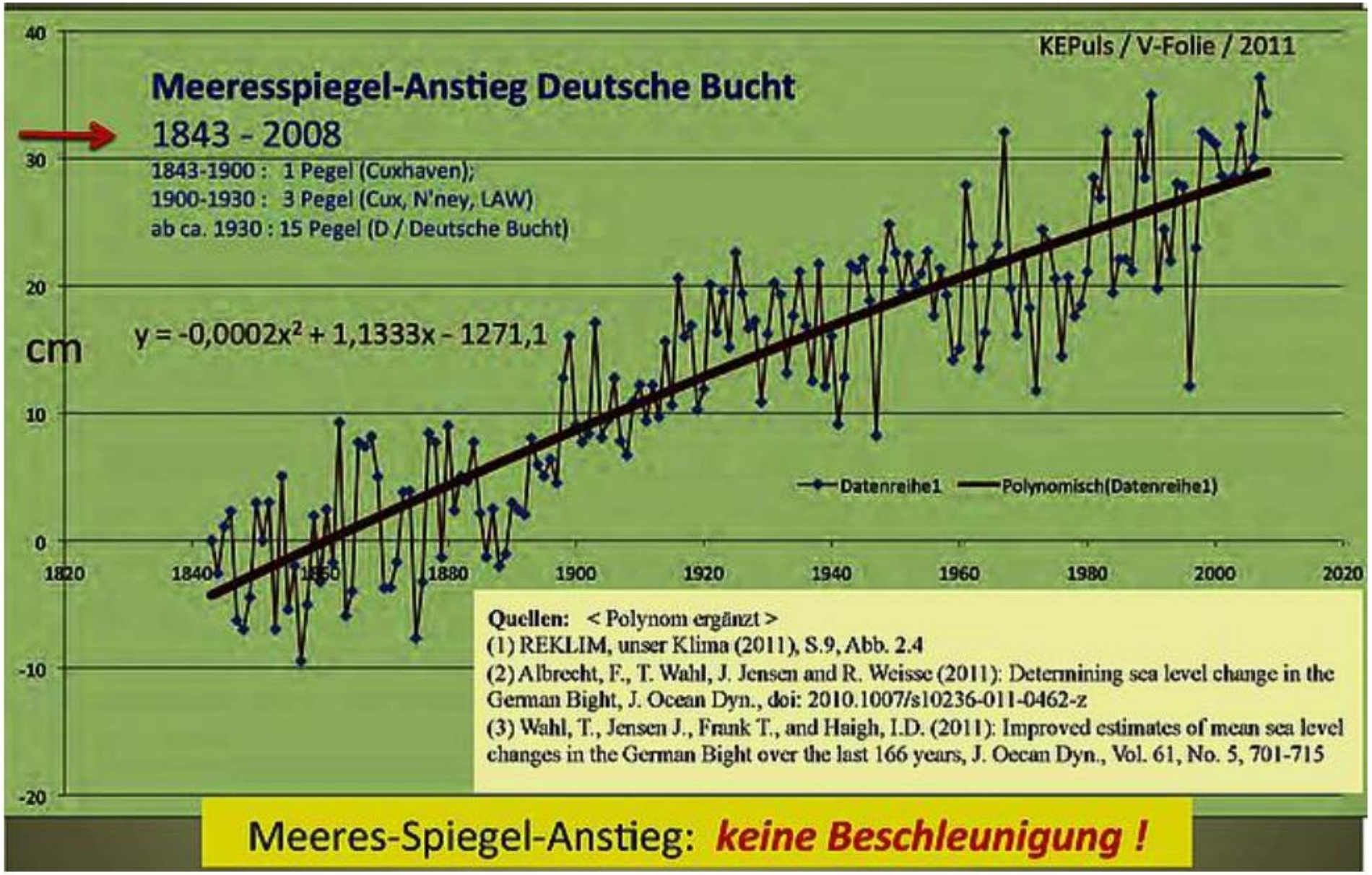


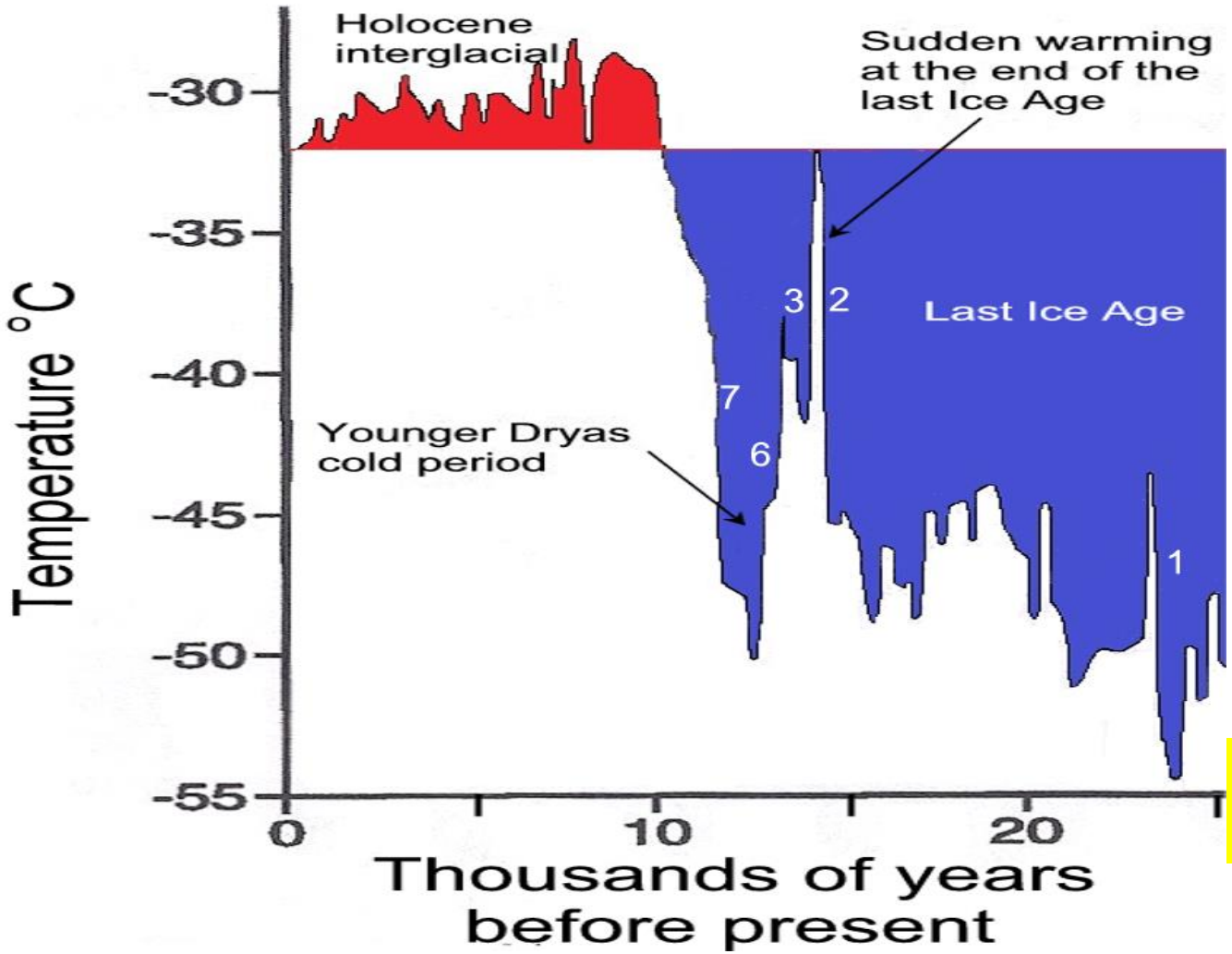
Abbildung 4

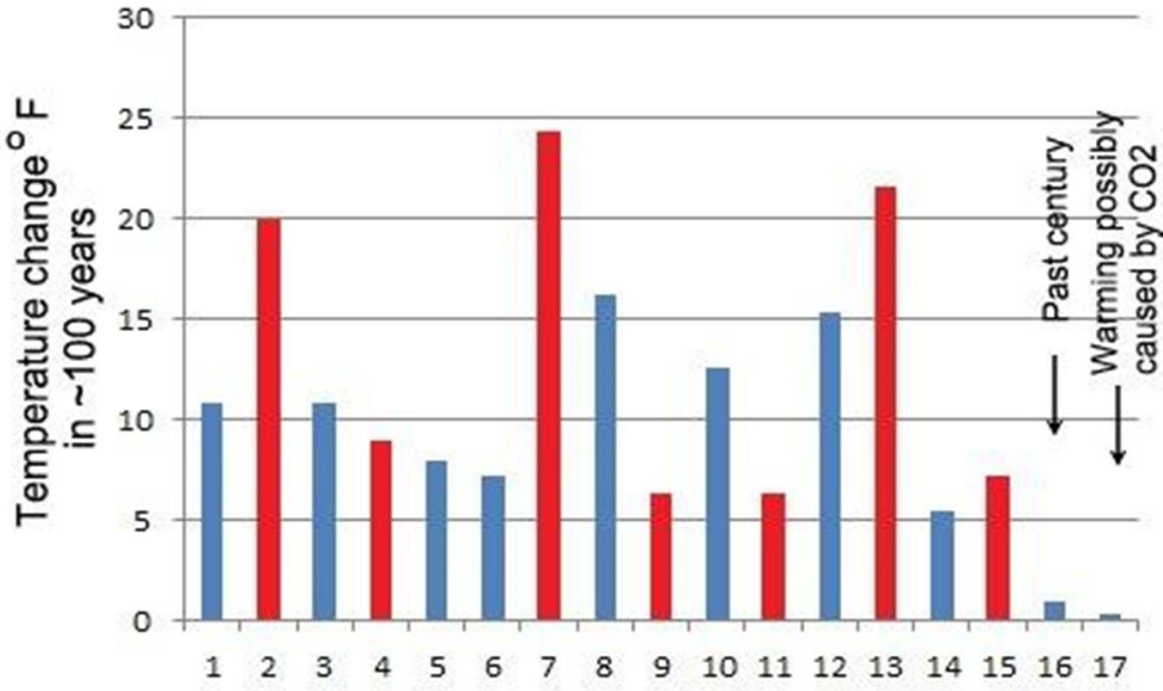
No Acceleration!

Auswertung von Küsten-Pegeln in der Deutschen Bucht (Daten [9])

From Don Easterbrook:
https://wattsupwiththat.com/2011/01/24/easterbrook-on-the-magnitude-of-greenland-gisp2-ice-core-data/

This Interglacial's temperatures peaked about 7,000 years ago. Present temperature changes are tiny in comparison with the previous 20,000 years.





During the time at # 7, temperatures INCREASED at a rate of 14F per century, around 12,000 years BP.

Now, some sanity, from David Middleton and The Heartland Institute

https://climaterealism.com/2024/07/no-newsweek-sea-level-rise-is-not-causing-longer-days/

ClimateREALISM

No, Newsweek, Sea Level Rise Is Not Causing Longer Days

Guest Post by David Middleton

**Editors' Note: This guest post by Geologist David Middleton discusses a recent claim in the media that sea level rise is causing longer days by changing the rate of the planet's rotation. However, Middleton reveals that there are major problems with the theory, not least of which that this is not a new phenomenon. As Climate Realism has covered dozens of times, models are not proof, and these studies certainly lean on modelling.*

I found this 2021 post in No Trick Zone to be a wonderful piece of fresh air on the current “climate change” kerfuffle, so often called “Climate Crisis.”

It comes from a journal article published by Dr Demetris Koutsiannis, a hydrology professor from the University of Athens, Greece.

https://notrickszone.com/2021/05/24:

Paradigm-Busting New Study Affirms CO2 Doesn’t Drive Climate – Water, Clouds Do

Comments

The term “climate change” is vacuous, alleging feigned knowledge, but really demonstrating ignorance of climate history.

Dr. Koutsiannis explained this in his article in the journal **Water.** Temperature Changes drive CO2 changes just as we describe in https://casf.me/wp-content/uploads/2017/10/PDF_-Climate-Short_Henry_s-Law-from-175-years-ago_Temperature-CDr. Koutsiannis ontrols-CO2_15-Sep_2017.pdf

Dr. Koutsiannis: It is a “wrong perception” that climate is generally constant unless an external agent changes it … has “misled climatologists” for the last two centuries.

The idea that a day, one Earth revolution, is composed of 24 integer hours, invariant with time, is flawed.

The oft-repeated claim that the present rise of temperatures is “unprecedented” is just malarky. The head of the Royal Society in England and President of the US National Academy of Sciences made these claims in 2010.

Sea Levels were a lot higher, with a lot less CO2 in the air during Antiquity, the Roman Warm Period, and the Medieval Warm Period.

https://notrickszone.com/2021/05/24/paradigm-busting-new-study-affirms-co2-doesnt-drive-climate-water-clouds-do/

Selected key points from Dr. Koutsiannis' paper in the journal Water.

1. The "naïve idea" or "wrong perception" that climate is generally constant unless an external agent changes it is the consequence of the "white noise paradigm" that has "misled climatologists" for the last two centuries. The "linear causality chain of the type: human CO2 emissions → increasing concentration of atmospheric CO2 → increasing temperature → changes in hydrological processes and water balance" does not "correspond to physical reality". <*Comment: Misleads more than "climatologists."*>

2. The scientifically vacuous term "climate change" is a political construct designed to suggest climate variability has not occurred until last few centuries and therefore what is occurring in the modern era is unnatural.

Bob Comment:

The term “Carbon Footprint” is likewise a political construct, not a scientific one.

https://notrickszone.com/2021/05/24/paradigm-busting-new-study-affirms-co2-doesnt-drive-climate-water-clouds-do/

3. Water is easily the main element driving Earth's climate. CO2 is but a tiny bit player by comparison.

• The mass of the ocean is 260 times greater than the mass of the atmosphere and the ocean encapsulates 94% of the Earth's accumulated heat energy (versus just 1% for the atmosphere). This is why water is the "thermodynamic regulator of climate".

• Latent heat transfer from the surface to atmosphere is described as "the Earth's natural locomotive". The total energy involved in Earth's hydrological cycle amounts to 1290 ZJ/year. Compare this to just 0.6 ZJ/year for the "human energy production" from greenhouse gas emissions. Therefore, the "natural locomotive is 2100 times higher than that of the human locomotive".

• A hypothetical 1/1000ths (1‰) change in the reflecting properties (albedo) of the water formations snow, ice, and clouds elicits an "imbalance" in the Earth's energy budget of 0.34 W/m². This is effectively equivalent to the energy imbalance necessary to explain the 0.1°C ocean warming (0-2000 m) in the last 50 years (Levitus et al., 2012). Actually, in the last 40 years, albedo-forcing from cloud variability was 10 times greater than the hypothetical 1‰ change. (underlining added) <We see cloud change graphed from Jo Nova, later>

https://notrickszone.com/2021/05/24/paradigm-busting-new-study-affirms-co2-doesnt-drive-climate-water-clouds-do/

4. “Another misconception, common in nonexperts, is that atmospheric CO2 is the product of human emissions, while in fact the latter contribute only 3.8% to the global carbon cycle.”

5. “[U]sing reliable instrumental measurements of global T and CO2 concentration covering the time interval 1980–2019, a recent study found that in the relationship of CO2 and temperature, the dominant causality direction is T → CO2, rather than the other way round, despite the latter being the common perception.”

Of course, **it’s from Henry’s Law, High School Chemistry,** and here: https://casf.me/wp-content/uploads/2017/10/PDF_-Climate-Short_Henry_s-Law-from-175-years-ago_Temperature-Controls-CO2_15-Sep_2017.pdf

Yes, many of the so call “educated elites” are ignorant of High School Chemistry.

Notions and Measurements of Time

Our notions of time…and how we measure time.

Using first principles definitions of temporal space…Day, Month, and Year.

Rising and setting of the Sun….later adjusted from sunrise to the next sunrise…the Day

Length of time between successive Full Moons….the Month.

Length of time between successive winter solstices…the Year.

Winter Solstice also marks the time of year of great symbolism and power, marking the return of the sun, when the days finally begin to get a little longer.

Day

During the reign of the Egyptians, and their use of sundials, <equinox> daytime was 12 hours long, based on this discussion from Scientific American.

The Greek Hipparchus defined the Day as <exactly> 24 hours, which seems to conveniently fit into our notion of integer arithmetic. Hipparchus used ideas from the Babylonians, who in turn used the ideas of the base 12 and base 60 of the Sumerians for standards of measure.

This sets the table, so to speak, for subsequent definitions of 60 minutes in an hour and 60 seconds in a minute.

We should be cautious however, because other elements of time measurement are not invariant but are functions of time, and do not to fit conveniently into integer arithmetic, viz.,

Month

Having a month < I learned **month** evolved from "*moonth*"> for one revolution of the Moon around the Earth also did/does not line up into integer number space very well.

Trying to fit 12 integer months into one year just doesn't fit at all.

Year

The Year, one revolution of the Earth around the sun, was thought by the Romans to be 355 days long, but that thought, which included fitting a year into <those> integer numbers, was incorrect.

From Wikipedia: https://en.wikipedia.org/wiki/Julian_calendar "The Julian calendar was proposed in 46 BC by (and takes its name from) Julius Caesar, as a reform of the earlier Roman Calendar, which was largely a lunisolar one. It took effect on 1 January 45 BC, by his edict. Caesar's calendar became the predominant calendar in the Roman Empire and subsequently most of the Western world for more than 1,600 years, until 1582 when Pope Gregory XIII promulgated a revised calendar."

More about years:

The old Roman Calendar used the base 10 notion of 10 months in a year. From Google, "Julius Caesar's astronomers explained the need for 12 months in a year and the addition of a leap year to synchronize with the seasons."

Romans also adapted the Egyptian 365 days/year calendar, started the year on 1 Jan instead of 1 March, and had twelve 30- and 31-day months except for February, which had 28 or 29 days, "shortchanged" because it was thought an unlucky month.

Finally…

Length of a day defined as 24 equal hours and nicely fitting integer arithmetic space is fundamentally incorrect.

None of the other measures of time fits so nicely into integer space, so why should the day be so defined?

End…Our Notions of Time.

Solar Constant <and Variability!>

When I was an Undergraduate in Basic Met, 1963-64 at Texas A&M, and Graduate Student, 1967-69, Penn State, the "Solar Constant" was 2 cal/cm**2/sec. But sometimes 1.94 cal/cm**2/sec ….in the CGS, the Centimeter-Gram-Second system of measurements.

Solar Radiation

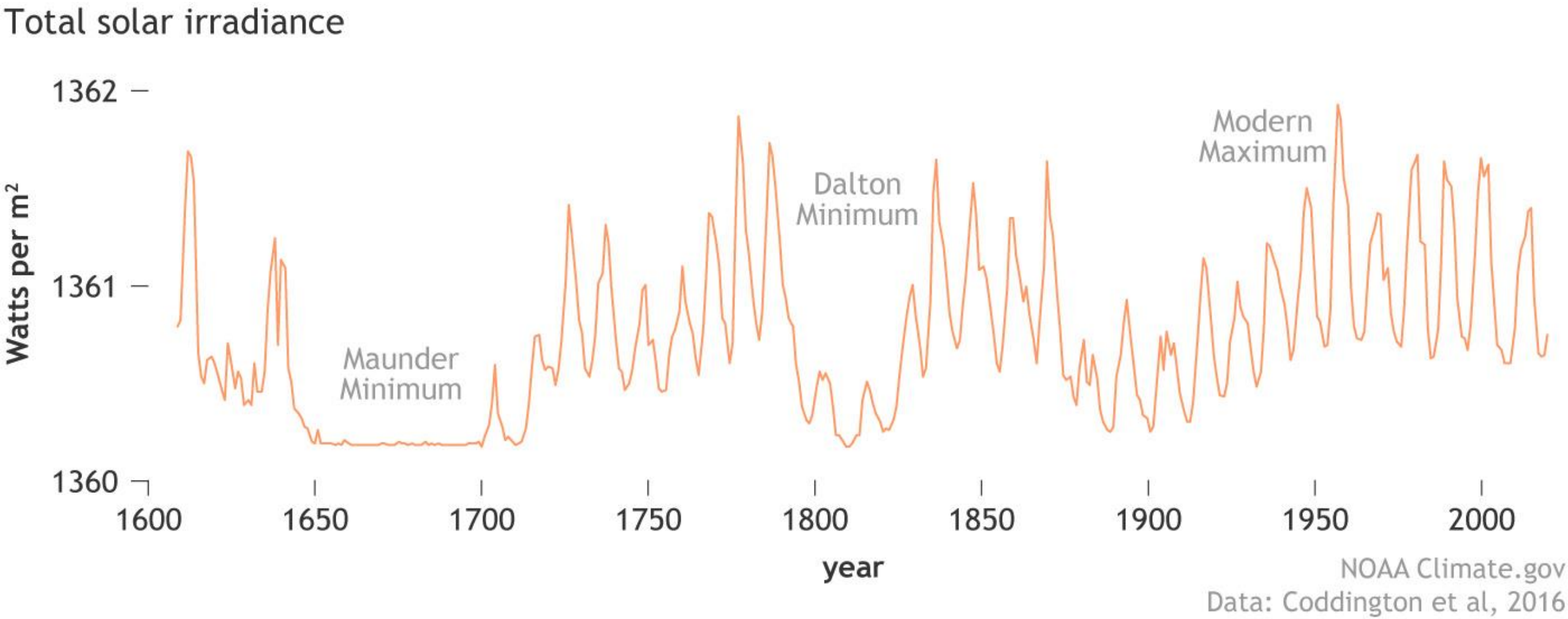
A Langley is a unit of energy per unit area (**1 gram-calorie/cm^2**) commonly employed in radiation measurements.

Sometimes the Solar Constant was called a two Langleys per second.
This was seemingly in the Dark Ages of academic endeavor.

Nowadays, the students use the MKS, Meter-Kilogram-Second system of measurements.

But please look to the right side, which is a chart where the old 2 Langley "Solar Constant" vs. the present solar radiation time series history has been plotted by Steve McGee.
Thank you, Steve!

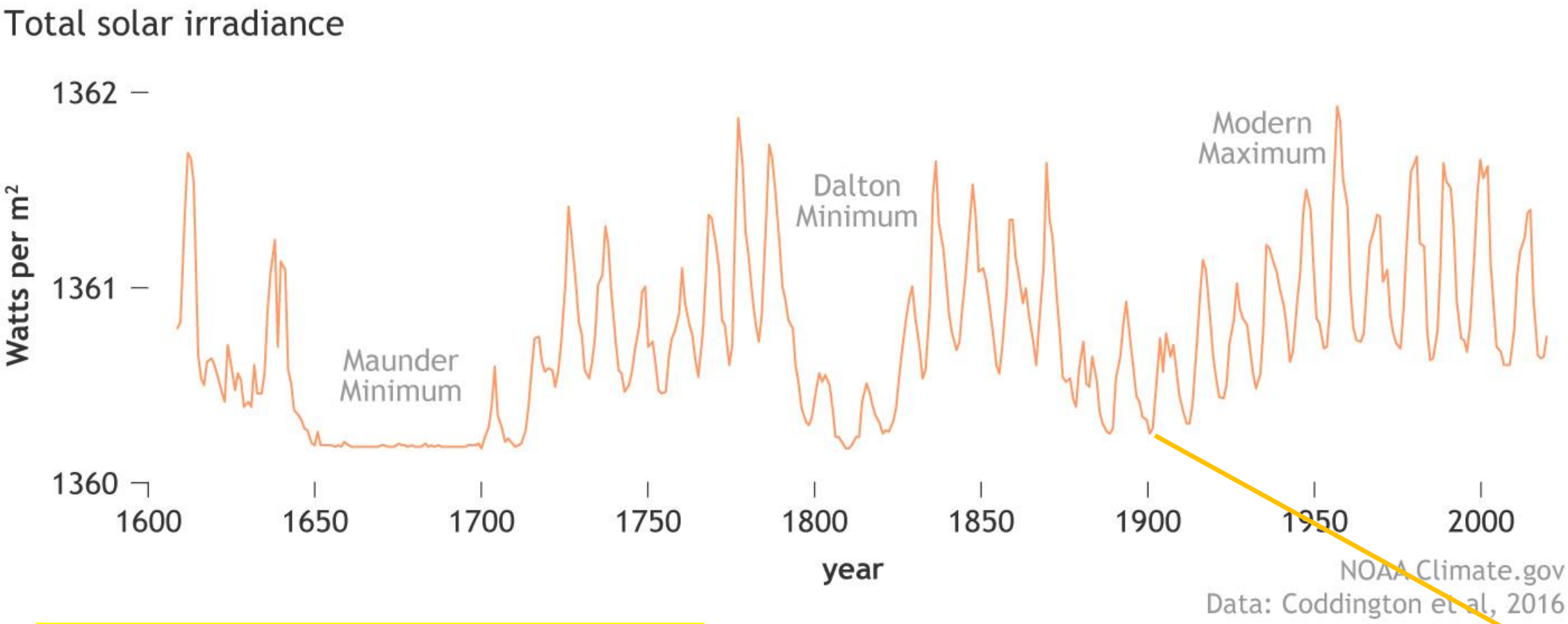
https://www.climate.gov/news-features/understanding-climate/climate-change-incoming-sunlight



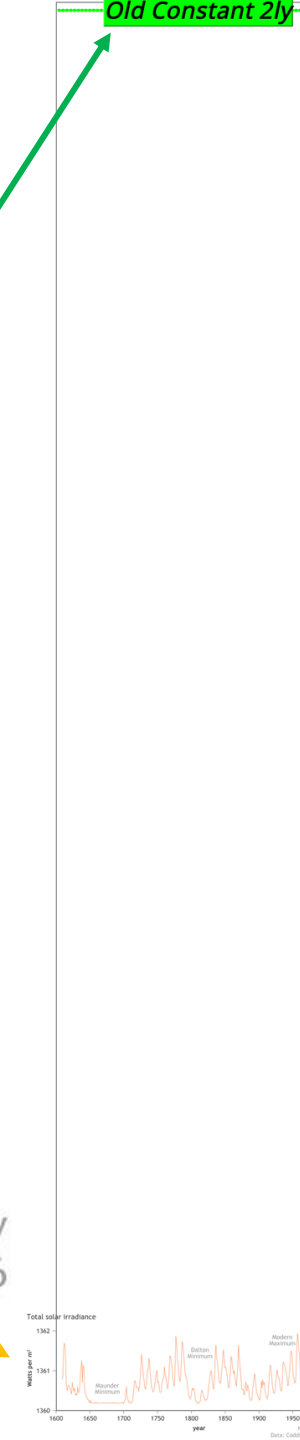
This is a recent time series of Total Solar Irradiance from NOAA

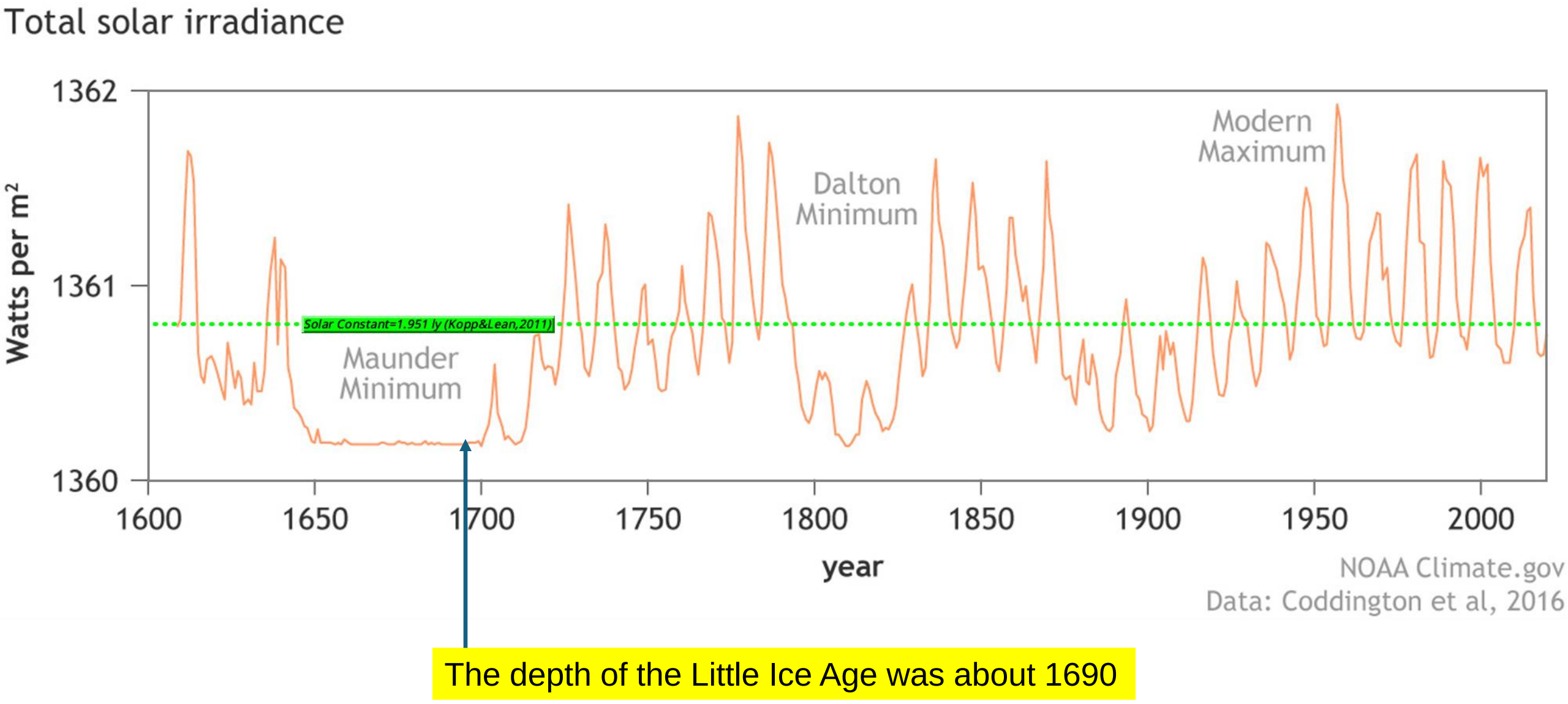
https://www.climate.gov/news-features/understanding-climate/climate-change-incoming-sunlight

This is the modern time series of TSI from NOAA, but right, the same time series, bottom, with the “old” Solar Constant plotted, 2 Langleys per second, in green on top.



Thanks again to Steve McGee!

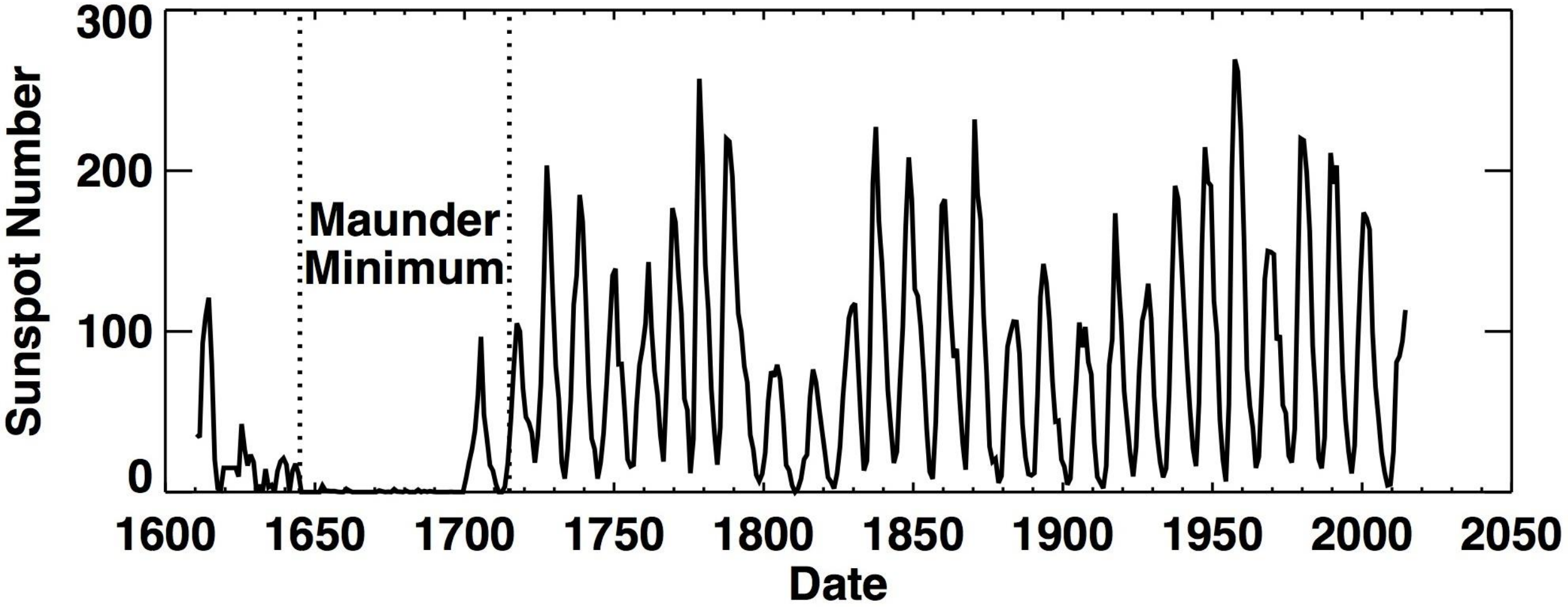


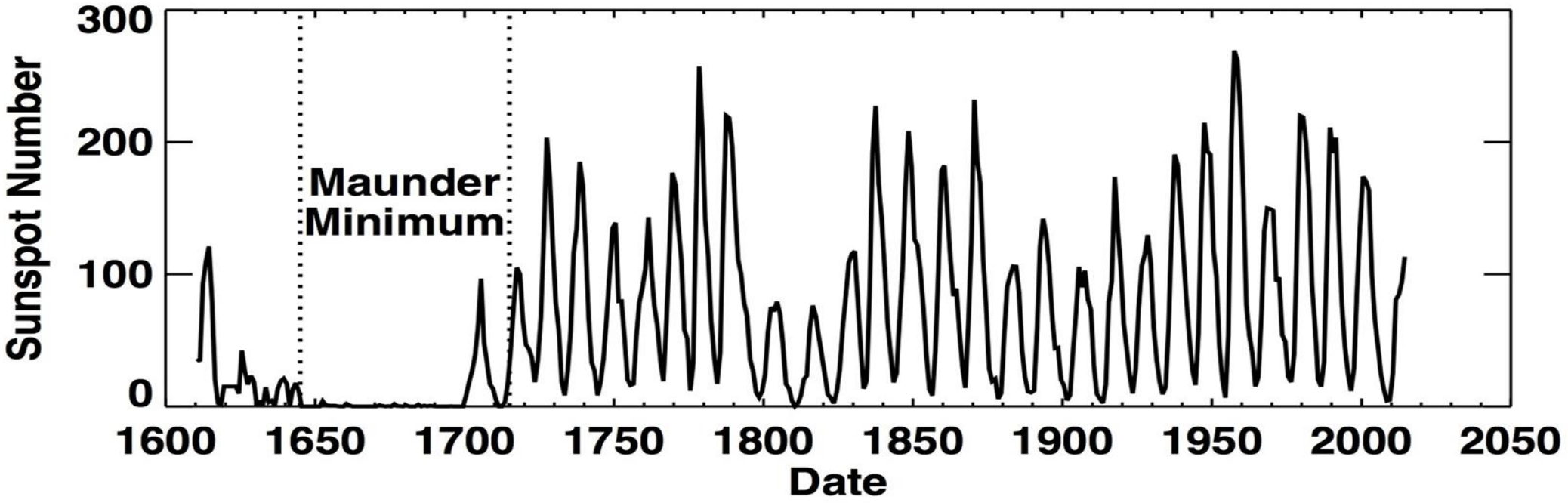


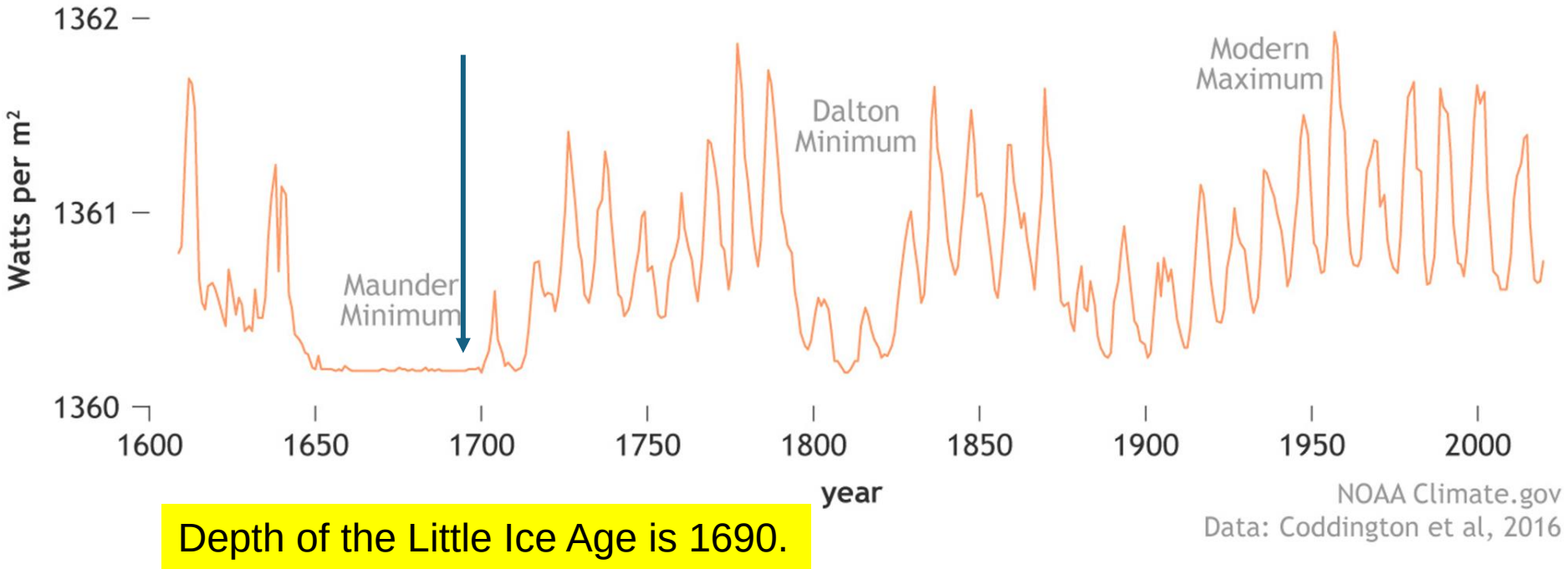
The depth of the Little Ice Age was about 1690

https://ugc.berkeley.edu/background-content/solar-radiation/

Sunspot Numbers



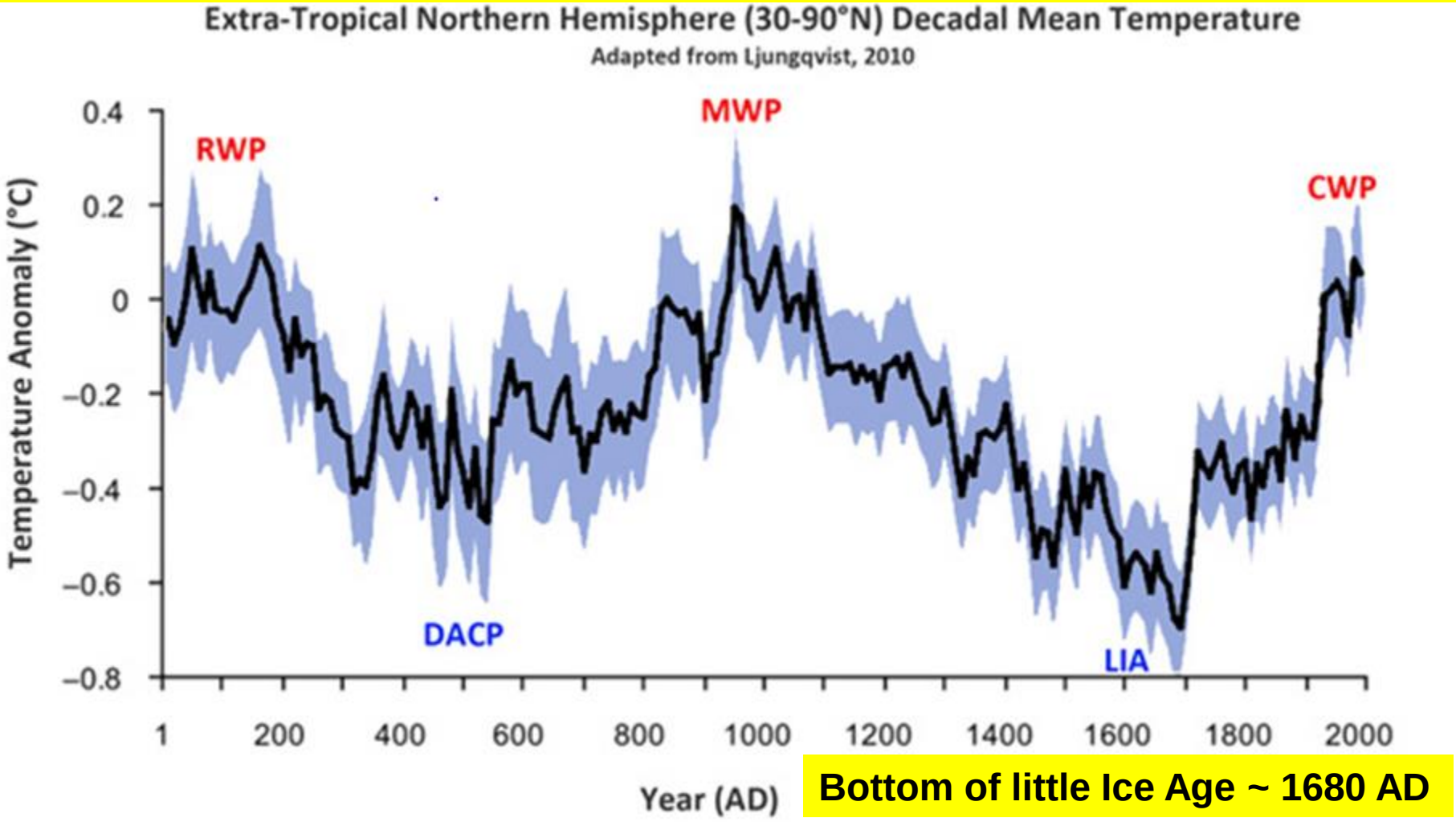




The clues that insolation was not constant have been with us a long time

Depth of the Little Ice Age is 1690.

Ljungqvist, F.C. 2010. A new reconstruction of temperature variability in the extra-tropical Northern Hemisphere during the last two millennia. *Geografiska Annaler Series A* 92: 339-351.



Bottom of little Ice Age ~ 1680 AD

Reconstructed extra-tropical (30-90°N) mean decadal temperature variations relative to 1961-1990 mean of the variance-adjusted 30-90°N CRUTEM3+HadSST2 instrumental temperature data of Brohan et al.(2006) and Rayner et al. (2006).

Adapted from Ljungqvist (2010).

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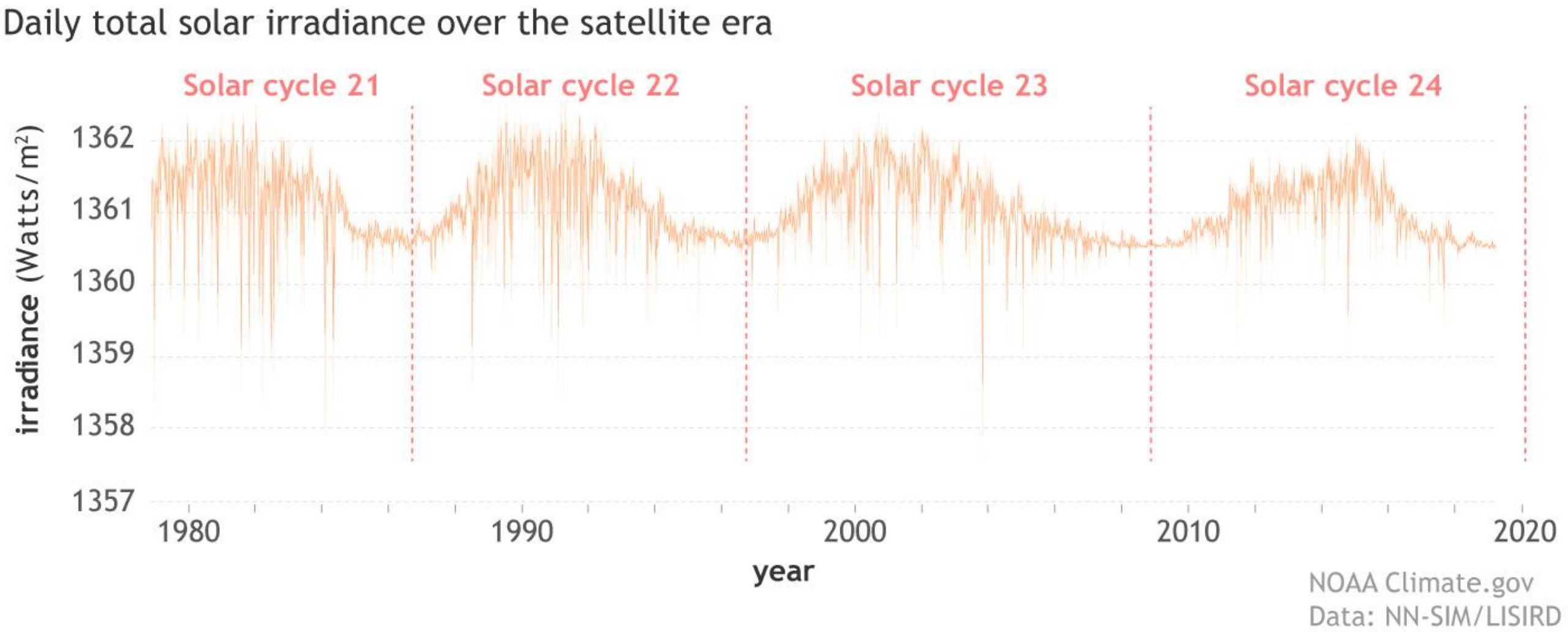
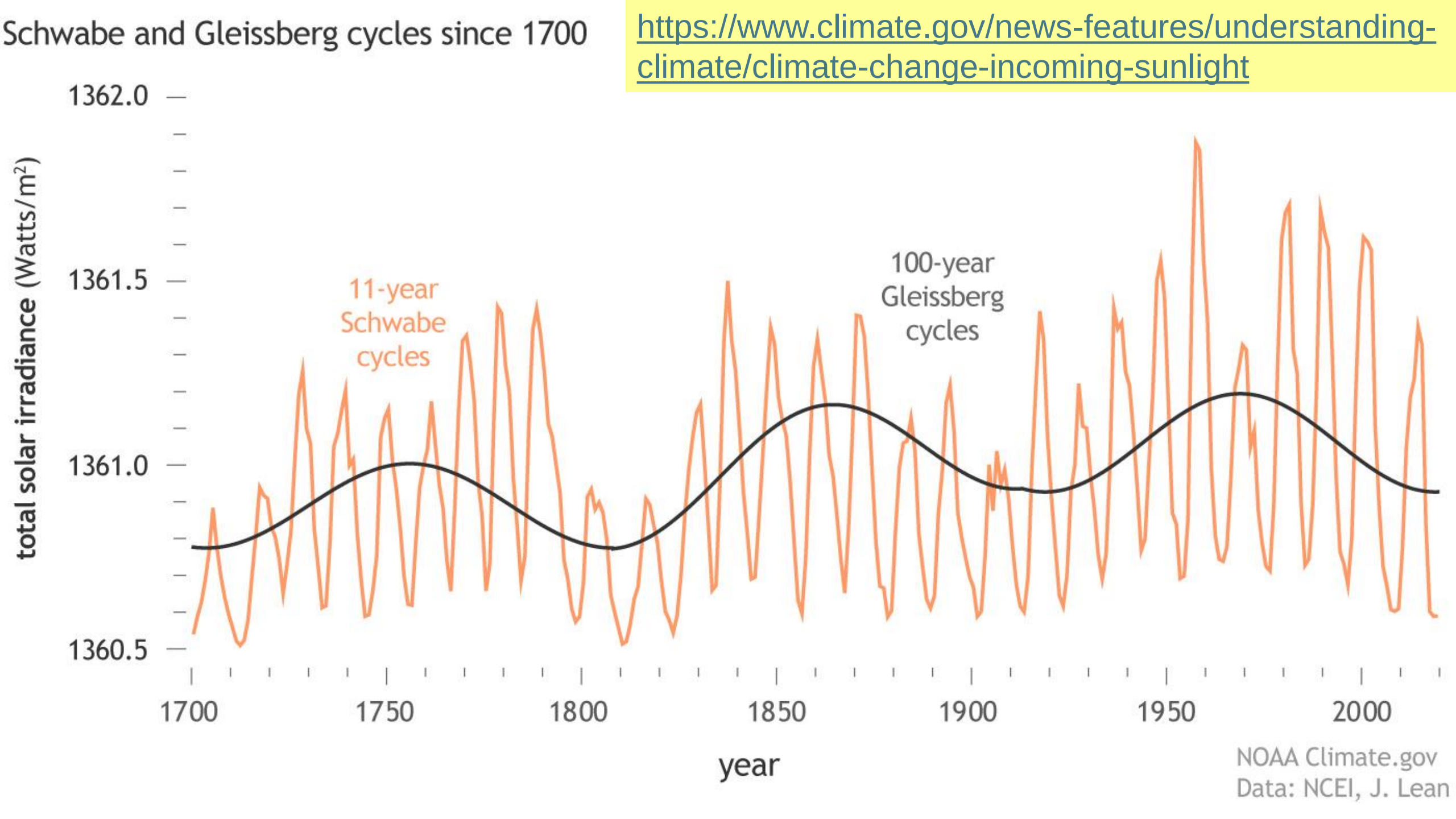
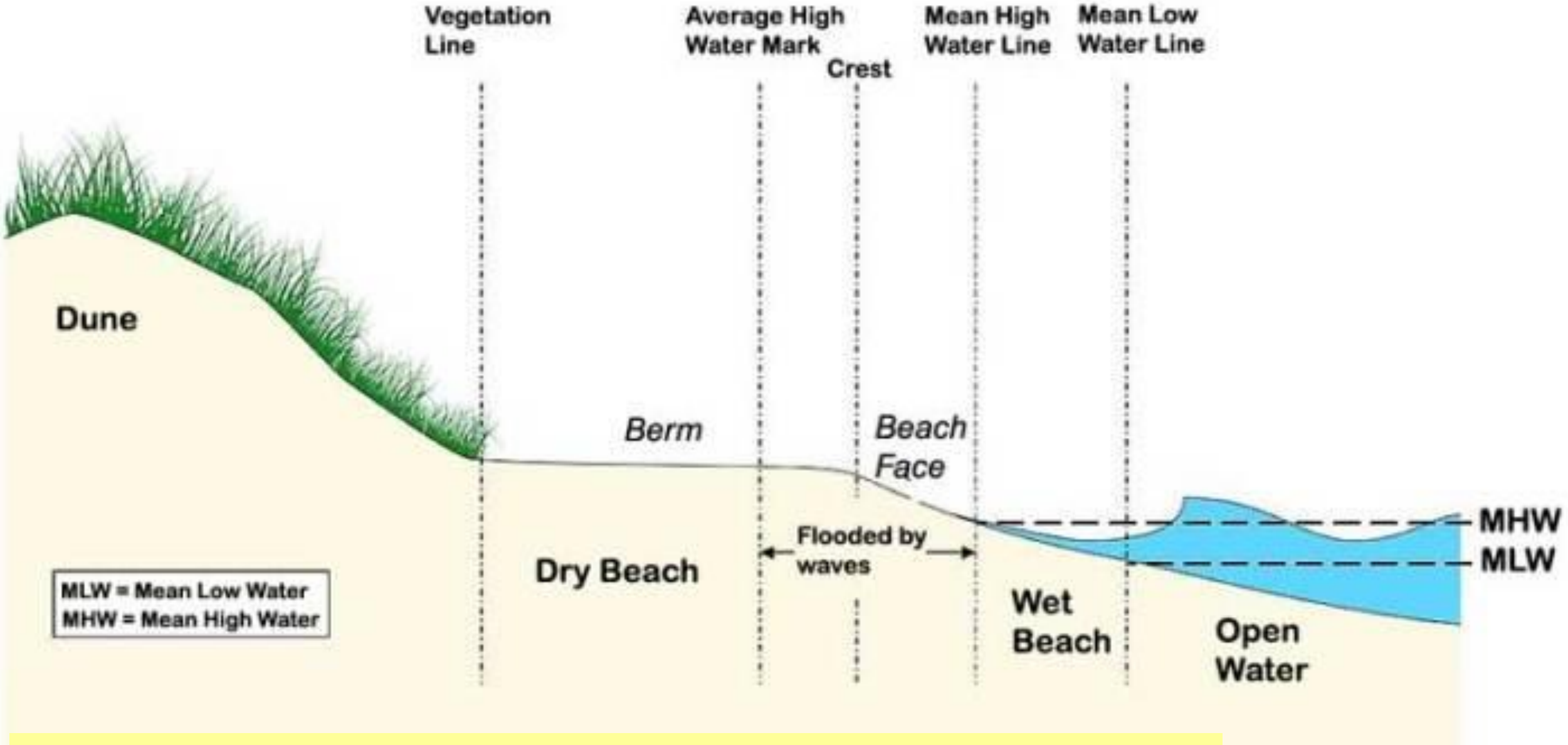


https://www.climate.gov/news-features/understanding-climate/climate-change-incoming-sunlight

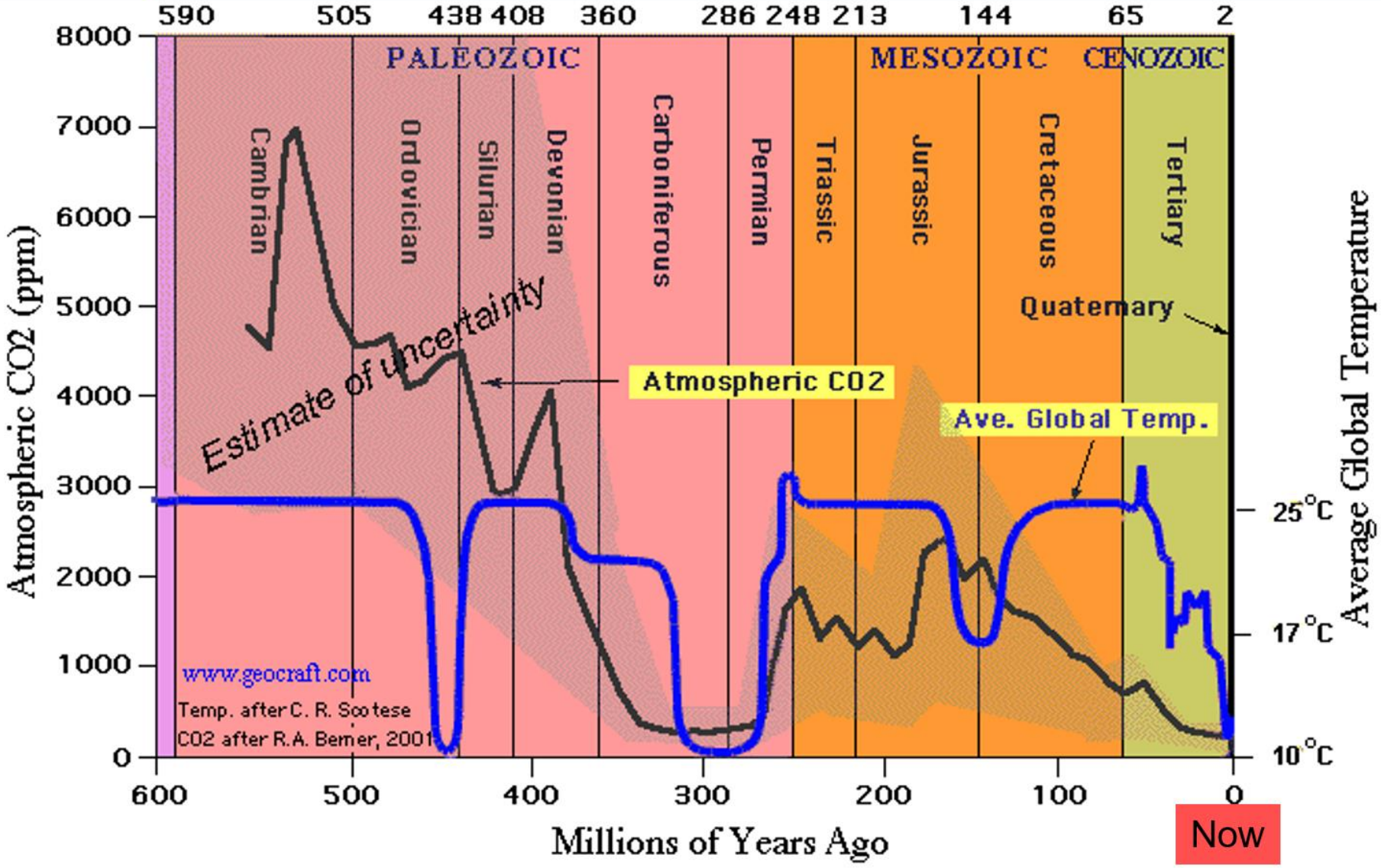


Geologic Processes and Sea Level



From https://wattsupwiththat.com/2017/10/07/sea-level-rise-and-fall-part-2-tide-gauges/

https://casf.me/wp-content/uploads/2023/03/PDF__Proxy-Temperatures-Historical-Records-show-continuation-of-the-present-warming-is-NOT-an-EXISENTIAL-THREAT-to-humanity_15_Feb_2023-edited-6-Mar-2023.pdf

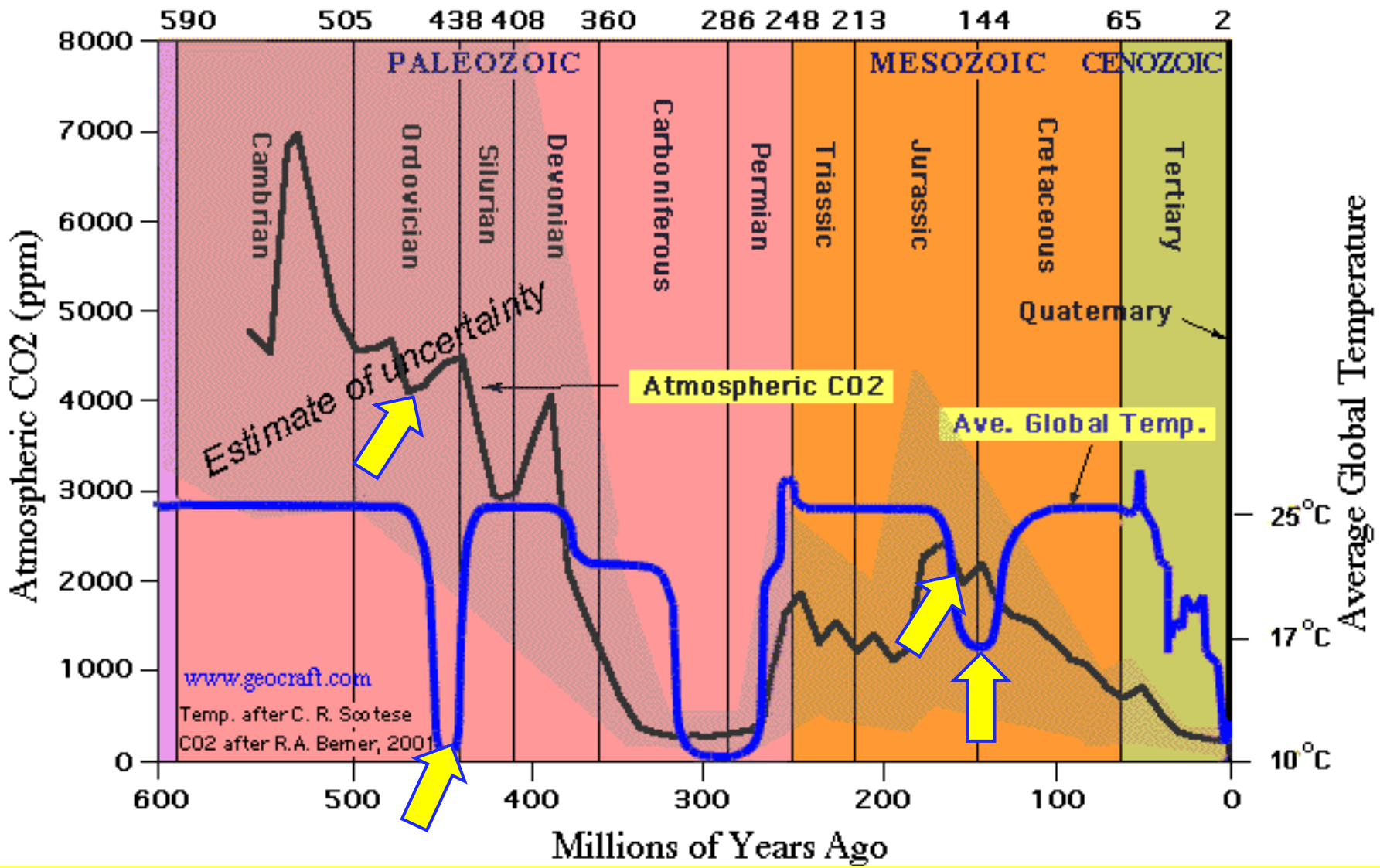


X-Axis Time: Cambrian 600 Million Years ago, Left Present on Right

Y-Axis Blue Average Global Temperature, Scotese **Paleomap** Project **Climate** Tab

Y-Axis Black Atmospheric <CO2> Berner & Kothavala, Am J. Sci., 2001, p 182-204

It is obvious from the data that <CO2> does NOT control temperature



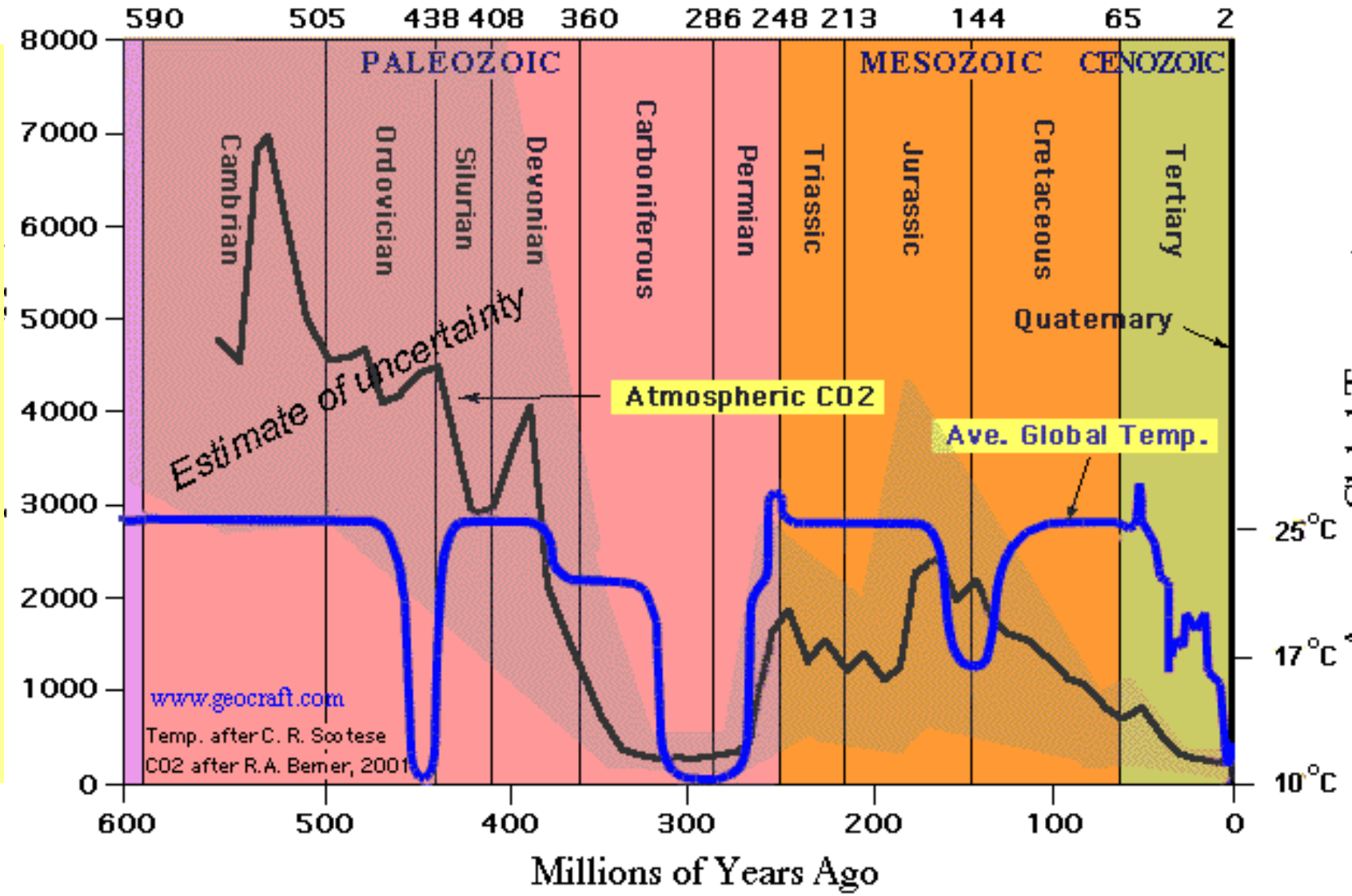
If atmospheric <CO2> effect has such a great effect on Temperature and the feedbacks are so strong, why, at the end of the Ordovician, 450M years BP, did temperatures fall so precipitously, when <CO2> INCREASED from 4100 to 4500 PPM.? Similar effect in at end of Jurassic. Yellow Arrows.

We are at present near the lowest temperatures and <CO2> in the past 600 million years.

Q: where did the CO2 go?

Answer: Into the limestones, dolomites, marble formations in sediments and metamorphic rocks of the Earth's crust.

Calcite: CAO+CO2 => CaCO3



X-Axis Time: Cambrian 600 MY ago Left Present on Right
Y-Axis Blue Average Global Temperature, Scotese **Paleomap** Project **Climate** Tab
Y-Axis Black Atmospheric <CO2> Berner & Kothavala, Am J. Sci., 2001, p 182-204

“I have myself seen what once was most solid ground disappear into the sea and I have heard of land risen out of the sea”

Ovidius (43BC-18AD):

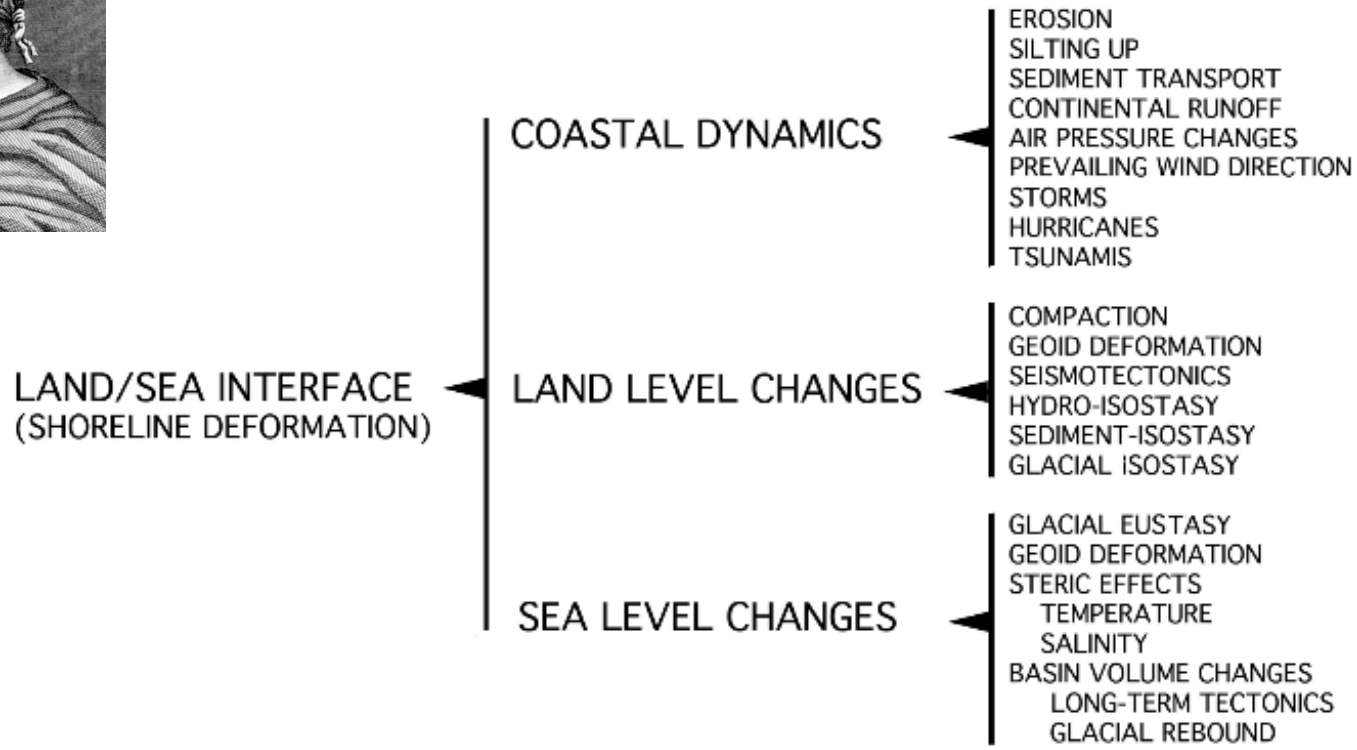
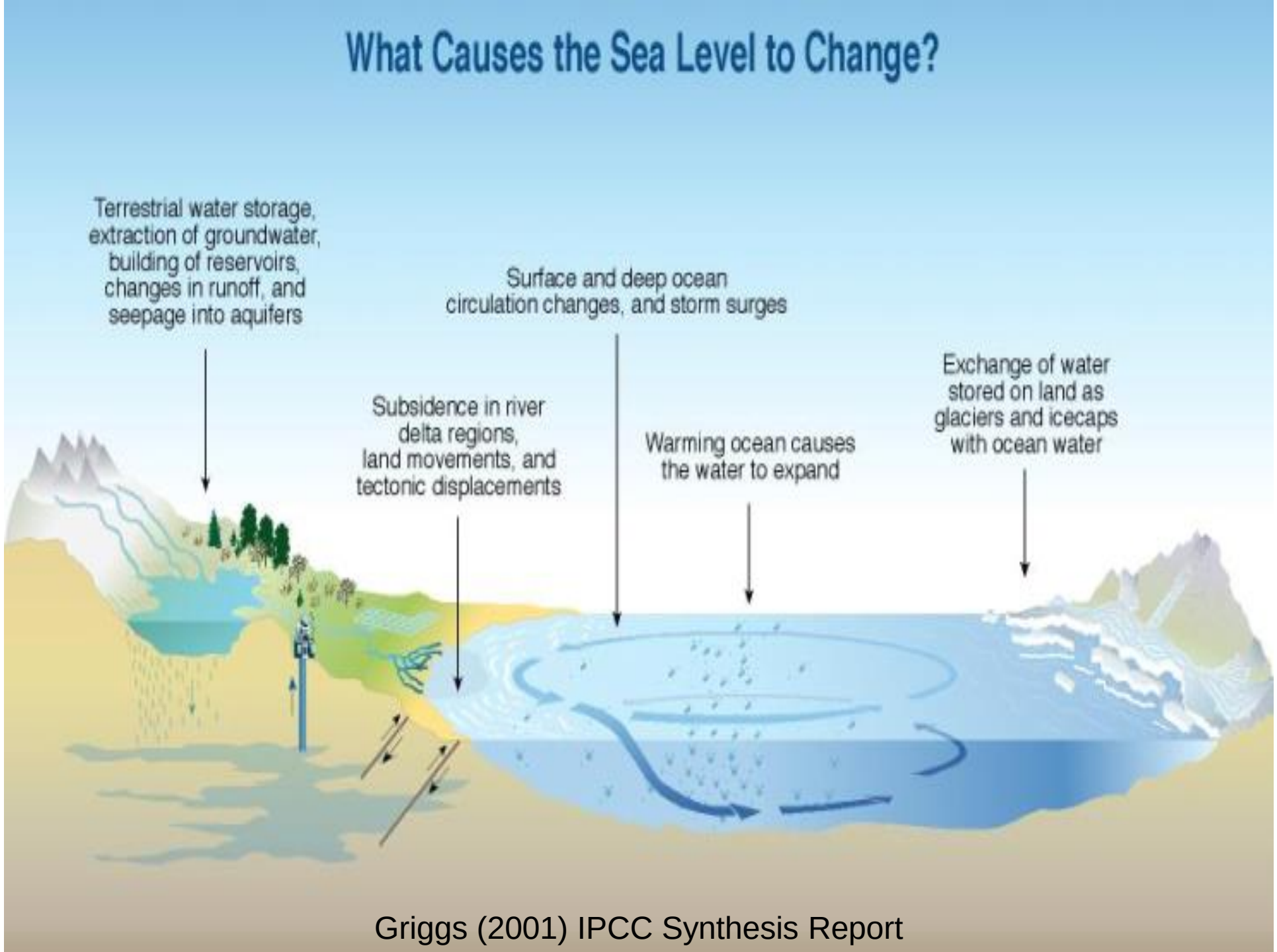


Figure 2. Many different variables affect the stability of the land/sea interface; i.e. the shoreline. They fall within three major group of changes; the coastal dynamics, the level of the land surface and the level of the sea [from 9,18). For a proper sea level analysis, all different variables have to be considered and evaluated.

Morner (2013) Energy and Environment, vol. 24, 509-536



Griggs (2001) IPCC Synthesis Report

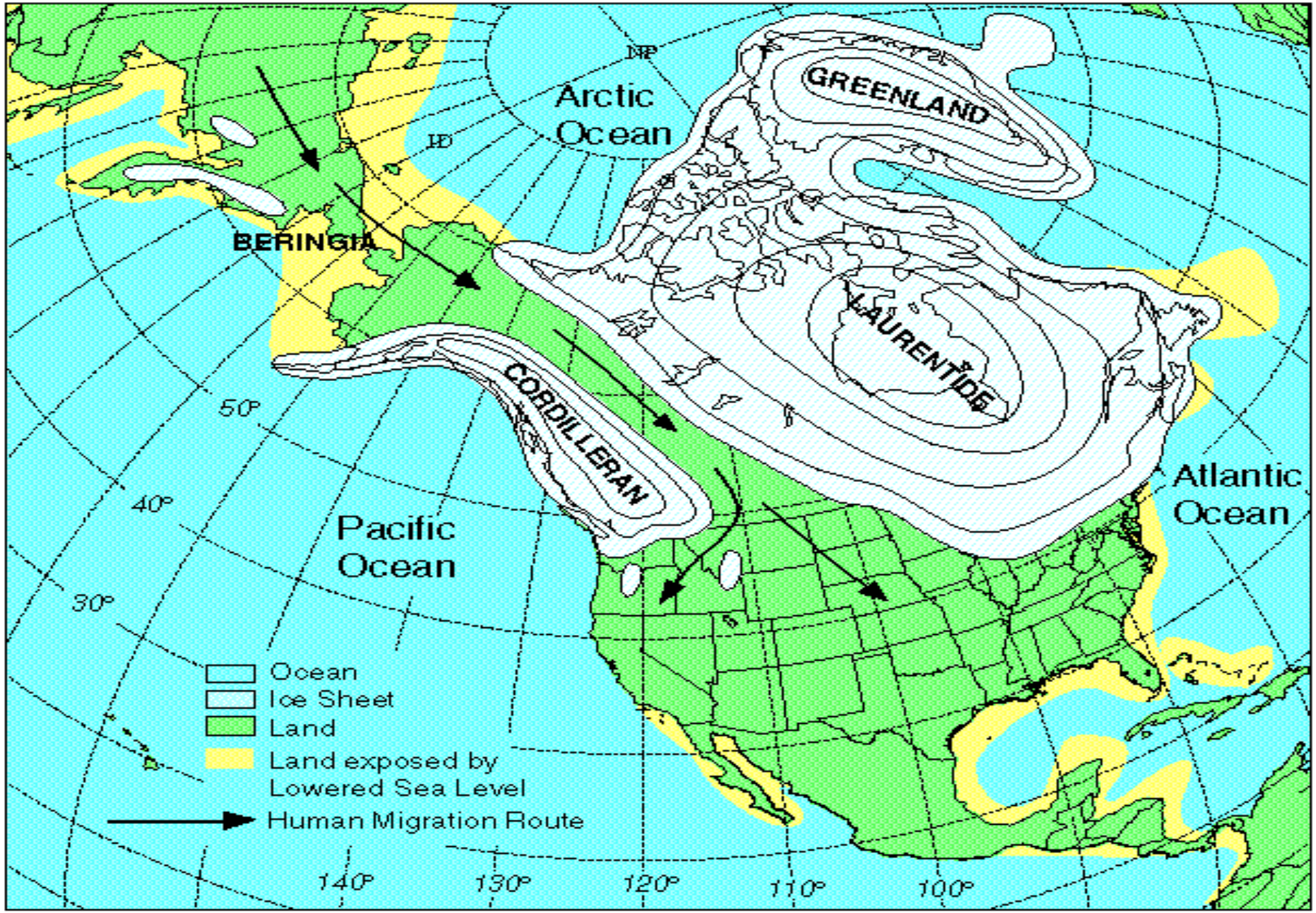
How Glaciers Work:

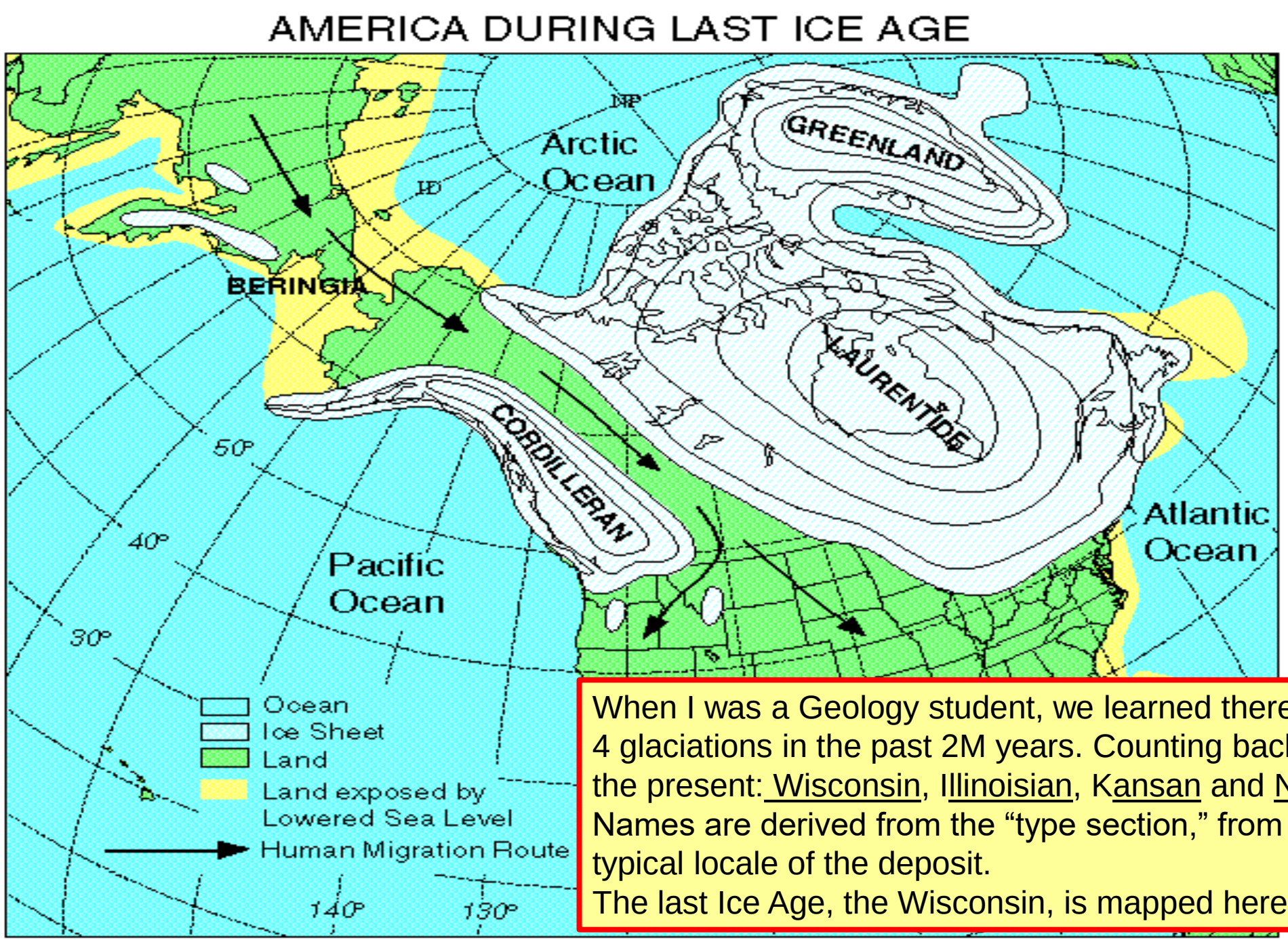
1. Snow falls in the mountains and highlands.
2. When snowfall>snowmelt, snow fields accumulate, and may become glaciers.

3. Glaciers are rivers of water consisting of plastic old snow and ice, which flows down hill.
4. When glaciers "calve," they merely return the water to the sea.

5. A calving glacier is the result of large amounts of snow which has fallen, accumulated, flowed downhill, and reached the sea. It means that it snows a lot in the highlands!

AMERICA DURING LAST ICE AGE





This means that continental glaciers reached as far south as Kansas.

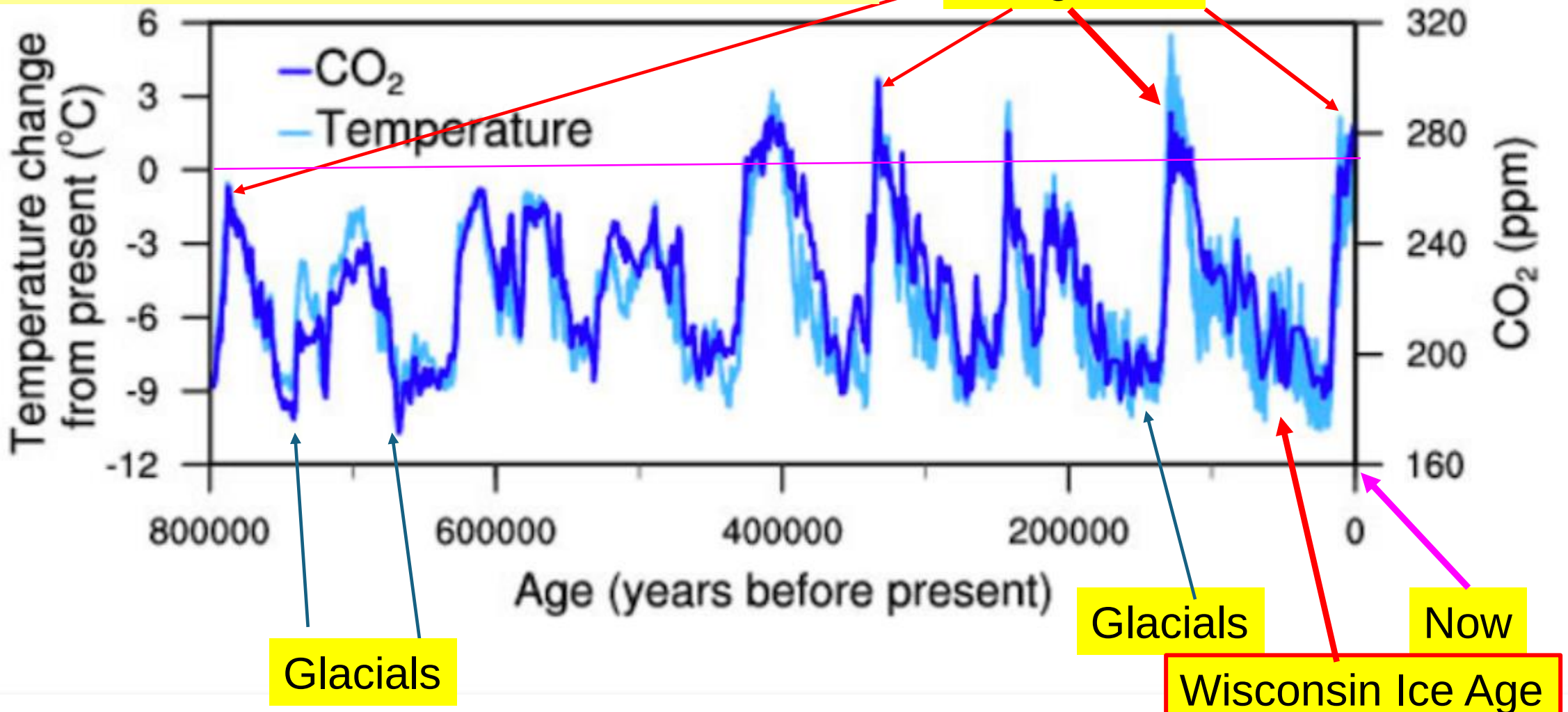
We now know that There were perhaps Nine glaciations In the past 12M years.

So much for “Settled Science!”

When I was a Geology student, we learned there were 4 glaciations in the past 2M years. Counting back from the present: Wisconsin, Illinoisian, Kansan and Nebraskan. Names are derived from the “type section,” from the most typical locale of the deposit.
The last Ice Age, the Wisconsin, is mapped here.

https://www.wunderground.com/cat6/Snow-Stars-and-Stress-Science-Concordia-Station

Time Series, Temp and CO2, last 800,000 years



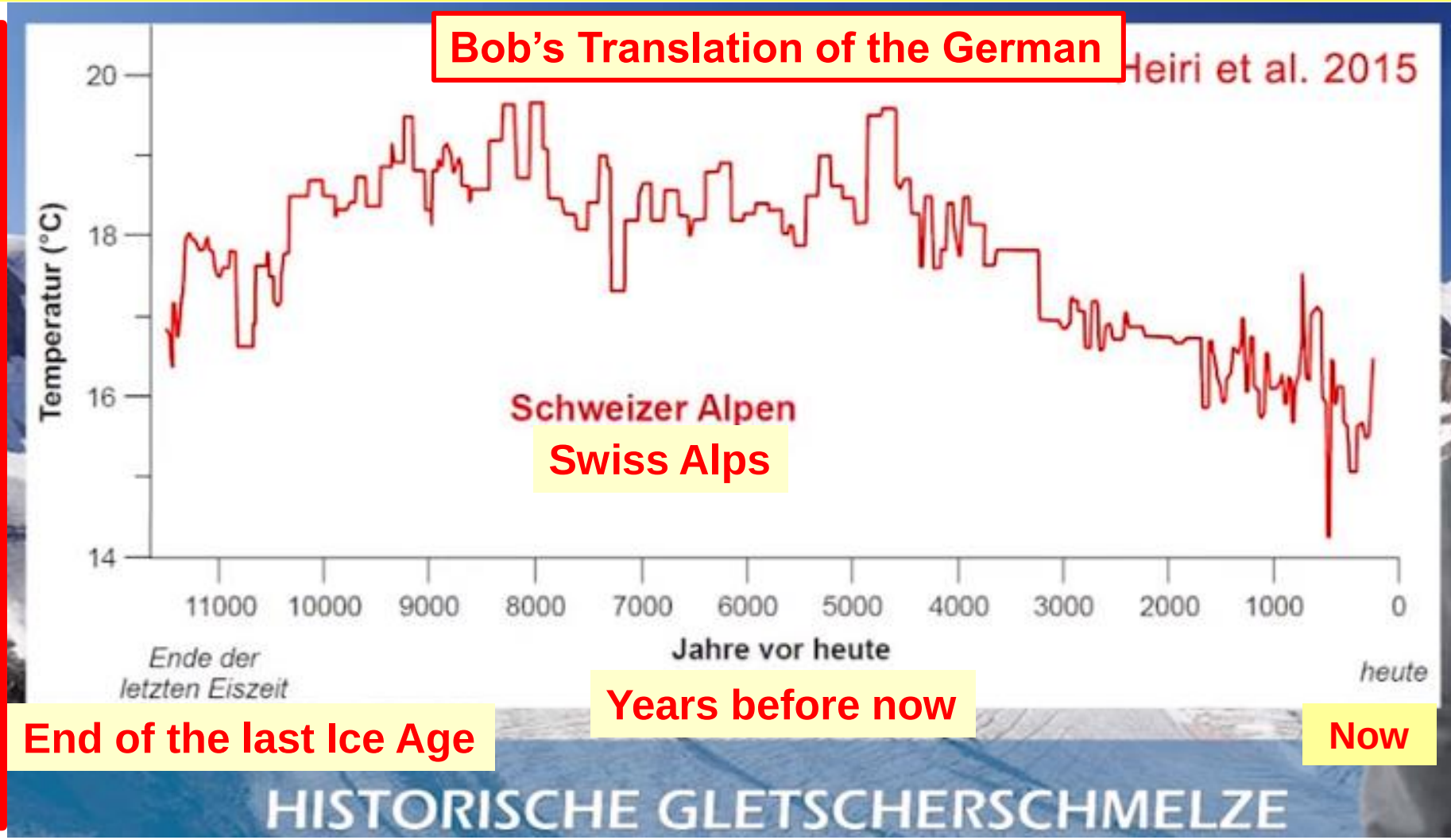
Changes in Temperatures and CO2 concentration over the past several hundred thousand years, based on analysis of the EPICA Dome C ice core from Antarctica.

https://notrickszone.com/2021/01/06/very-inconvenient-alps-glacier-history-top-glaciologists-alps-were-ice-free-6000-years-ago

Look at the temperatures!

According to this study, present temperatures are ~3C cooler than the peaks of Holocene warmth ~8000 years ago.

Claims of “climate crisis” or “climate emergency” ill-informed, probably deliberately deceptive.



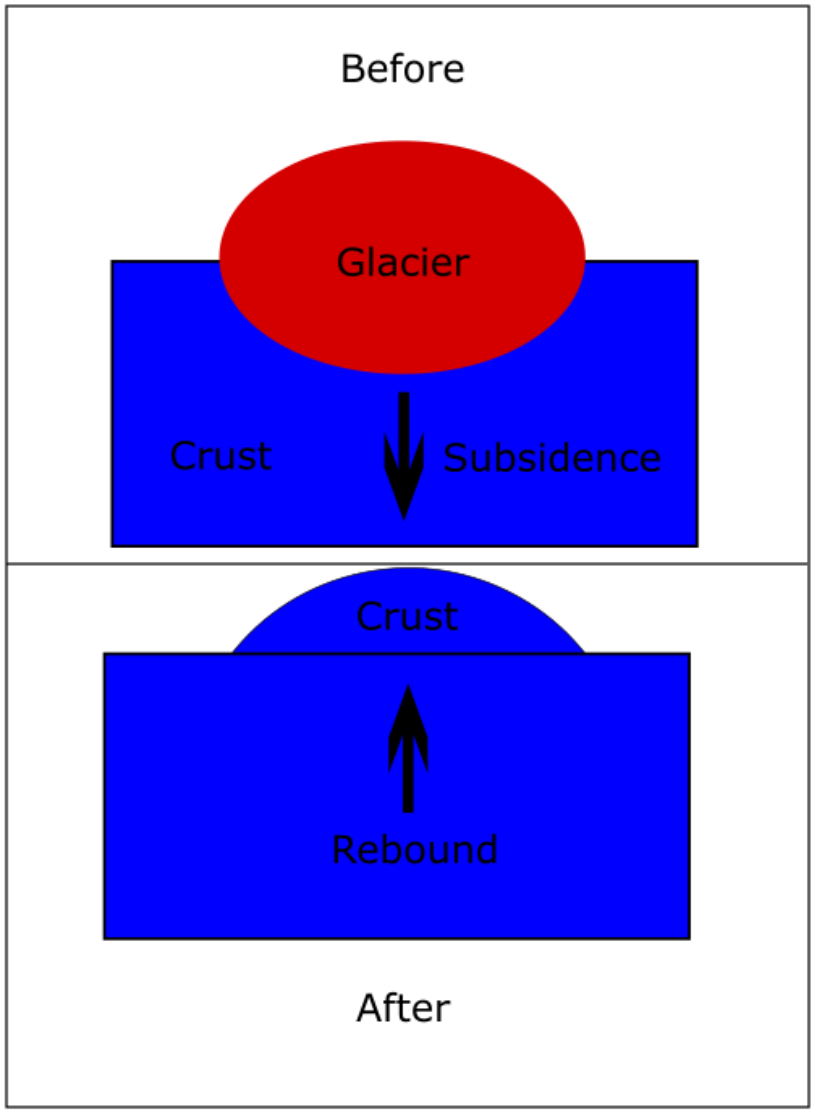
“In recent years, scientists have underscored the need to limit planetary warming to 1.5 degrees Celsius in order to stave off the worst impacts of climate change. A key goal of both the Leaders Summit and COP26 will be to catalyze efforts that keep that 1.5-degree goal within reach.” *whitehouse.gov, 26 March 2021*

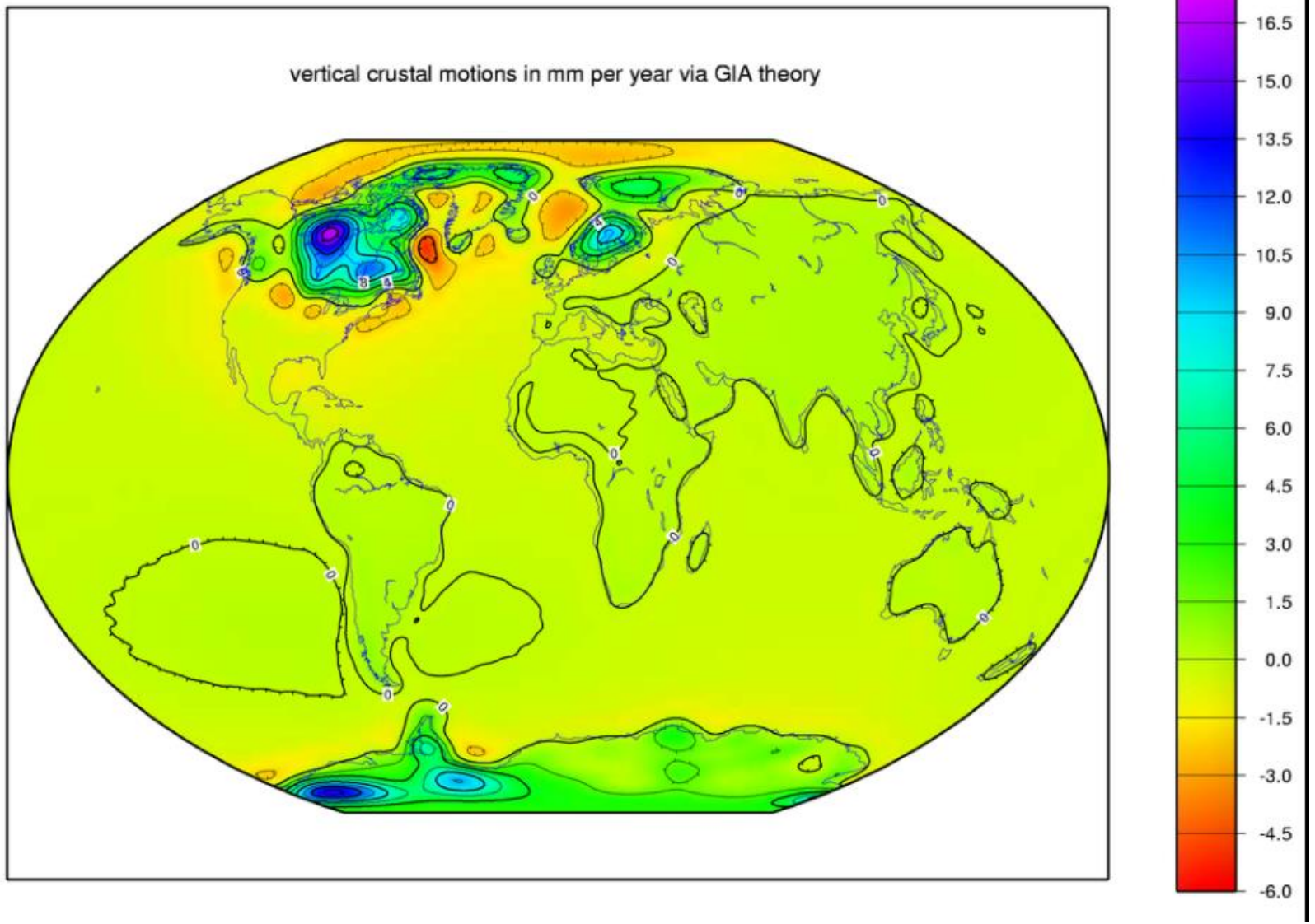
Because of continental rebound from the recent Wisconsin Ice Age, Sea Levels appear to be falling in the areas where the ice was deepest.

Some of following graphics came from my 18 Dec 2021 presentation to CASF:

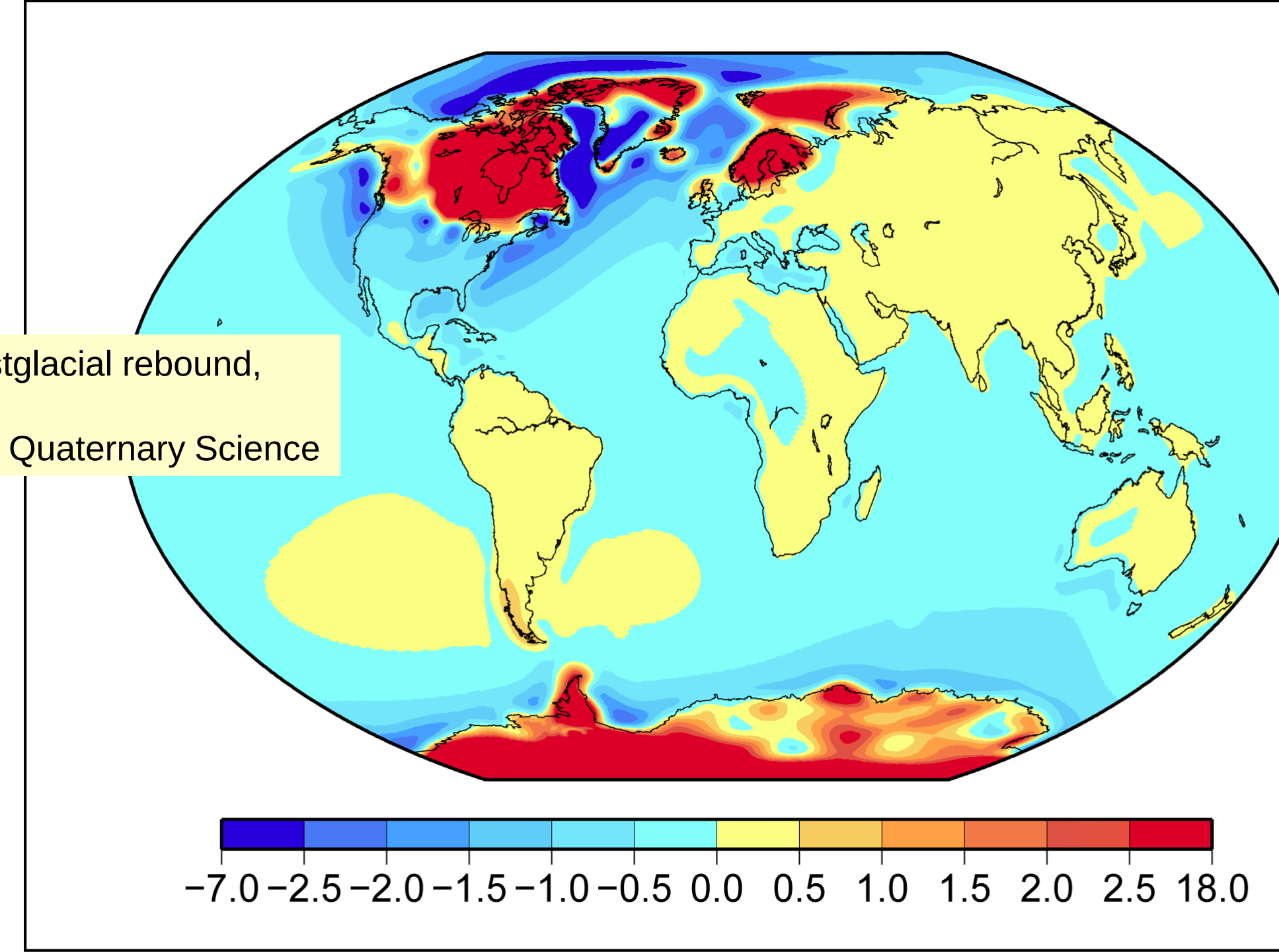
https://casf.me/critique-of-the-june-2021-aarp-bulletin-climate-change-and-you/

https://en.wikipedia.org/wiki/Post-glacial_rebound





Rates of present-day postglacial rebound, courtesy of Glenn Milne.
From the Encyclopedia of Quaternary Science



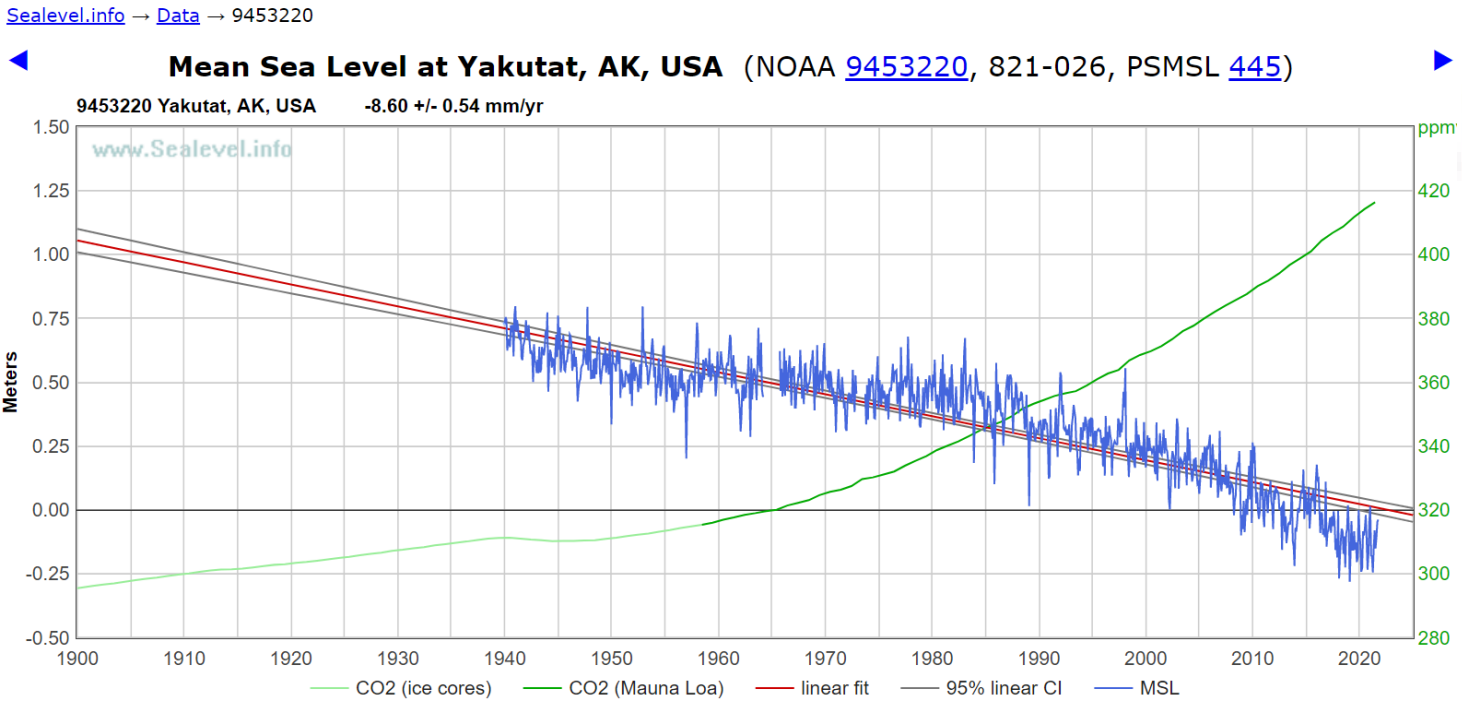
“*Successive shorelines show isostatic rebound,*” a photo from the Canadian North, shows rebound of far northern North America after ice from the Wisconsin Ice Sheet melted away, some 20,000 to 10,000 years ago.

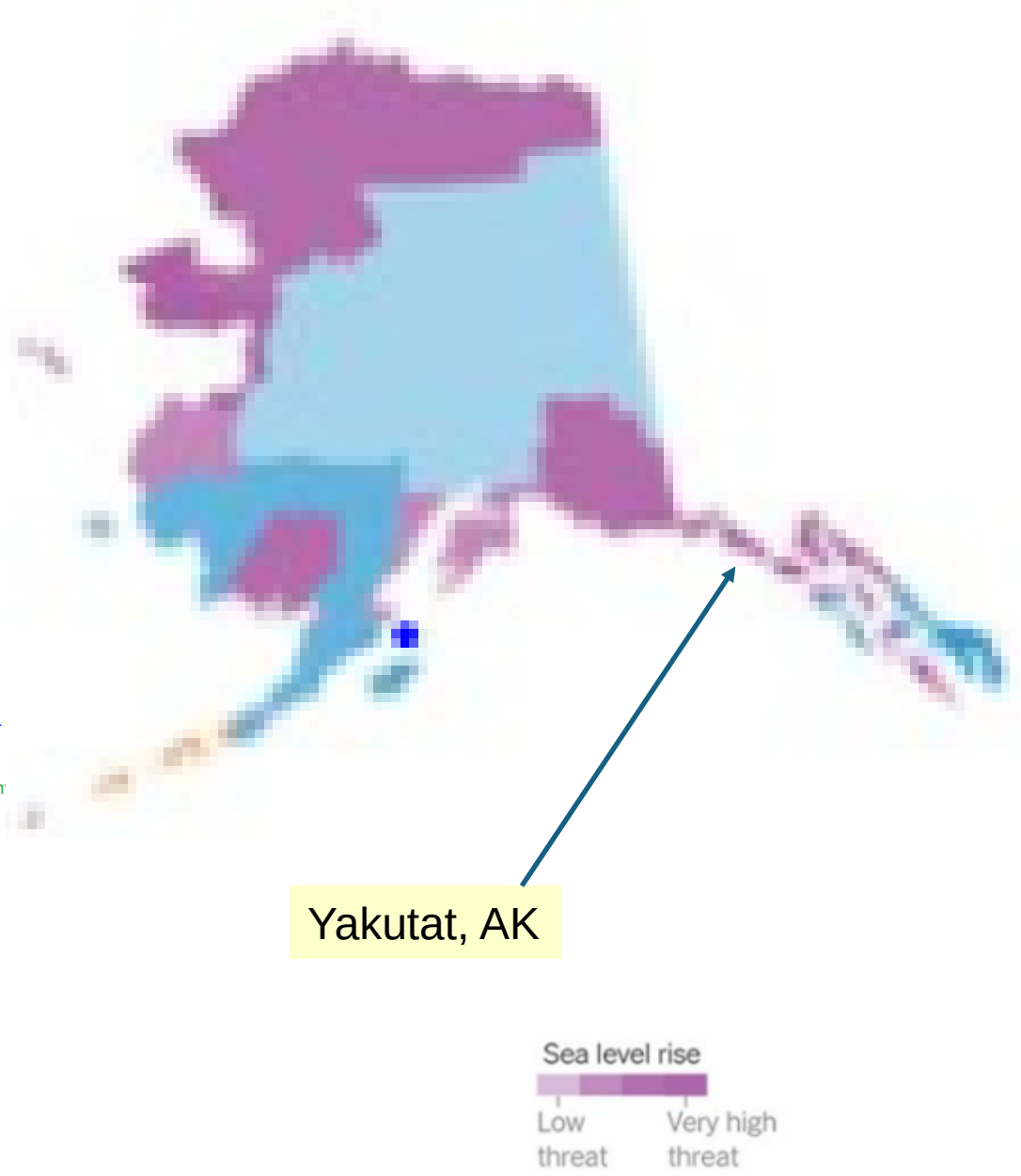
This layered beach is at Bathurst Inlet, Nunavut; it's an example of post-glacial rebound after the last Ice Age.

Little to no tide helped to form its layer-cake look. Isostatic rebound is still underway here.

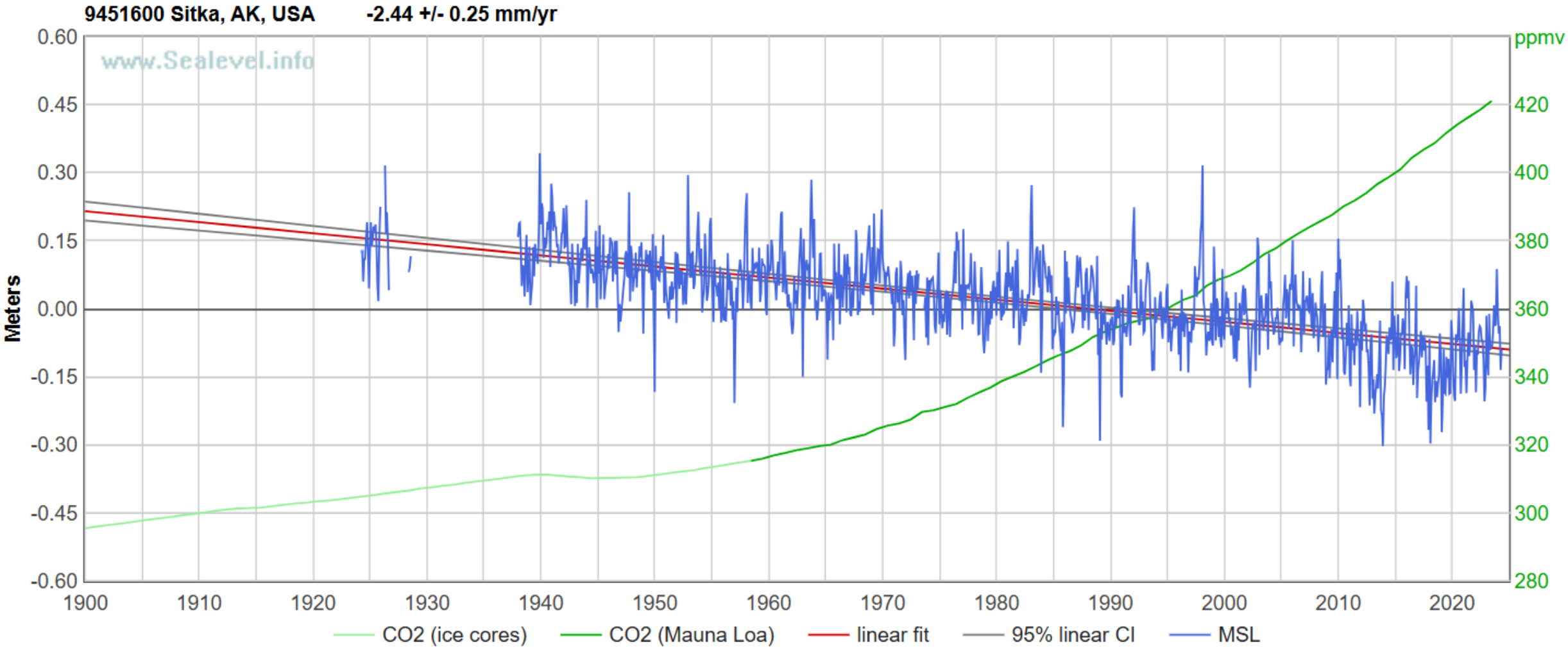
Rebounding Beach, by Mike Beauregard from Nunavut, Canada – https://commons.wikimedia.org/w/index.php?curid=28065771

Sea Level appears to be falling at Yakutat, Alaska.





Mean Sea Level at Sitka, AK, USA (NOAA 9451600, 821-031, PSMSL 426)



The mean sea level (MSL) trend at Sitka, AK, USA is -2.44 mm/year with a 95% confidence interval of ±0.25 mm/year, based on monthly mean sea level data from 1924/5 to 2024/5. That is equivalent to a change of -0.80 feet in 100 years. (R-squared = 0.438)

We will get more into Tide Gages later, but this brief introduction to the methodology…

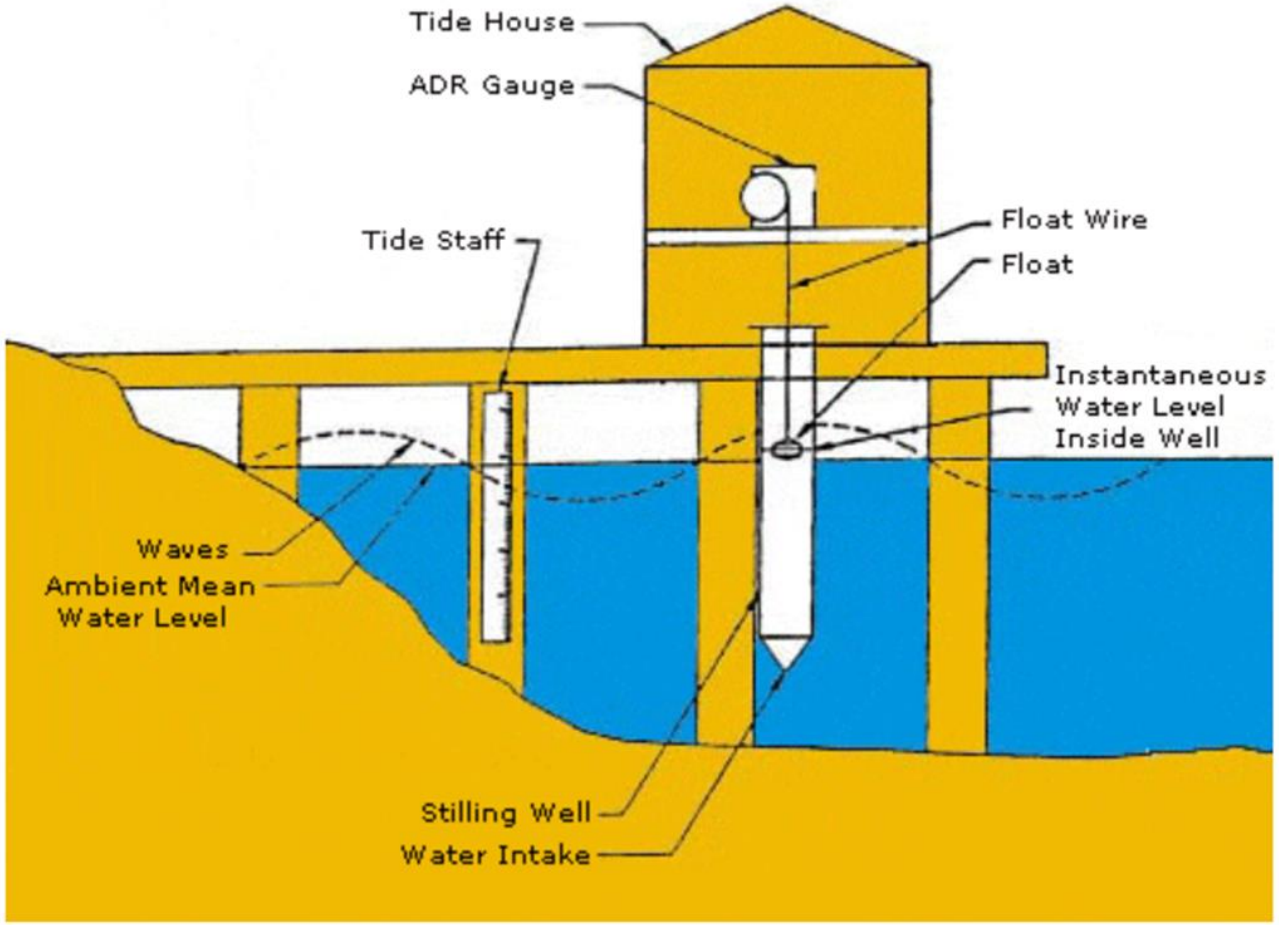
A float in a tide gage resembles a toilet tank float, in that the rising or falling level in the tank sends a mechanical signal to the float valve to either bring in water or stop it.

In a Tide Gage, the float sends a signal to a strip chart recorder or electronic recorder creating a time series of the water height.

However, the Tide Gage can not by itself tell the difference between rising water levels and sinking land, the latter often human-caused because ground water pumping removes water mass from the interstitial spaces between unconsolidated sediments such as sand, fine gravel, or glauconite sand.

An organization in France, Sonel, https://www.sonel.org/ uses collocated Tide Gages and GPS receivers to help resolve this.

https://oceanservice.noaa.gov/education/tutorial_tides/tides10_oldmeasure.html



Special tide houses were constructed to shelter permanent water level recorders, protecting them from harsh environmental conditions. In this diagram, we can see how the analog data recorder (ADR) is situated inside the house with the float, and the stilling well located directly beneath it. Attached to one of the piers pilings is a tidal staff. Essentially a giant measuring stick, this device would allow scientists to manually observe the tidal level and then compare it to the readings taken by the analog recorder.

https://www.sonel.org/

SONEL

Home

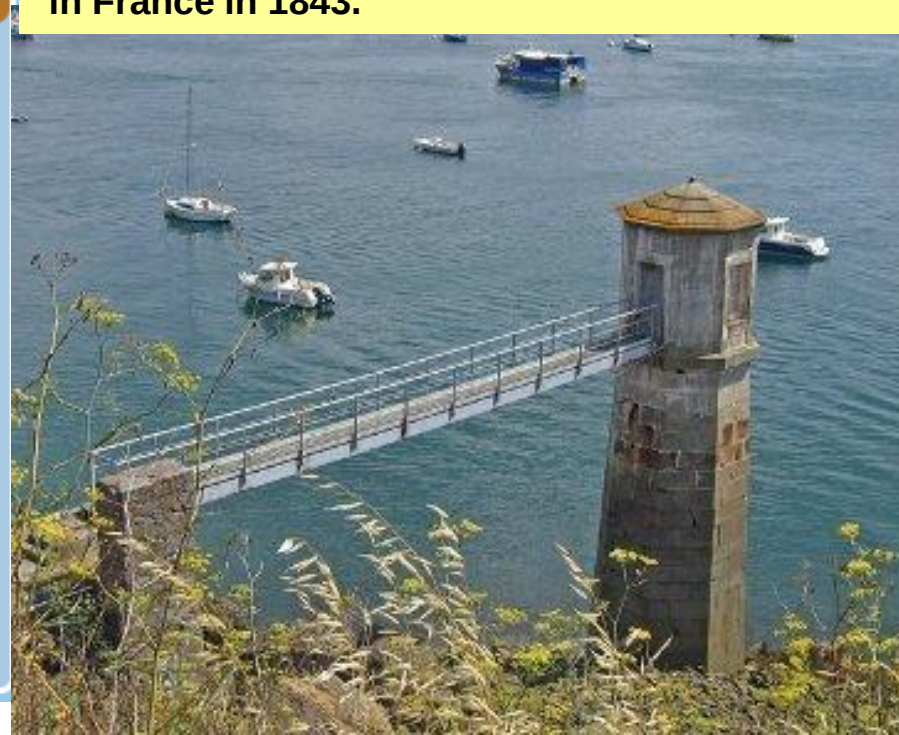
Presentation

Welcome to SONEL

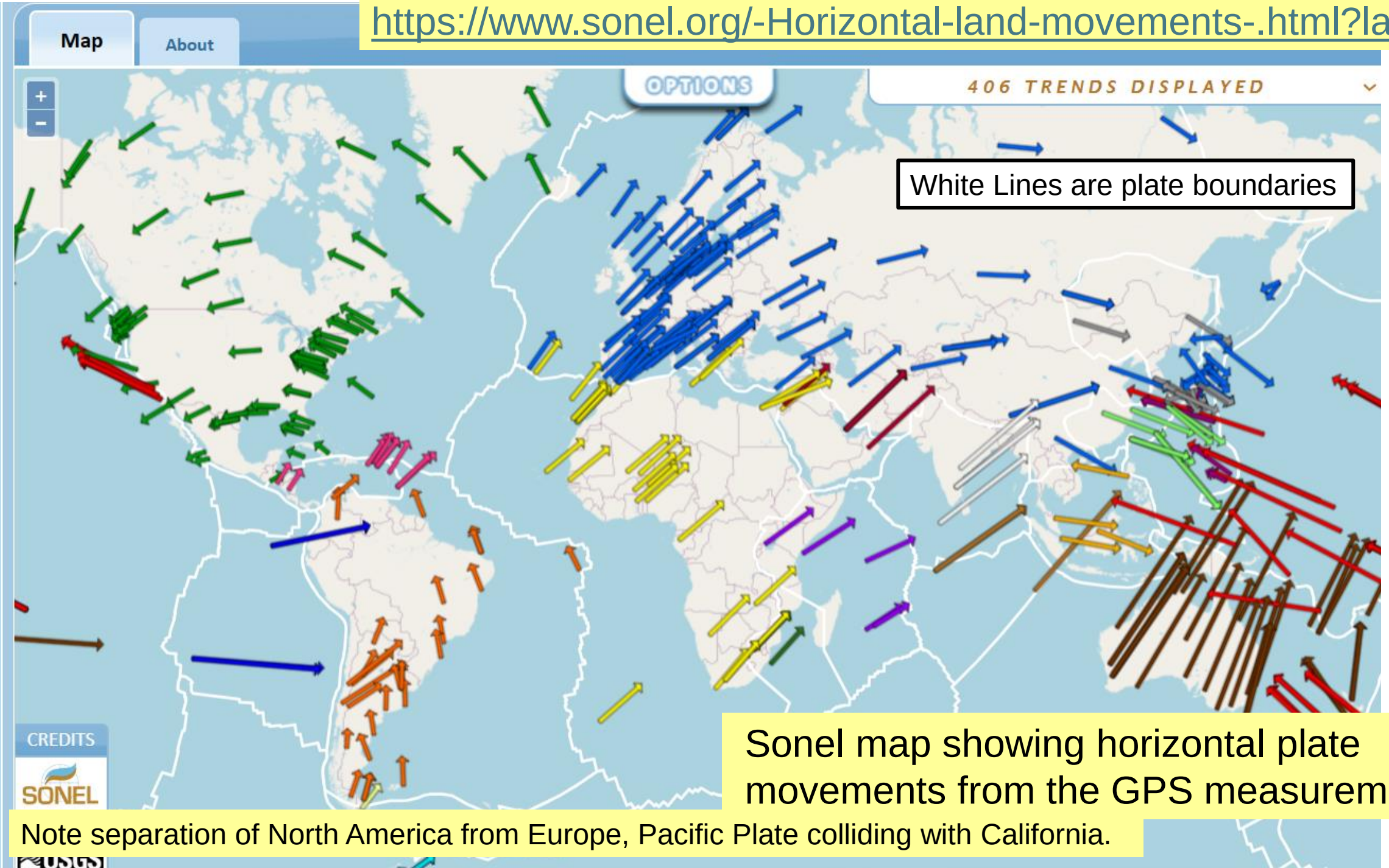
SONEL aims at providing high-quality continuous measurements of sea- and land levels at the coast from tide gauges (relative sea levels) and from modern geodetic techniques (vertical land motion and absolute sea levels) for studies on long-term sea level trends, but also the calibration of satellite altimeters, for instance.

SONEL serves as the GNSS data assembly centre for the Global Sea Level Observing System (GLOSS), which is developed under the auspices of the IOC/Unesco. It works closely with the PSMSL and the University of Hawaii Sea Level Center (UHSLC) by developing an integrated global observing system, which is linking both the tide gauge and the GNSS databases for a comprehensive service to the scientific community. It also acts as the interface with the scientific community for the French tide gauge data.

R. Chazallon (1802-1872), a French hydrographic Engineer, was the first to introduce the gage, in France in 1843.



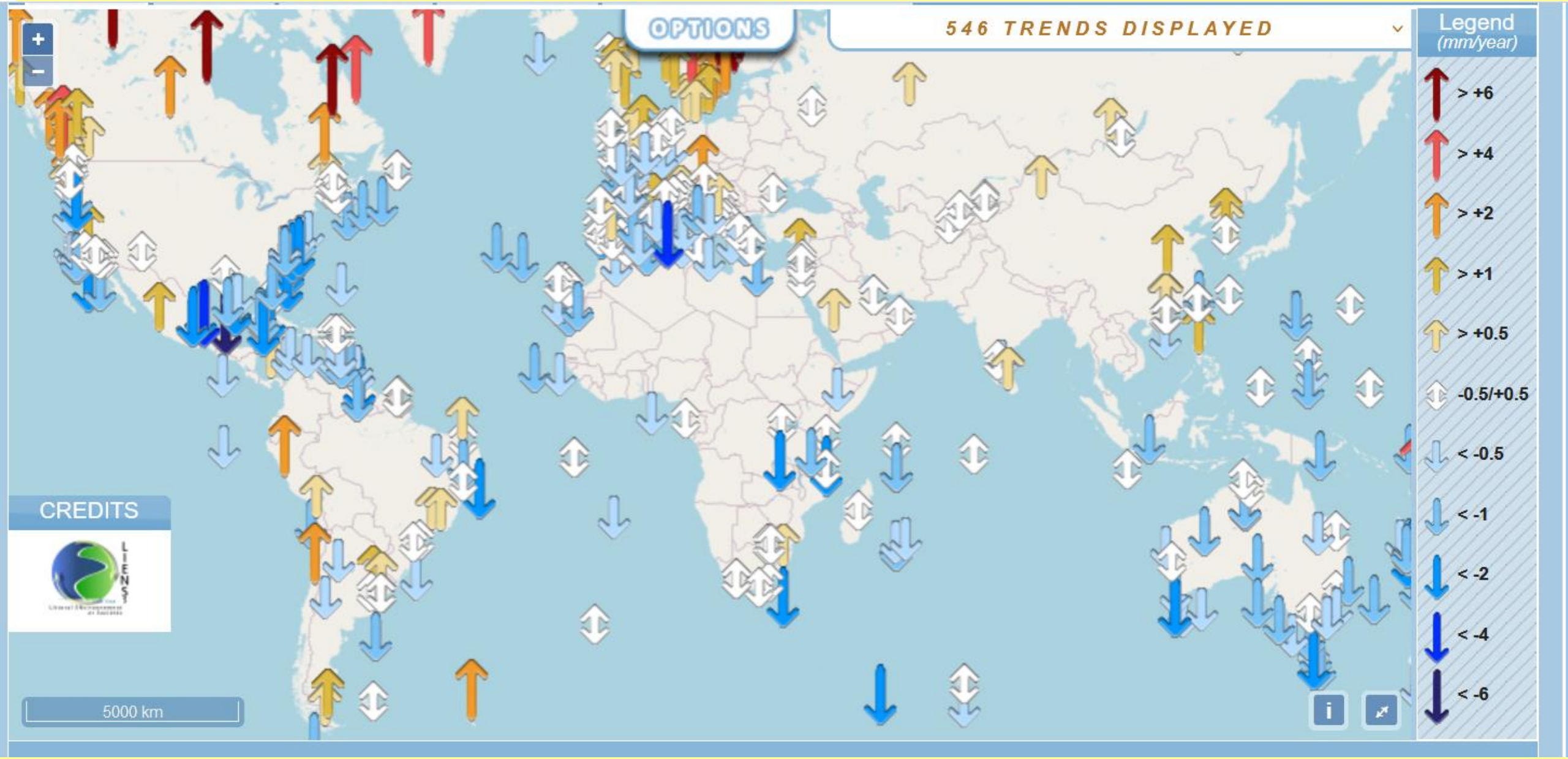
https://www.sonel.org/-Horizontal-land-movements-.html?lang=en



Sonel map showing horizontal plate movements from the GPS measurements.

Note separation of North America from Europe, Pacific Plate colliding with California.

https://www.sonel.org/-Vertical-land-movements-.html?lang=en

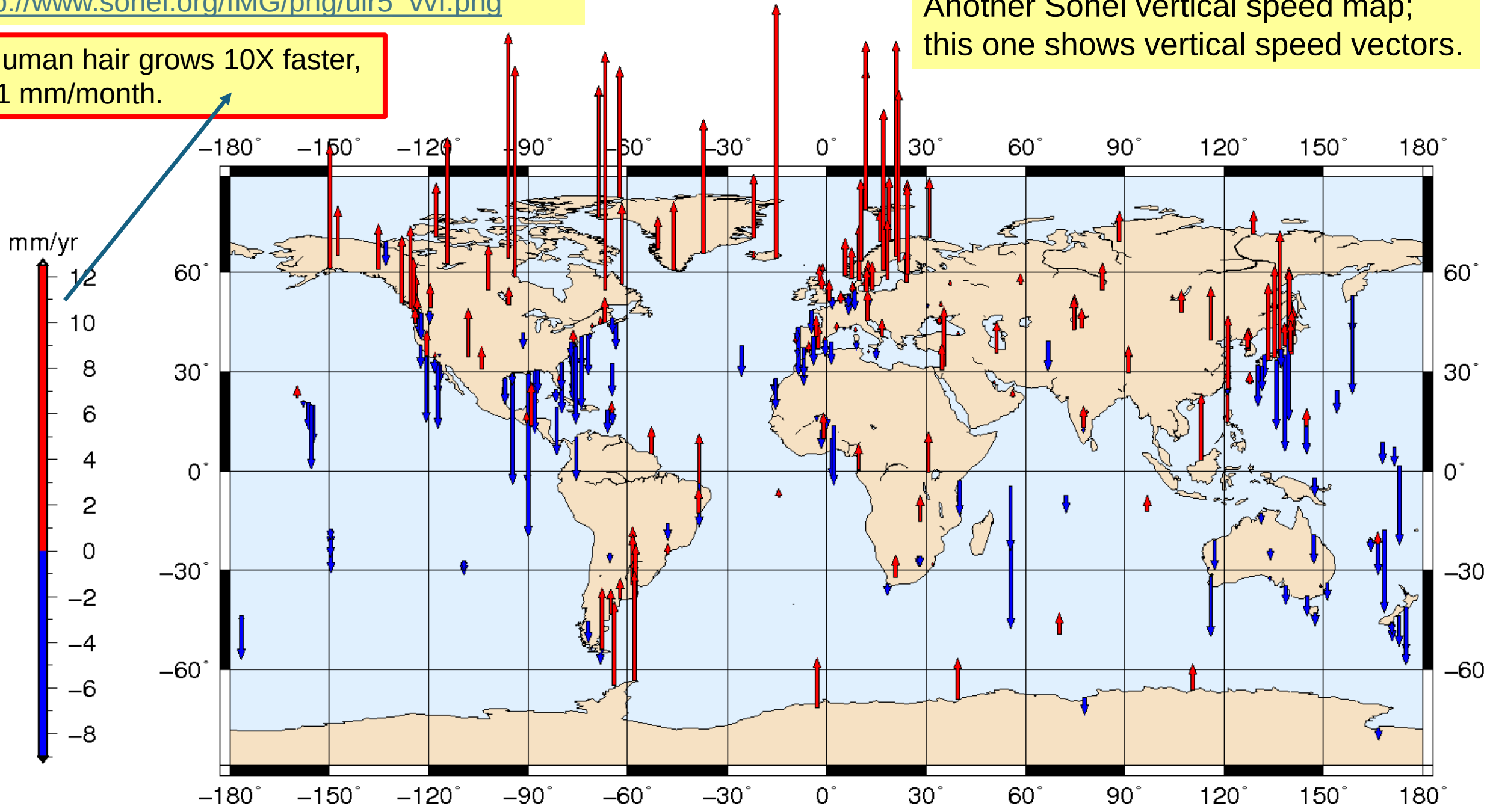


Sonel map showing vertical land movements. Vertical speed color code is to the right.

http://www.sonel.org/IMG/png/ulr5_vvf.png

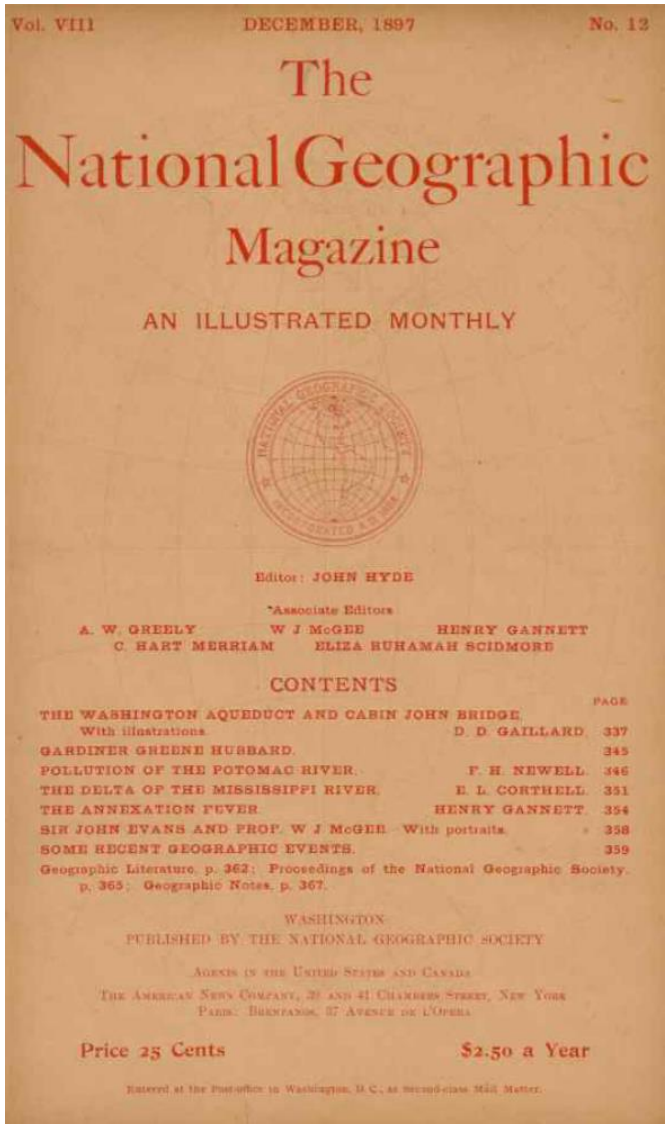
Another Sonel vertical speed map; this one shows vertical speed vectors.

Human hair grows 10X faster, 11 mm/month.



Mississippi Delta, Sedimentary Loading, New Orleans Sinking:

Courtesy of Willie Soon at DDP



Vol. VIII DECEMBER, 1897 No. 12

The National Geographic Magazine

AN ILLUSTRATED MONTHLY

Editor: JOHN HYDE

Associate Editors

A. W. GREELY W J McGEE HENRY GANNETT
C. HART MERRIAM ELIZA RUHAMAH SCIDMORE

CONTENTS

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Entered at the Post-office in Washington, D.C., as Second-class Mail Matter.

1897

Land subsidence caused naturally, by compression of fine silt, squeezing water out.

"Discrepancies in bench-marks and level heights and gauges could only be satisfactorily accounted for by the most plausible explanation of the subsidence of the whole delta, making gauges and bench-marks at the mouth of South Pass unreliable. …**It is a fact well known to people living in the delta of Mississippi that large tracts of land were long ago abandoned in consequence of overflow by Gulf waters, due to the sinking of the lands."**

Often land subsidence is caused by ground water pumping, by humans, next.

Corthell (1897) National Geographic Magazine, vol. 8 (no. 12), 351-354

https://www.economist.com/blogs/economist-explains/2017/02/economist-explains-18

The Economist Topics Print edition More

Why cities sink

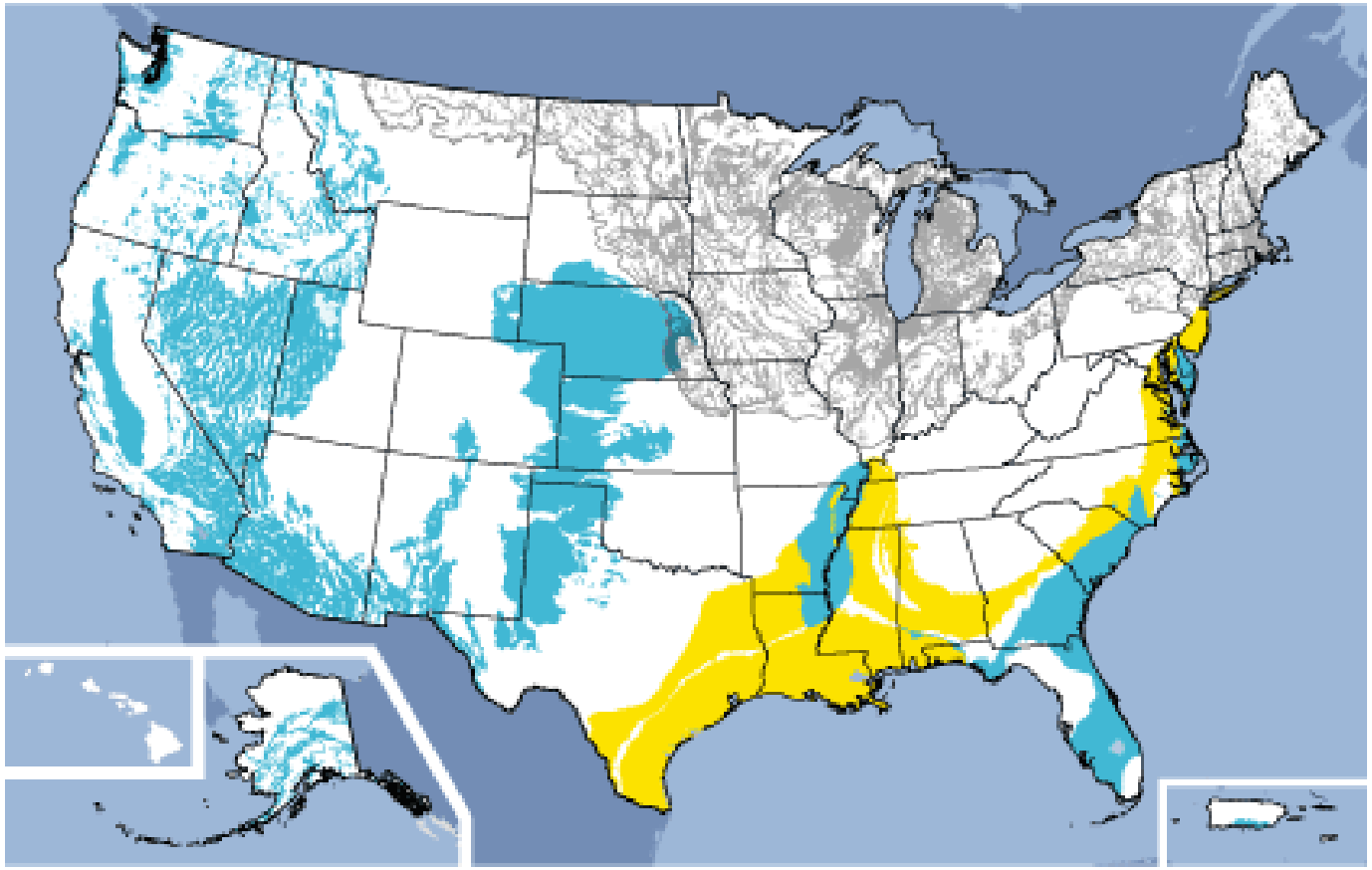
The good news is some causes of land subsidence can be stopped

Flood in Jakarta, Indonesia, exacerbated by land subsidence following uncontrolled groundwater pumping.

“In America groundwater extraction without commensurate recharge is responsible for 80% of subsidence.”

https://water.usgs.gov/ogw/aquiferbasics/uncon.html

PRINCIPAL UNCONSOLIDATED AND SEMICONSOLIDATED SAND AND GRAVEL AQUIFERS



Unconsolidated sand and gravel aquifers at or near the land surface.

Semiconsolidated sand and gravel aquifers.

Sand and gravel aquifers of alluvial and glacial origin are north of the line of continental glaciation.

http://water.usgs.gov/ogw/pubs/fs00165/

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GROUND WATER RESOURCES FOR THE FUTURE

Land Subsidence in the United States

USGS Fact Sheet-165-00
December 2000

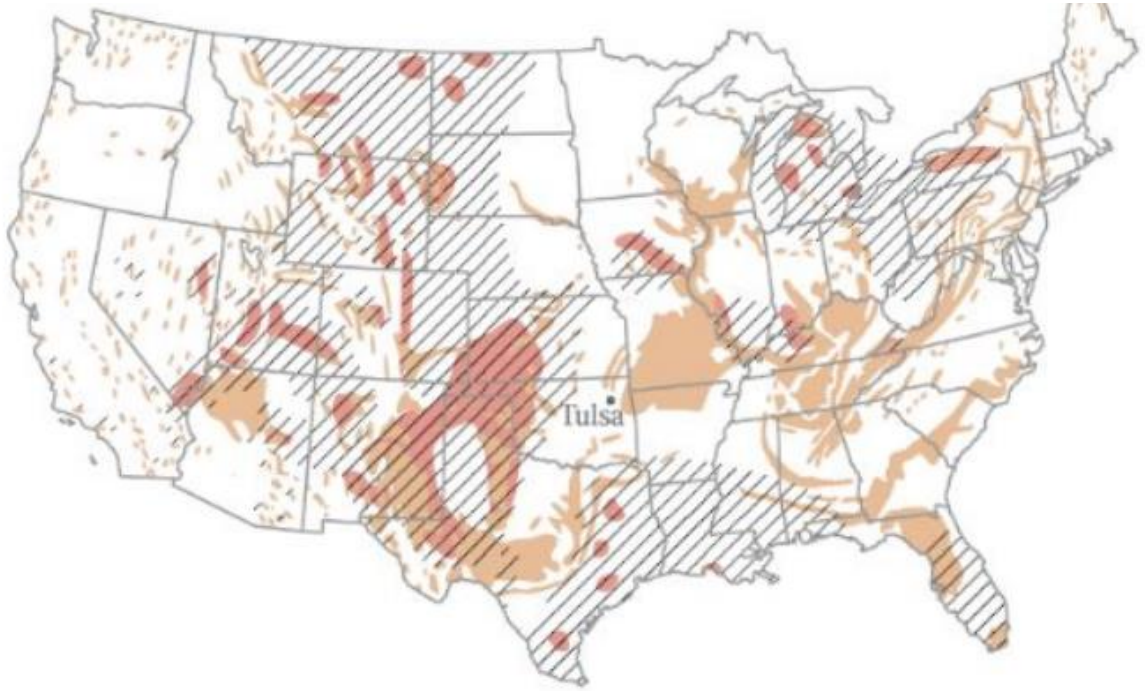


Figure 9. Salt and gypsum underlie about 40 percent of the contiguous United States. Carbonate karst landscapes constitute about 40 percent of the United States east of Tulsa, Oklahoma (White and others, 1995).

Evaporite rocks—salt and gypsum
Karst from evaporite rock
Karst from carbonate rock
(modified from Davies and Legrand, 1972

Land subsidence from groundwater pumping is the key element forgotten by sea level alarmists

From Geomorphology:

Emergent and drowning seashores:

Emergent Seashores from California and the West:

Drowned and drowning seashores: East and Gulf Coasts

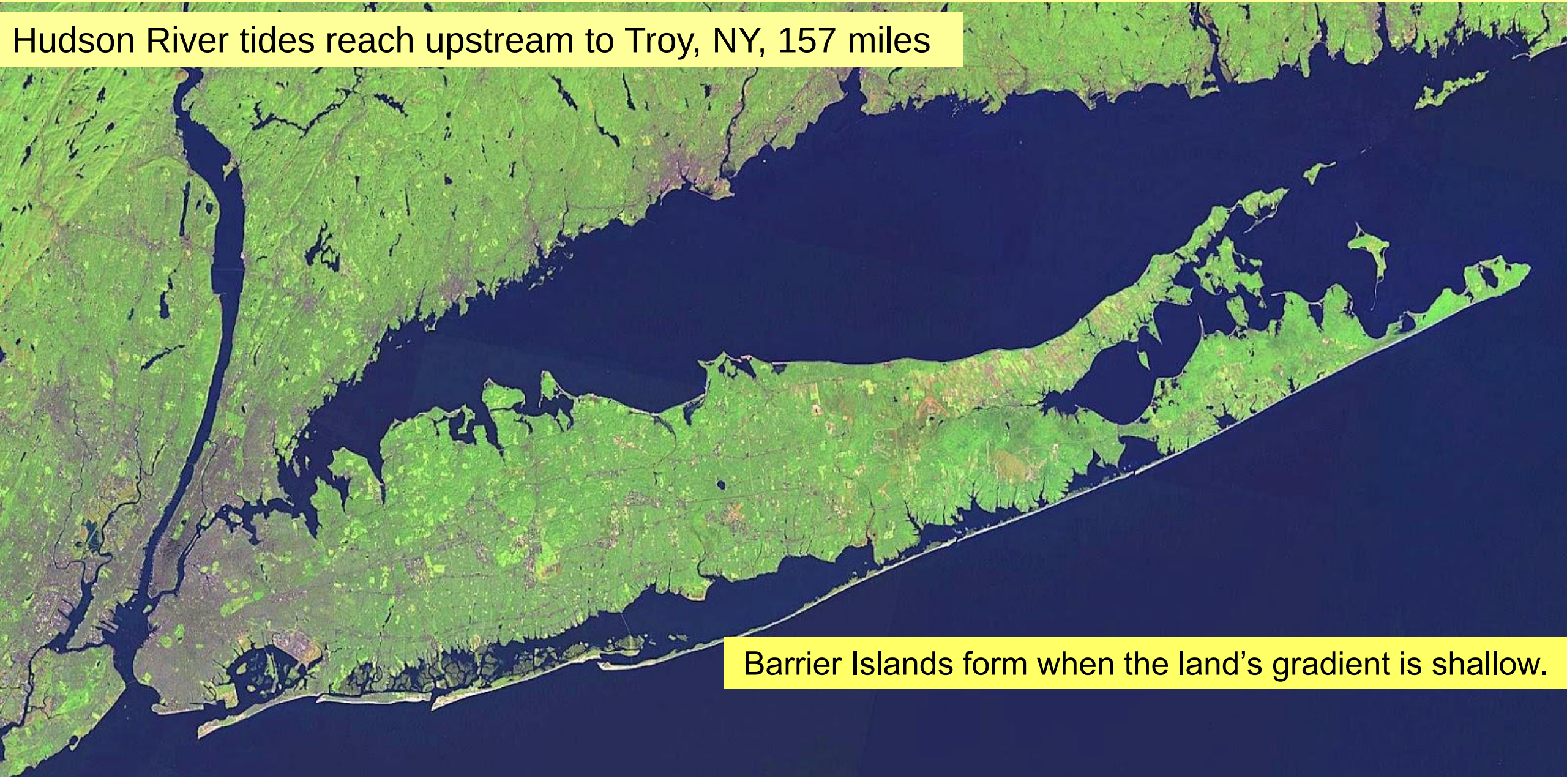
https://www.californiabeaches.com/best-beaches-in-san-diego/

Emergent Seashore:

Del Mar, CA, near San Diego, CA.

Satellite image of New York, New Jersey and Connecticut. Long Island was formed from outwash from the Wisconsin glacier melt. Drowned seashore and river.

Hudson River tides reach upstream to Troy, NY, 157 miles



Barrier Islands form when the land’s gradient is shallow.

http://www.monmouthbeachlife.com/sea-bright/shores-of-sea-bright/

Drowned River Valleys:

Top to bottom

Hudson River

Navesink River

Shrewsbury River

Land Features:

Manhattan (Skyscrapers)

Brooklyn-Rockaway Beach

Sandy Hook
<A Compound, Recurved Spit>

Navesink Highlands

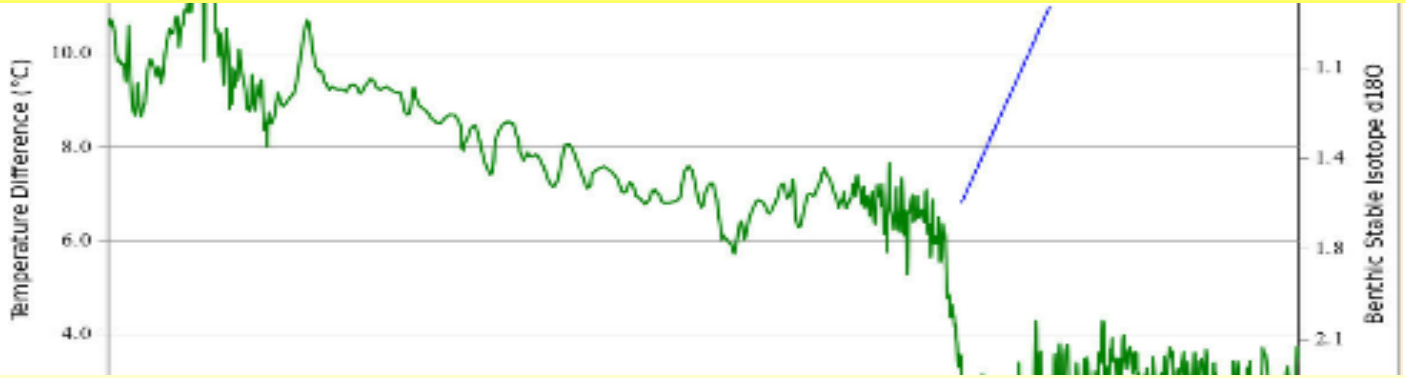
Rumson, Sea Bright
<latter on the barrier beach>

Some Important Geologic History, ~41 Million Years Ago, and Lesson from CASF in Jan, 2019:

Book Review:

John Kehr's

"The Inconvenient Skeptic"



Bob Endlich

bendlich@msn.com

Cruces Atmospheric Sciences Forum

19 Jan 2019

(It) Wasn’t (the) entire Earth cooling;
the real culprit: Antarctica starting to cool.

41 million years ago Antarctica was cold enough for snow and ice to form during winters.

Coincides with opening of Drake Passage between Antarctica - South America.

As Drake Passage became larger, it allowed formation of the Antarctic Circumpolar Current (ACC).

As ACC grew in strength, less warmth from Tropics reached Antarctica because ACC surrounded Antarctica.

Changing ocean currents resulted steady average cooling happening 34 to 41 million of years ago.

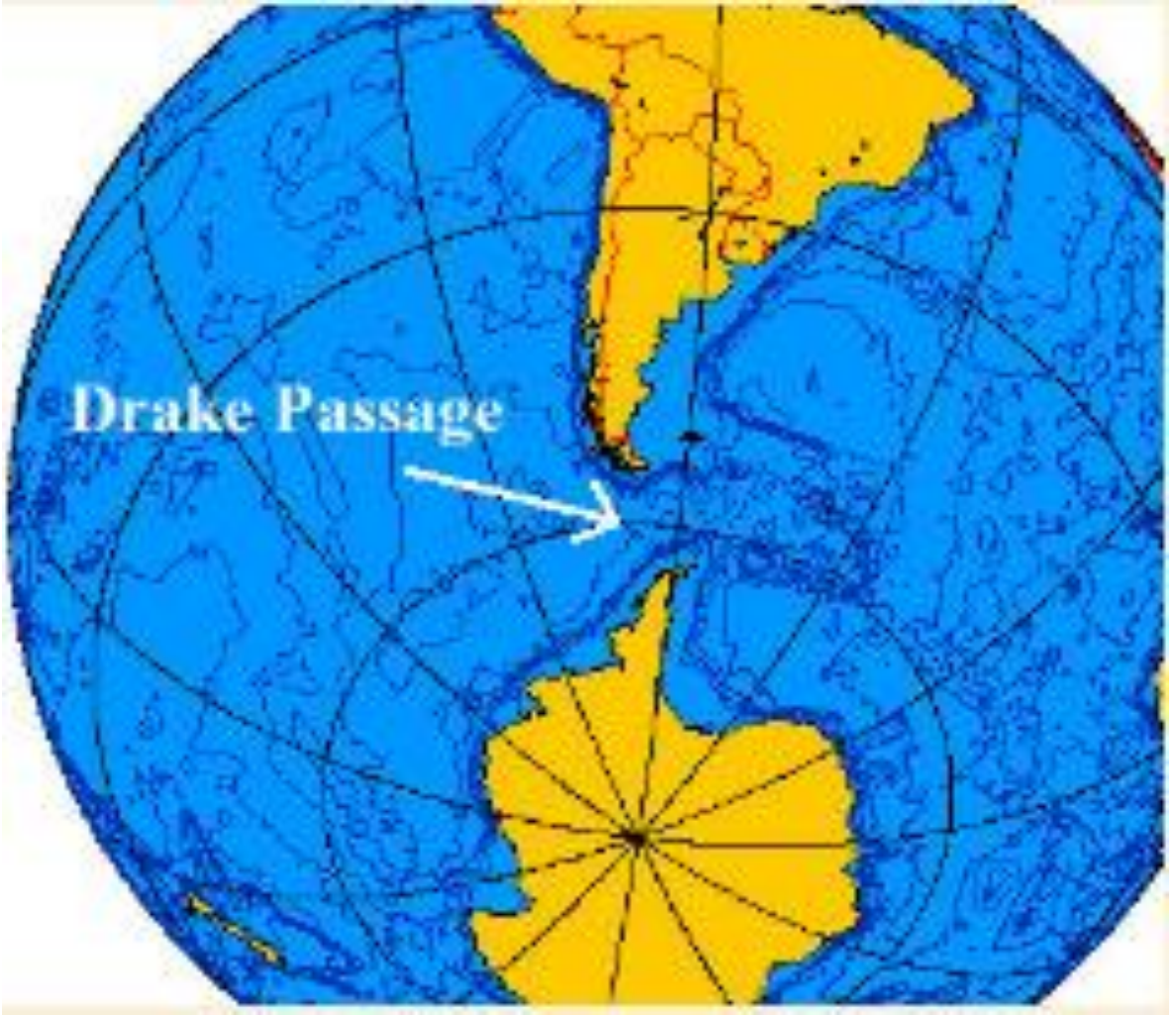
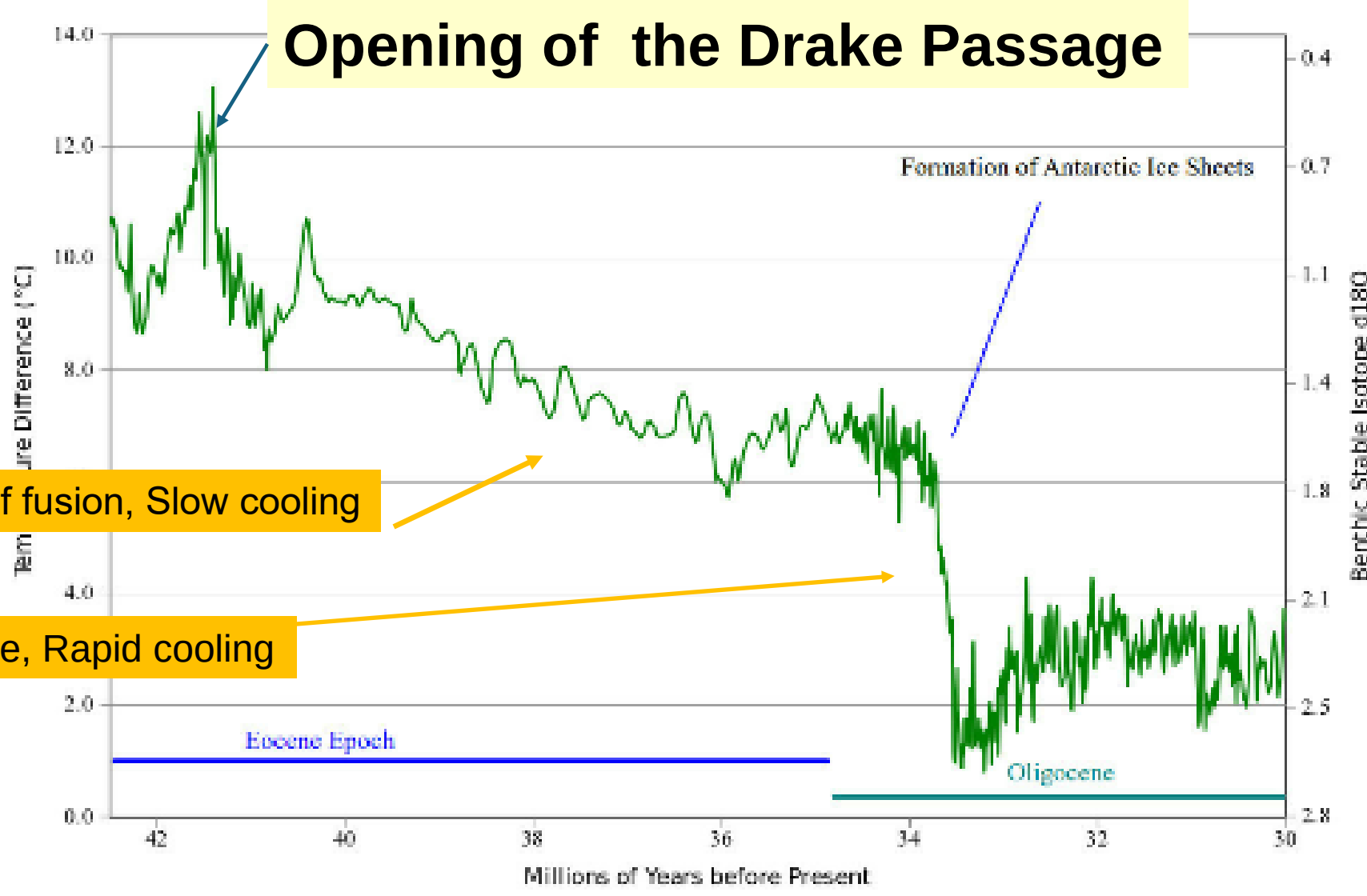


Illustration 16:
Drake Passage was closed in the early Cenozoic.
Opening of the passage altered the Earth's climate.

One author speculated that 42MY ago, Antarctica was like present day New Zealand.



Bob's Analysis: Losing the latent heat of fusion, Slow cooling

Once the water all froze, Rapid cooling

Illustration 17: Changing geography plays a major role in changes to the Earth's climate. (Zachos, 2008)

…while the average temperature of the Earth was decreasing, the average drop was caused by a large drop in temperature in Antarctica. The whole Earth was not getting cooler, Antarctica changed from what was likely a temperate place to a frigid wasteland.

I content these are important:

Before the Drake Passage Opened, ocean circulations were pole-to-equator-to-pole.

There were none of the Ice Sheets we now see associated with both polar regions.

It is cause and effect:

Plate Tectonics: Drake Passage opened, and then,

The Southern Ocean's currents then circled Antarctica, without having to cross the equator.

Global Cooling ensued.

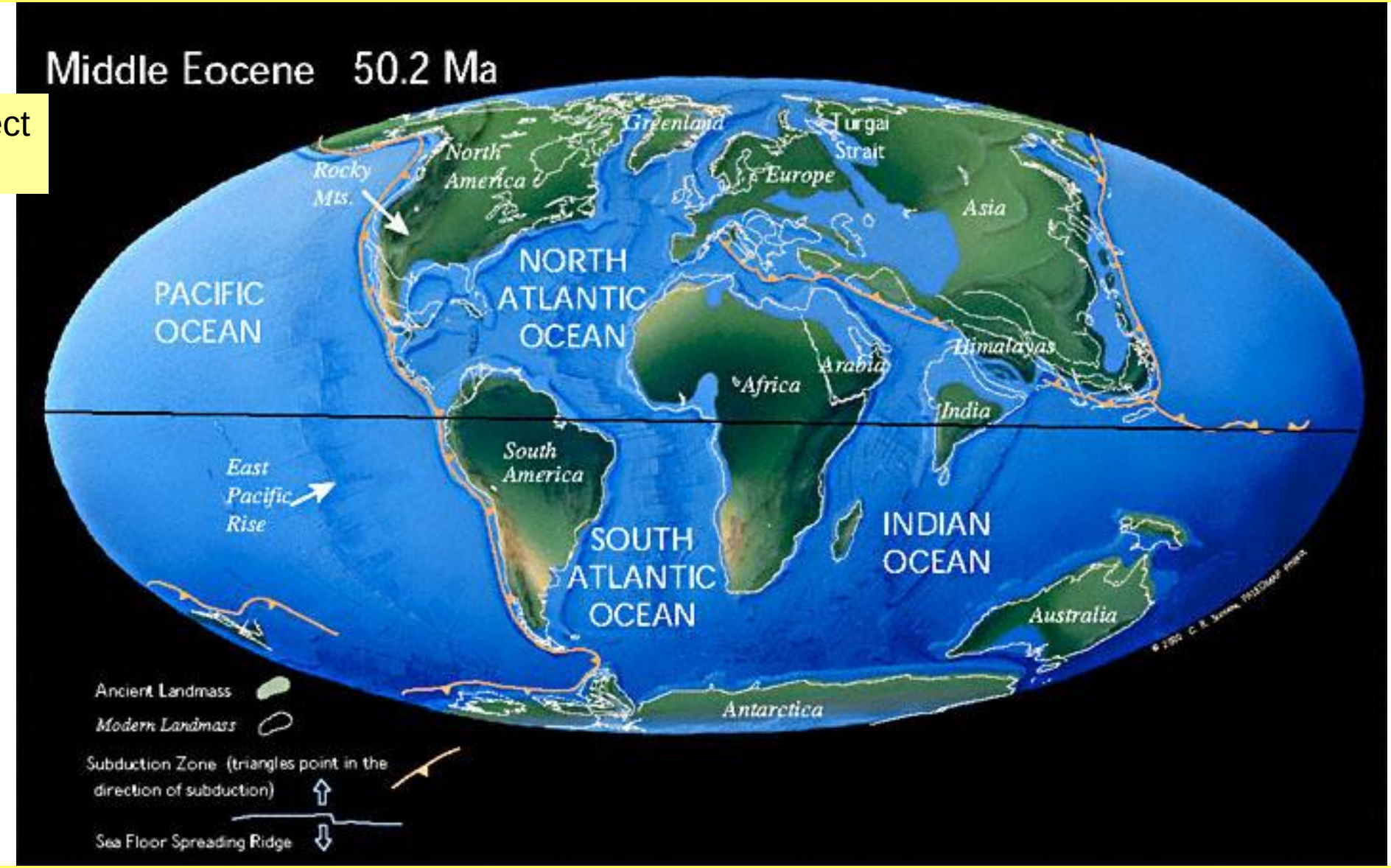
Antarctica cooled and became ice-covered during the Oligocene, ~30 million years ago

North Polar Ice Caps developed about 3M years ago.

https://www.geolsoc.org.uk/Education-and-Careers/Ask-a-Geologist/Earths-Climate/How-Long-has-Earth-had-Polar-Ice-Caps

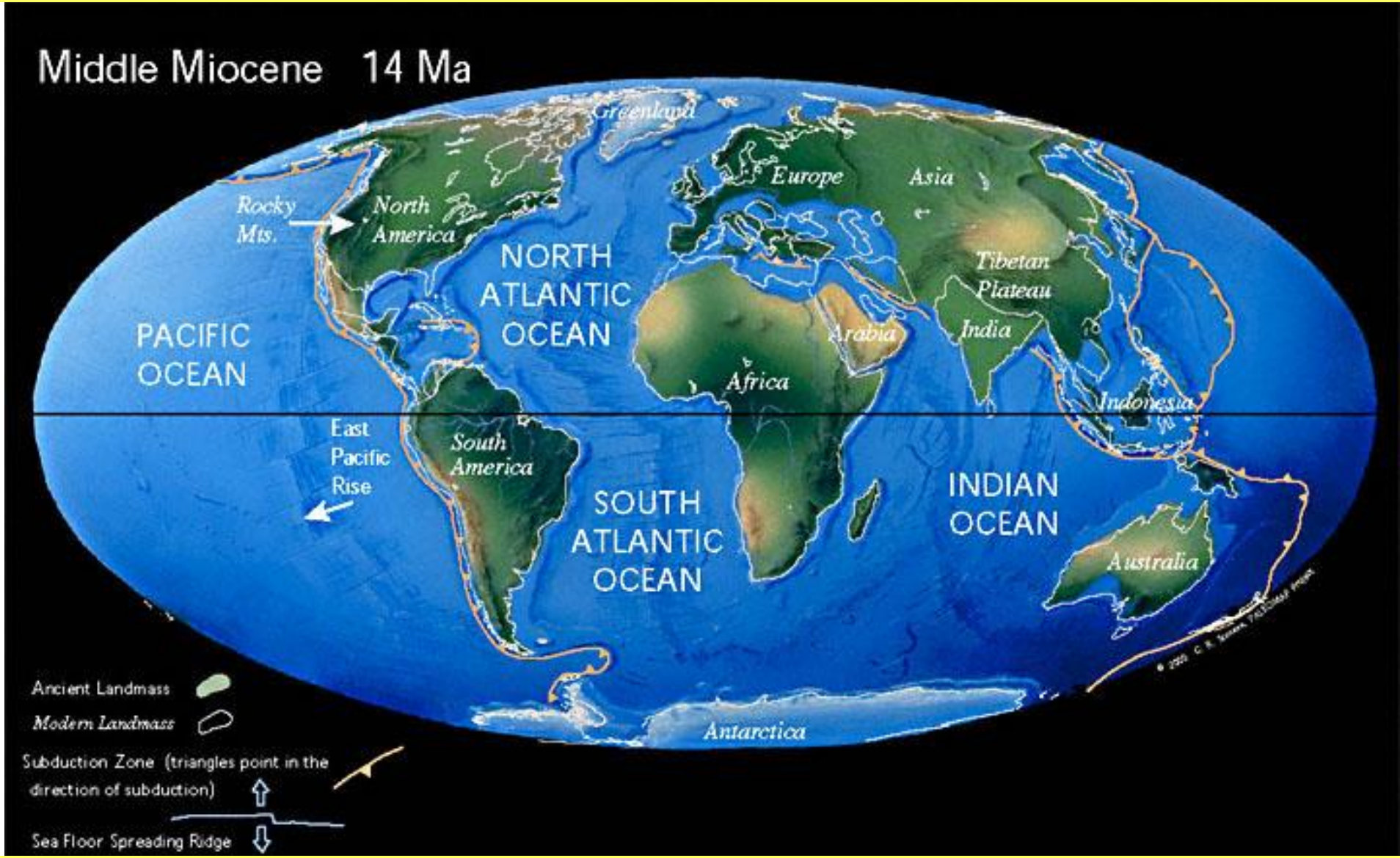
http://www.scotese.com/newpage9.htm

The Paleomap Project
<scotese.com>



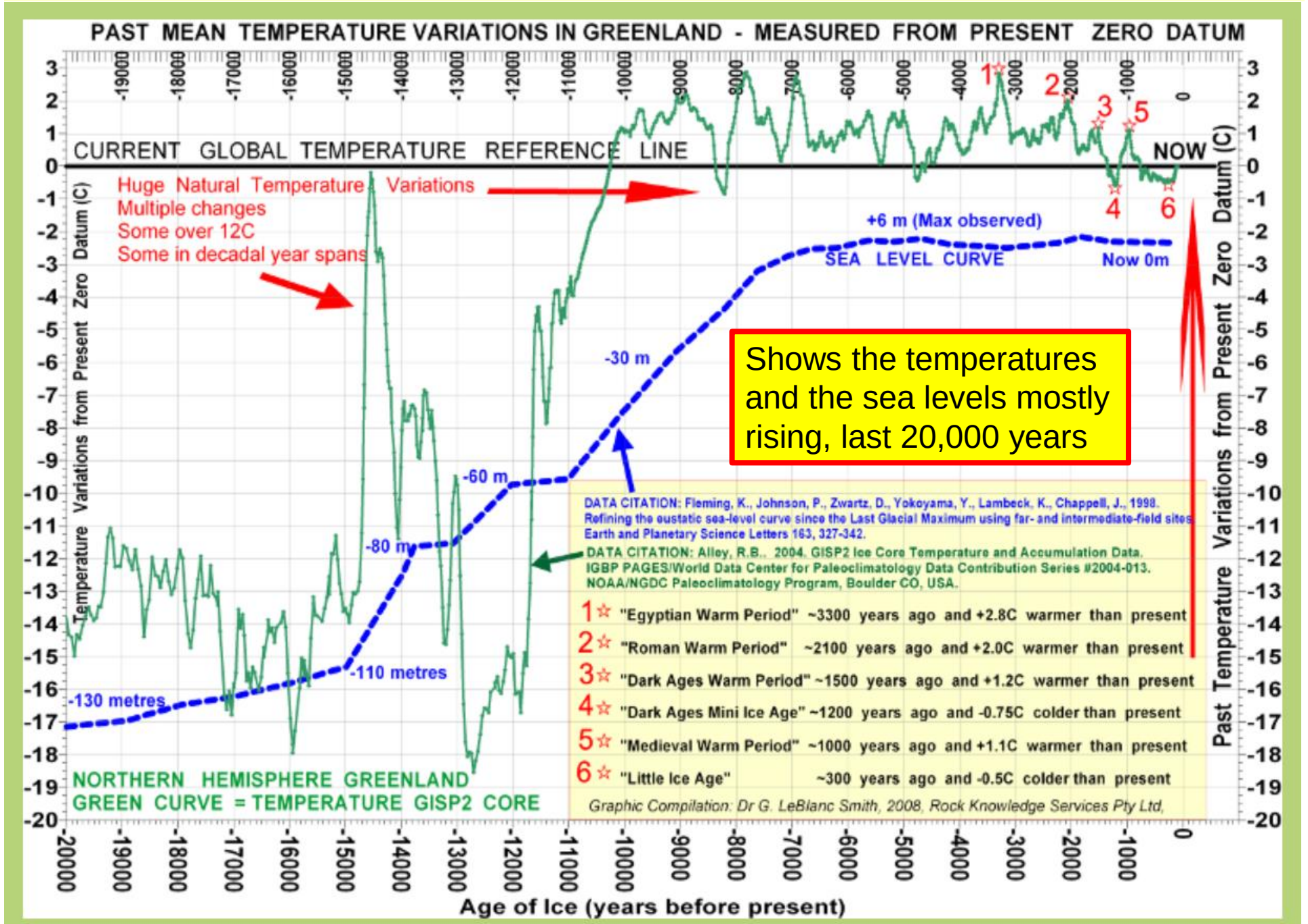
Scotese shows the Drake Passage still closed in the Middle Miocene, 50 million years BP. Antarctica was not ice-covered, nor was Greenland.

http://www.scotese.com/miocene.htm

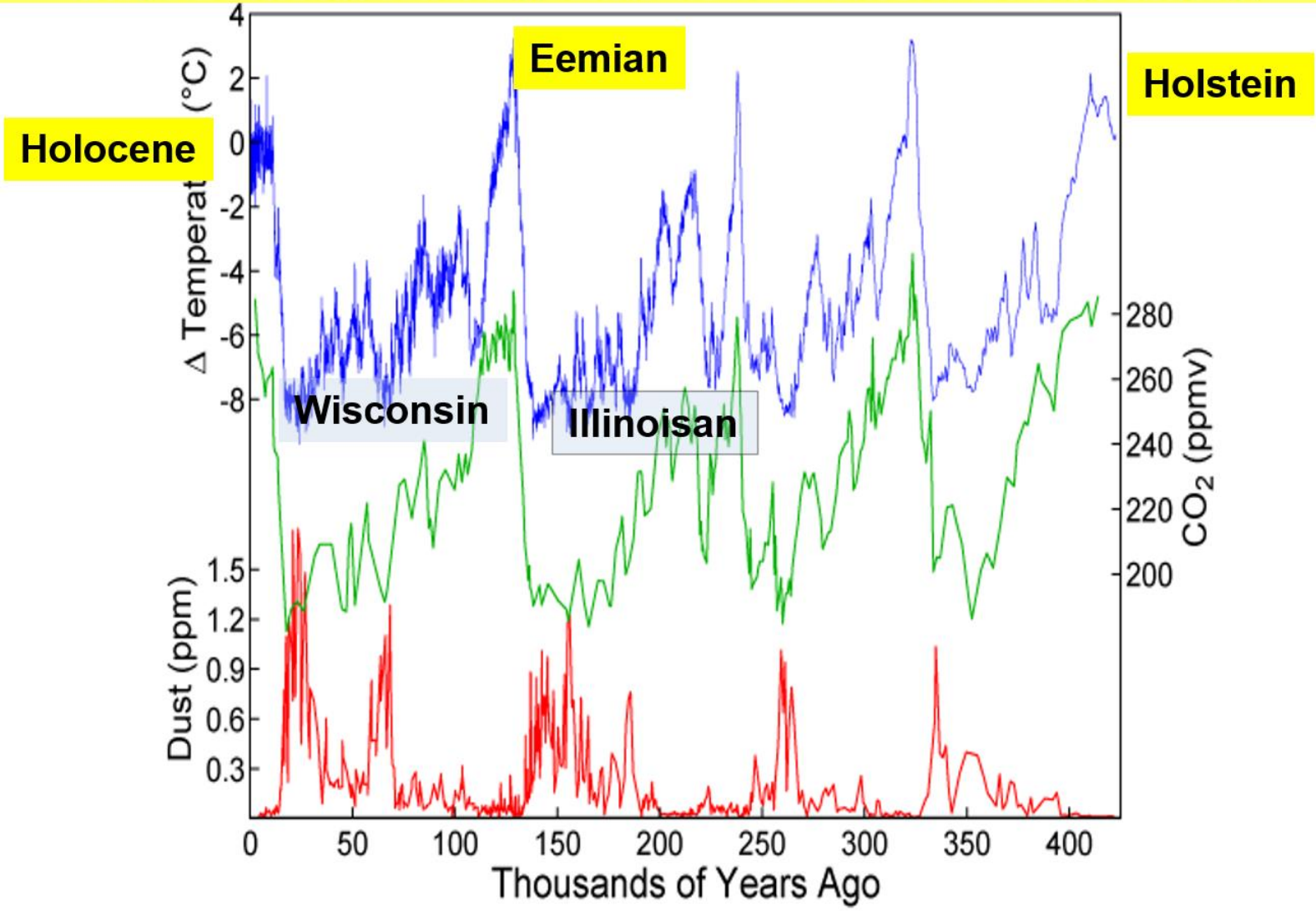


Paleomap for the Middle Miocene. The Southern Ocean circulated around Antarctica: Global Temperatures fell, and Antarctica and Greenland are shown Ice-Covered.

http://carbon-sense.com/category/the-evidence/



http://en.wikipedia.org/wiki/File:Vostok-ice-core-petit.png



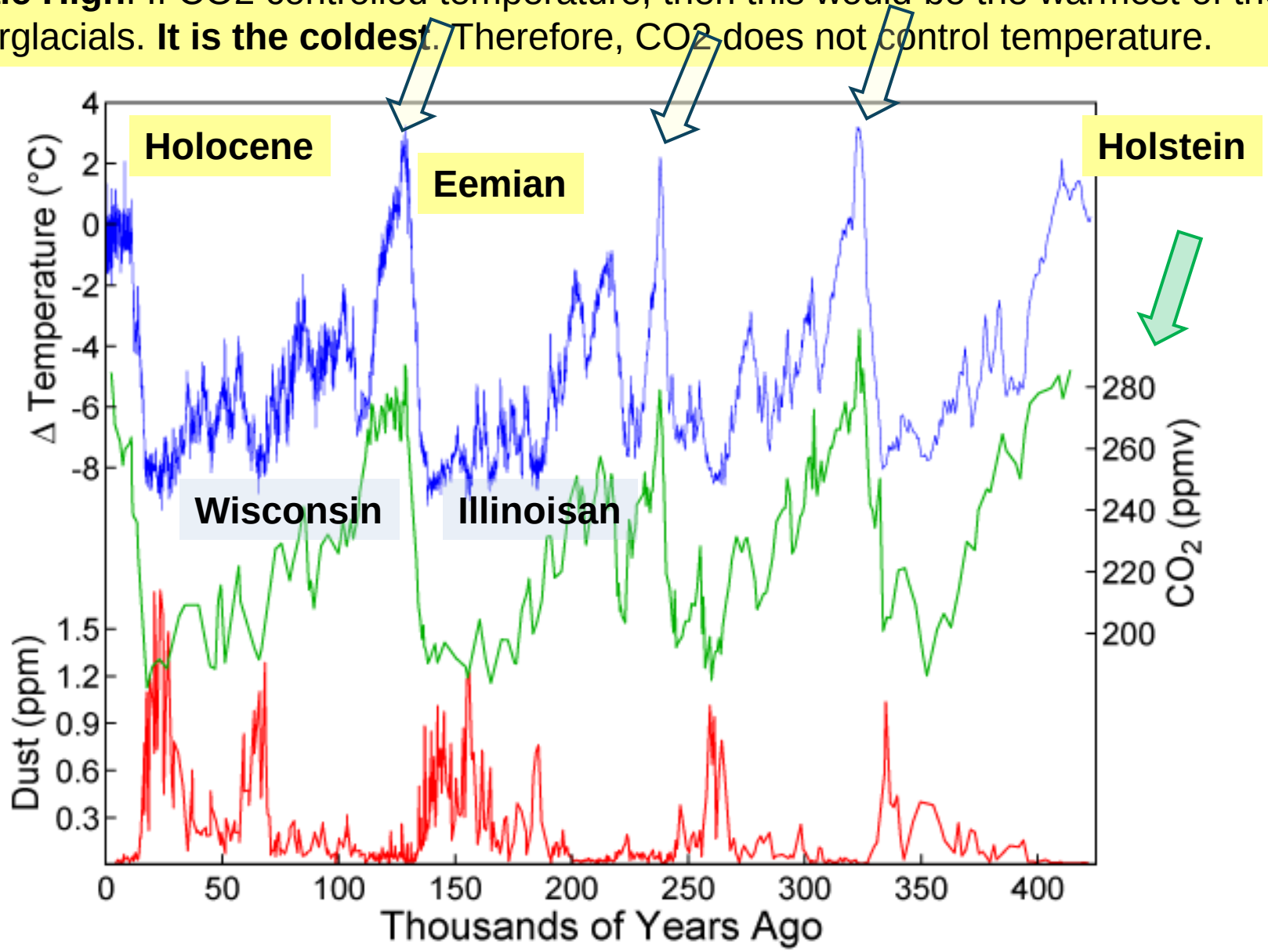
X-Axis Time Present Time, Left 450,000 years BP, Right

Y-Axis Blue Temperature difference "anomaly" from mean, last 10 K years

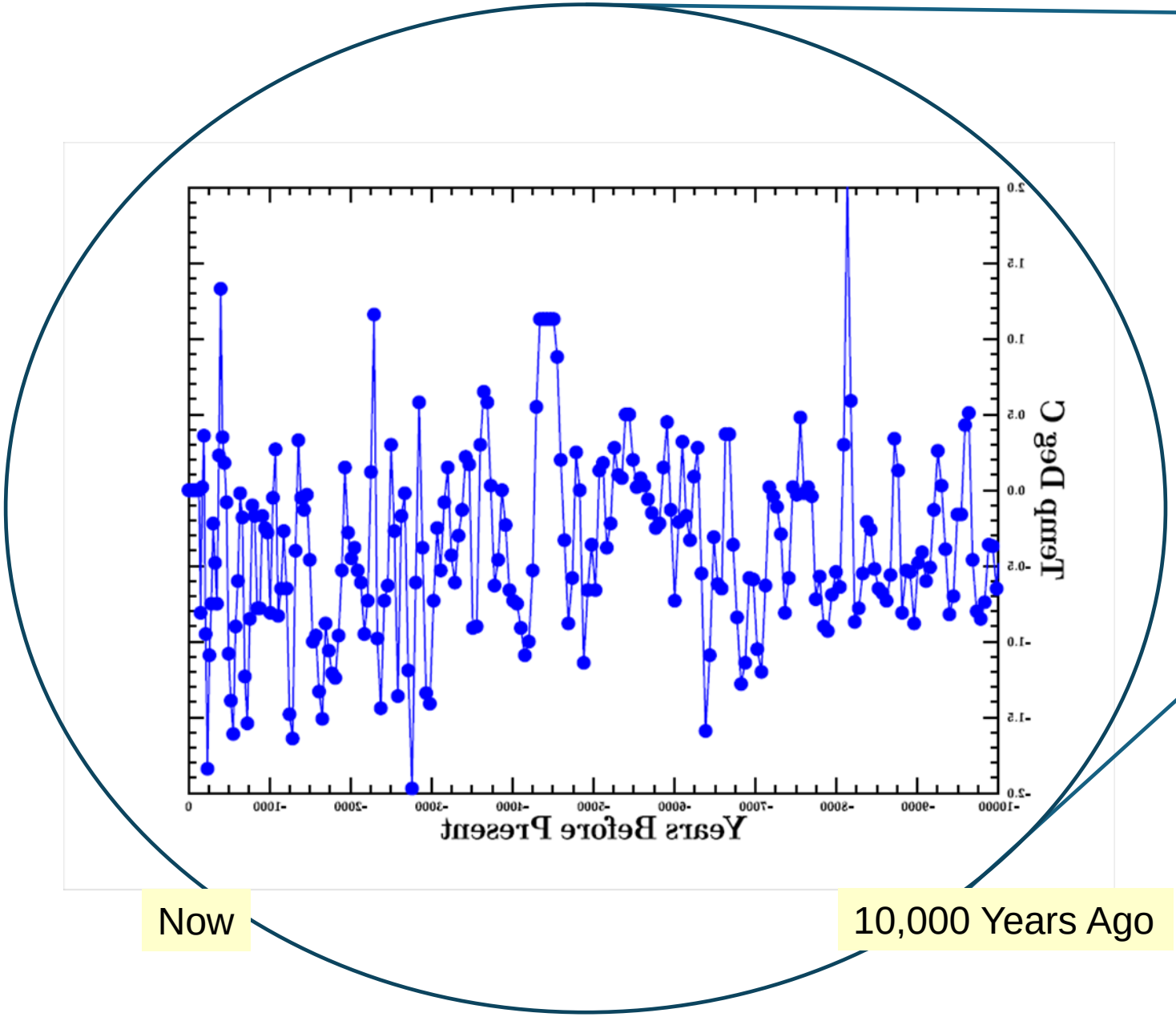
Y-Axis Green, Scale on Right atmospheric <CO2>

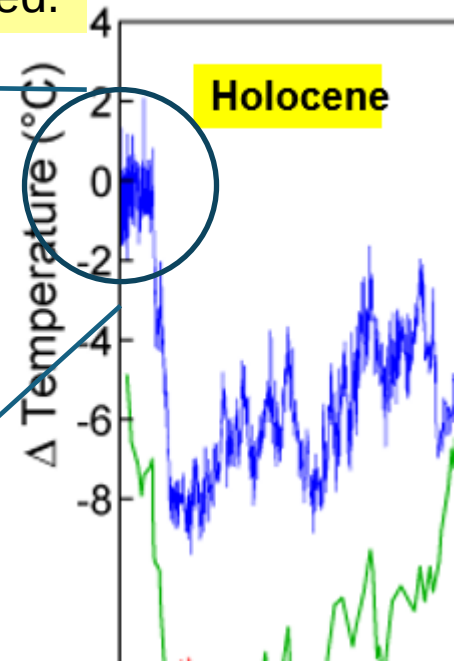
http://en.wikipedia.org/wiki/File:Vostok-ice-core-petit.png

Present <CO2> is ~424 PPM, which on the green CO2 scale on the right would be **Off Scale High**. If CO2 controlled temperature, then this would be the warmest of the five interglacials. **It is the coldest**. Therefore, CO2 does not control temperature.



Detailed view of Antarctic Temperatures plotted by Dave Tofsted. Next graphic shows plot flipped.





Now

10,000 Years Ago

Y-Axis Delta Temp Deg C.

X-Axis Years before Present.

Vostok Ice Core Temperatures from CDIAC, plotted by Dave Tofsted

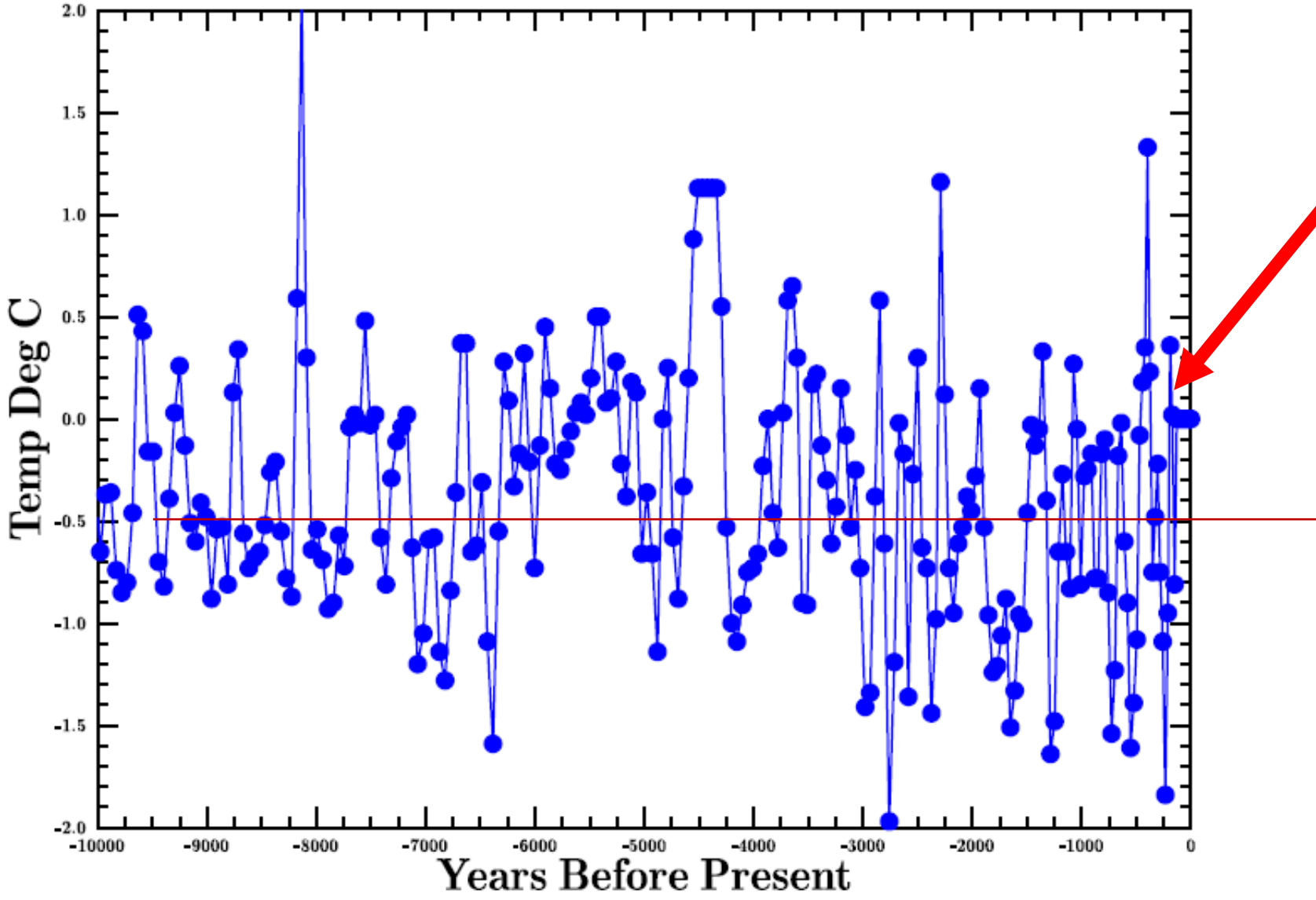
https://cdiac.ess-dive.lbl.gov/ftp/trends/temp/vostok/vostok.1999.temp.dat

Vostok ice core Temperatures showing the last 10,000 years.

It is difficult to see the justification for declarations of “climate crisis,” “climate emergency,” and “existential threat.”

The Alarmists claim that the present cycles of temperature change, indicated by the red arrow, are somehow evidence of “Human-Caused, CO2-fueled” Global warming.

Such notions are without foundation in the data.
The Alarmists are both wrong, and lack critical thinking skills.



Holocene temperatures from Ice Cores, the last 10,000 years.

Top graphic is from Greenland, GISP2 core, in Red

Bottom graphic is from Antarctica, Vostok core in Blue

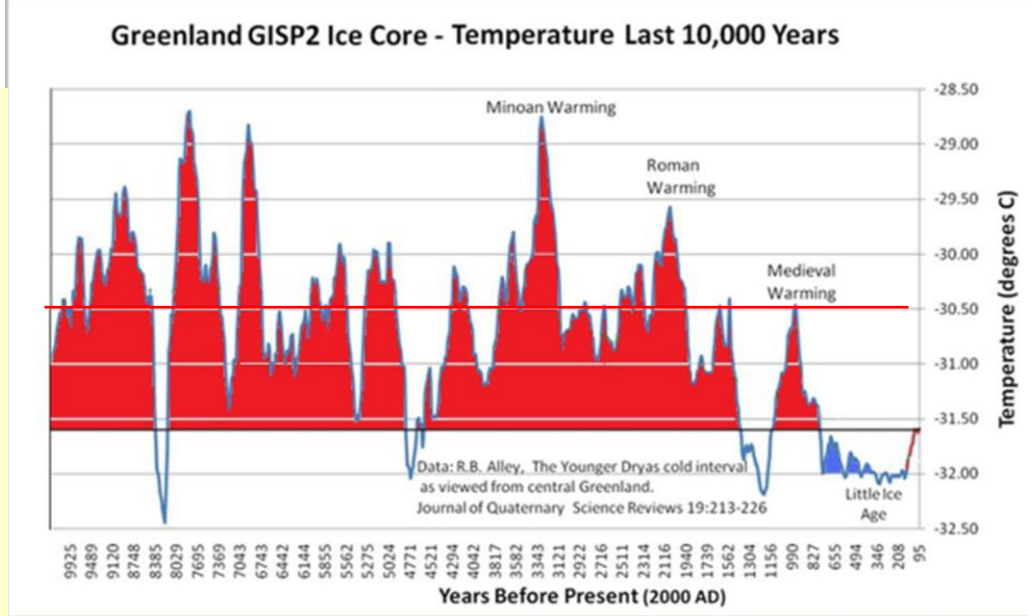
Red horizontal in GISP2 line is ice temp of -30.50C

Red horizontal line in Vostok Core, mean temperature, last 10K yrs

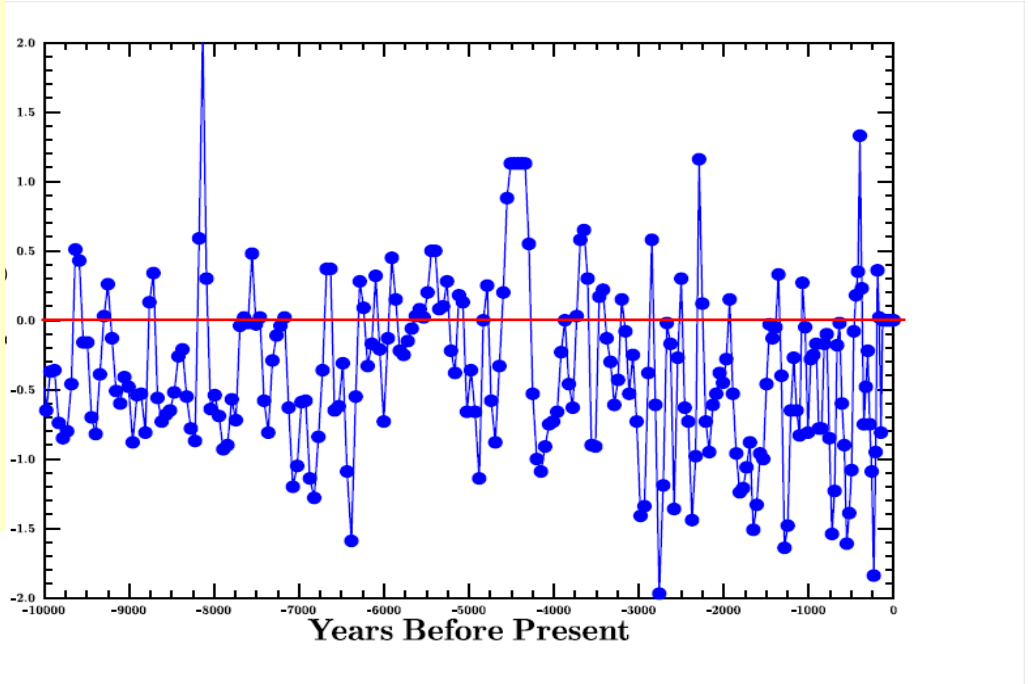
Both plots show a +/- 2C deviation from the mean.

Both plots show that a 1.5C rise from the Little Ice Age minimum is nothing to be concerned about, rather celebrated.

Data showing improvements as we warm from the Little Ice Age is in the section, ahead,
"…the human condition is improving. Rapidly."



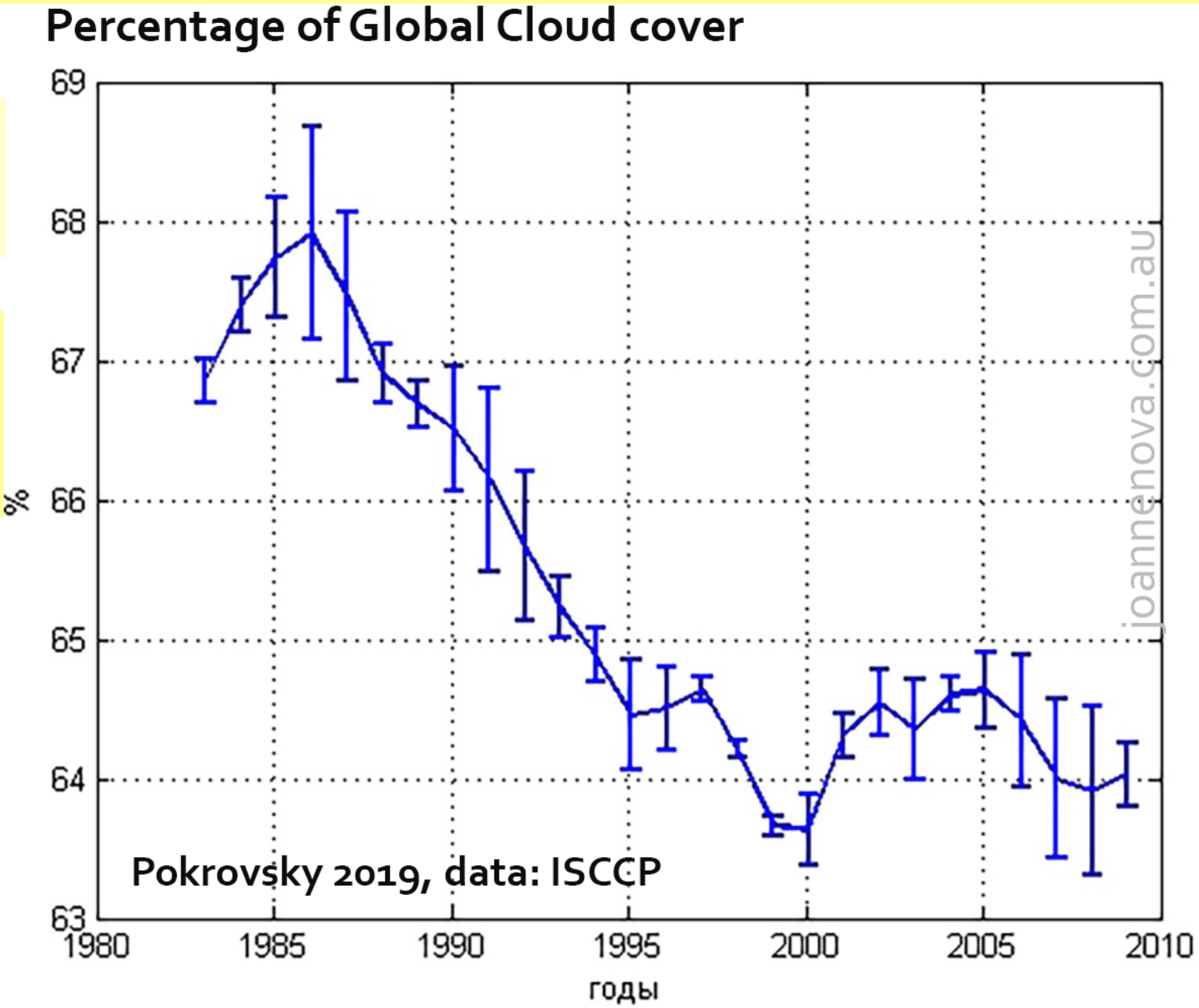
X-Axis, Time Oldest on Left, Present on Right
Y-Axis, Temperature from the O16/O18 ratio , Greenland GISP2 Ice Core
Coldest Down, Warmer Up.



http://joannenova.com.au/2019/11/new-study-settles-it-global-warming-and-the-pause-was-driven-by-changes-in-cloud-cover-not-co2/

Cloud cover vs temperature time series from Jo Nova I mentioned earlier.

This is a better explanation of recent temperature change than increasing <CO2> of which the Alarmists decry.

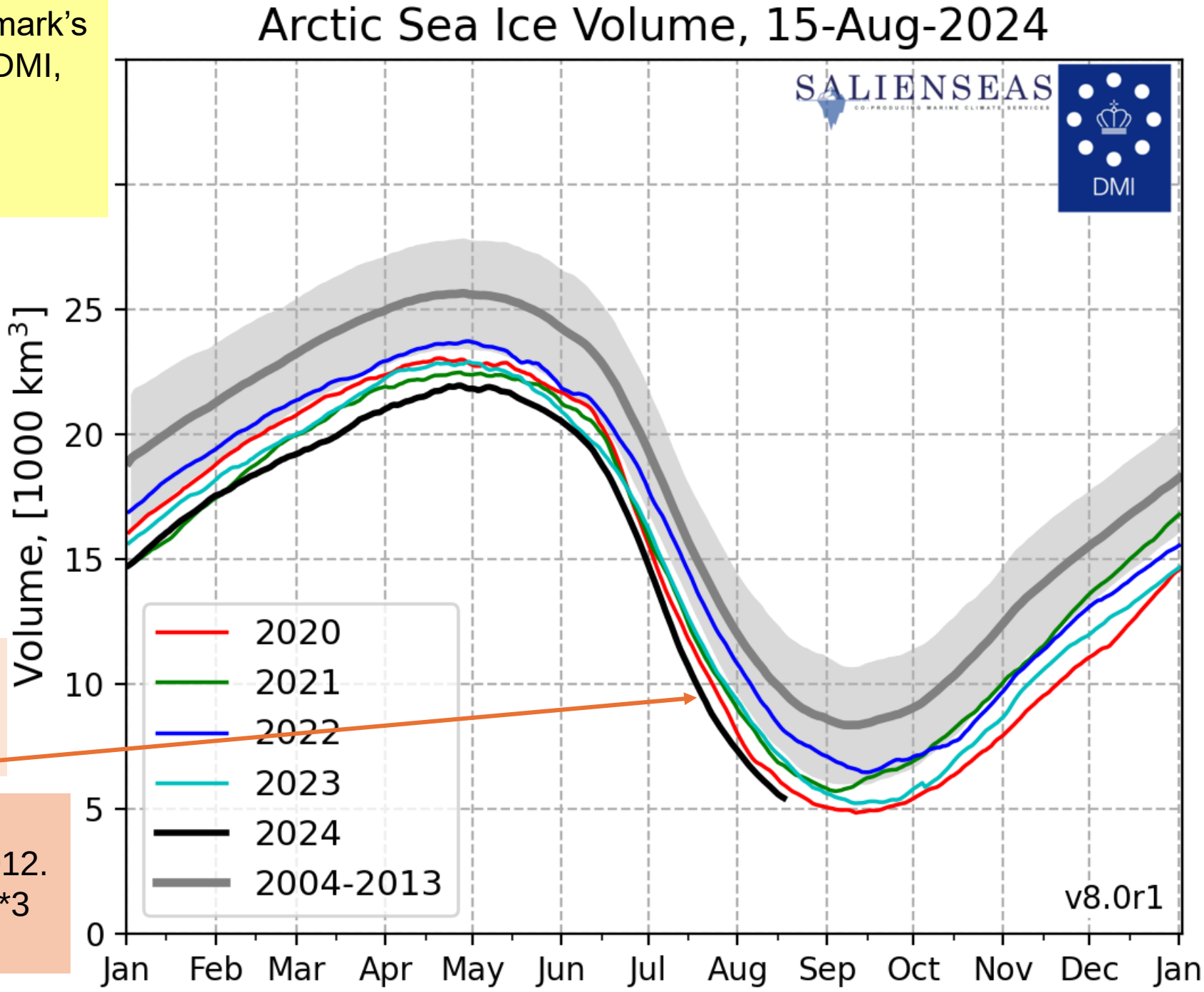


Planetary Ice Sheets

Greenland, Arctic

Arctic Sea Ice Volume from Denmark's Danish Meteorological Institute, DMI, The Polar Portal
http://polarportal.dk/en/home/

http://polarportal.dk/fileadmin/polarportal/sea/CICE_curve_thick_LA_EN_20240815.png

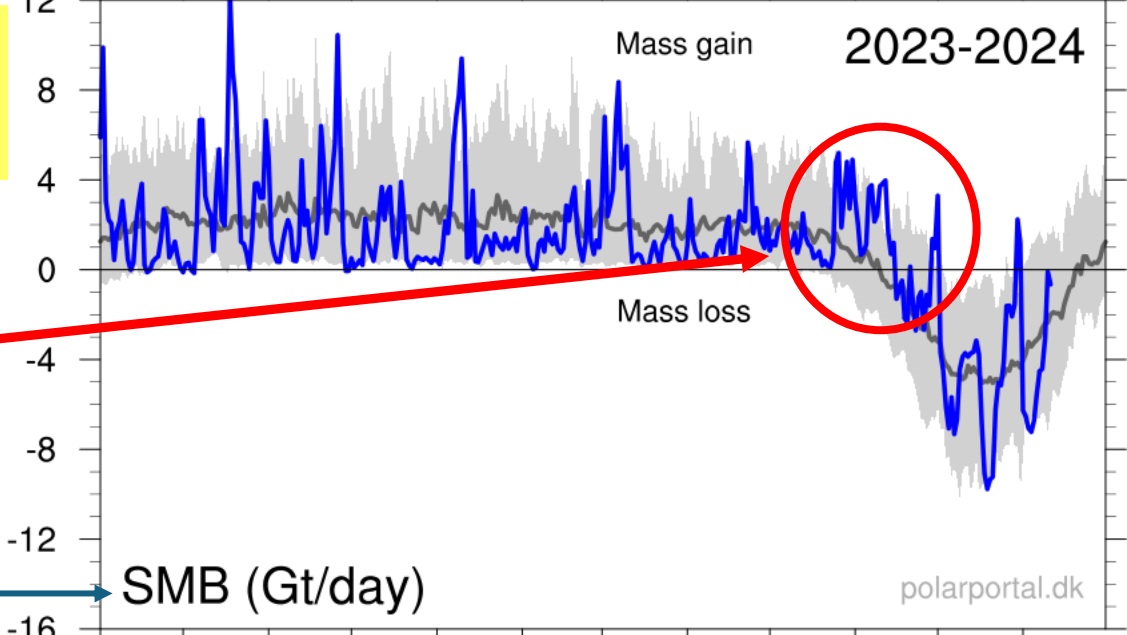


This does not look like NPR's *"…rapidly melting ice at the poles…"*

Al Gore, others, predicted the end of Summer Polar Ice by ~2012. They were off by only 5,000 km**3 of ice volume.

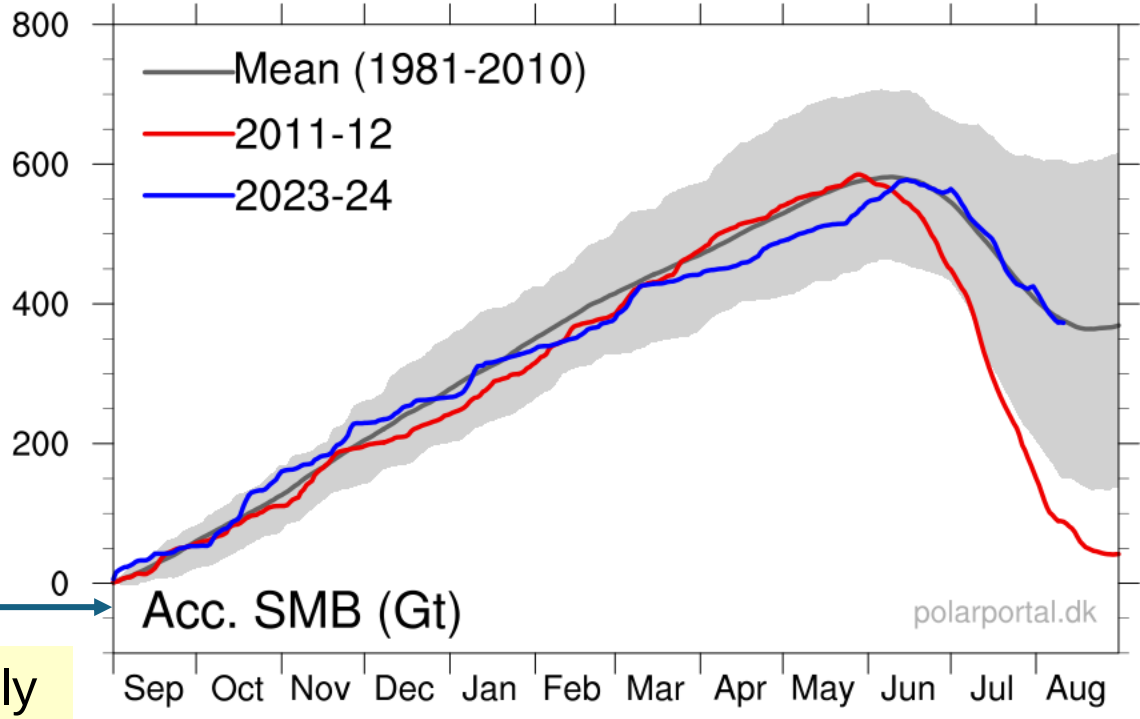
http://polarportal.dk/fileadmin/polarportal/surface/SMB_curves_LA_EN_20240811.png

There was unusual surface mass balance accumulation at and near the Summer Solstice for this time of year



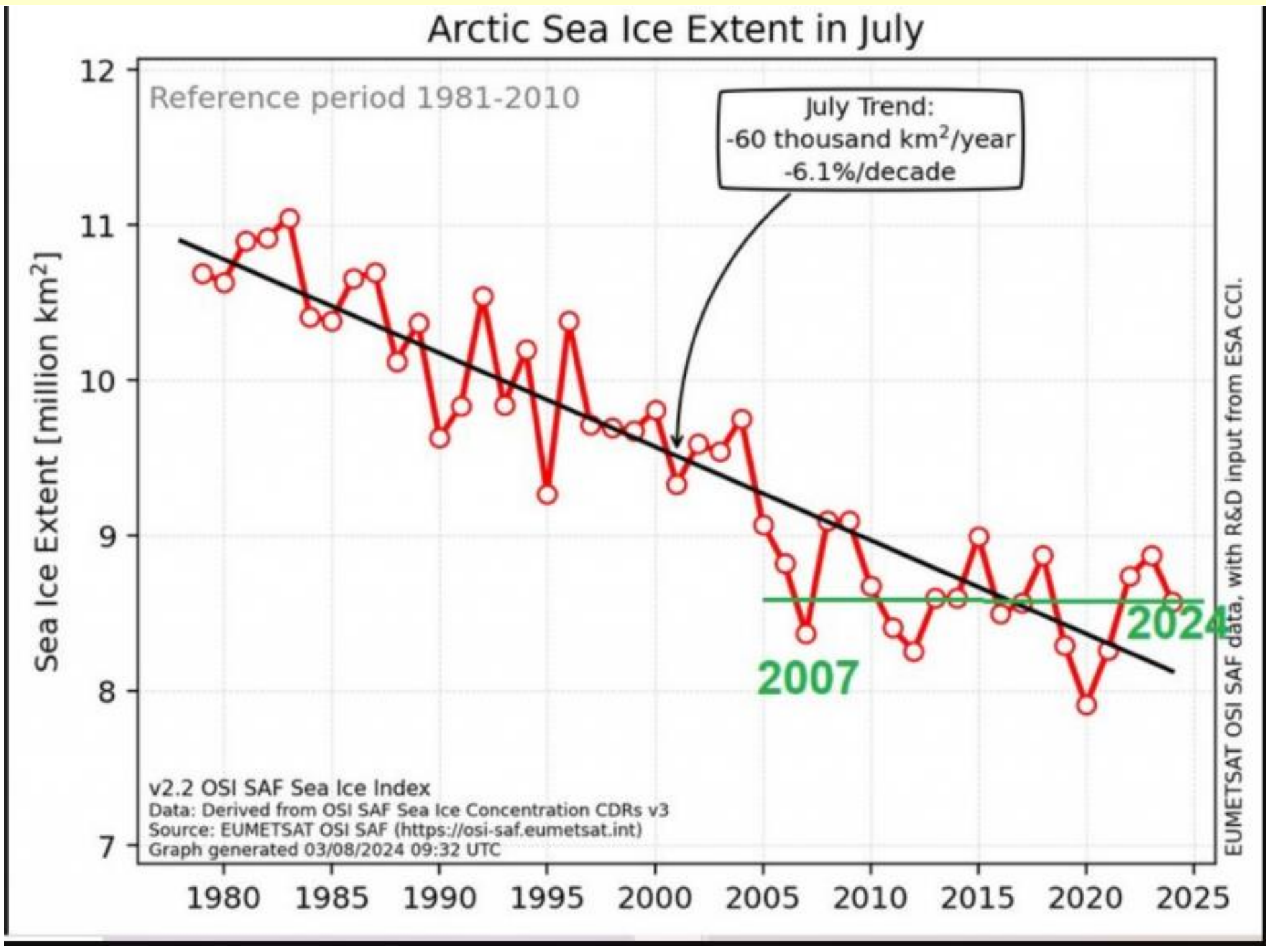
Surface Mass Balance

"The difference between snowfall and runoff is known as the SURFACE mass balance. It is always positive over the course of a year as not all fallen snow runs off the ice sheet…"
<edited for clarity>



Accumulated Surface Mass Balance

Accumulated Surface Mass Balance Year starts 1 Sep annually


Arctic Sea Ice Extent in July
Reference period 1981-2010
July Trend:
-60 thousand km²/year
-6.1%/decade
Sea Ice Extent [million km²]
12
11
10
9
8
7
1980
1985
1990
1995
2000
2005
2010
2015
2020
2025
2007
2024
v2.2 OSI SAF Sea Ice Index
Data: Derived from OSI SAF Sea Ice Concentration CDRs v3
Source: EUMETSAT OSI SAF (https://osi-saf.eumetsat.int)
Graph generated 03/08/2024 09:32 UTC
EUMETSAT OSI SAF data, with R&D input from ESA CCI.

Arctic Sea Ice Yearly Minimum

September 1979-2023

https://www.climate.gov/news-features/understanding-climate/climate-change-incoming-sunlight

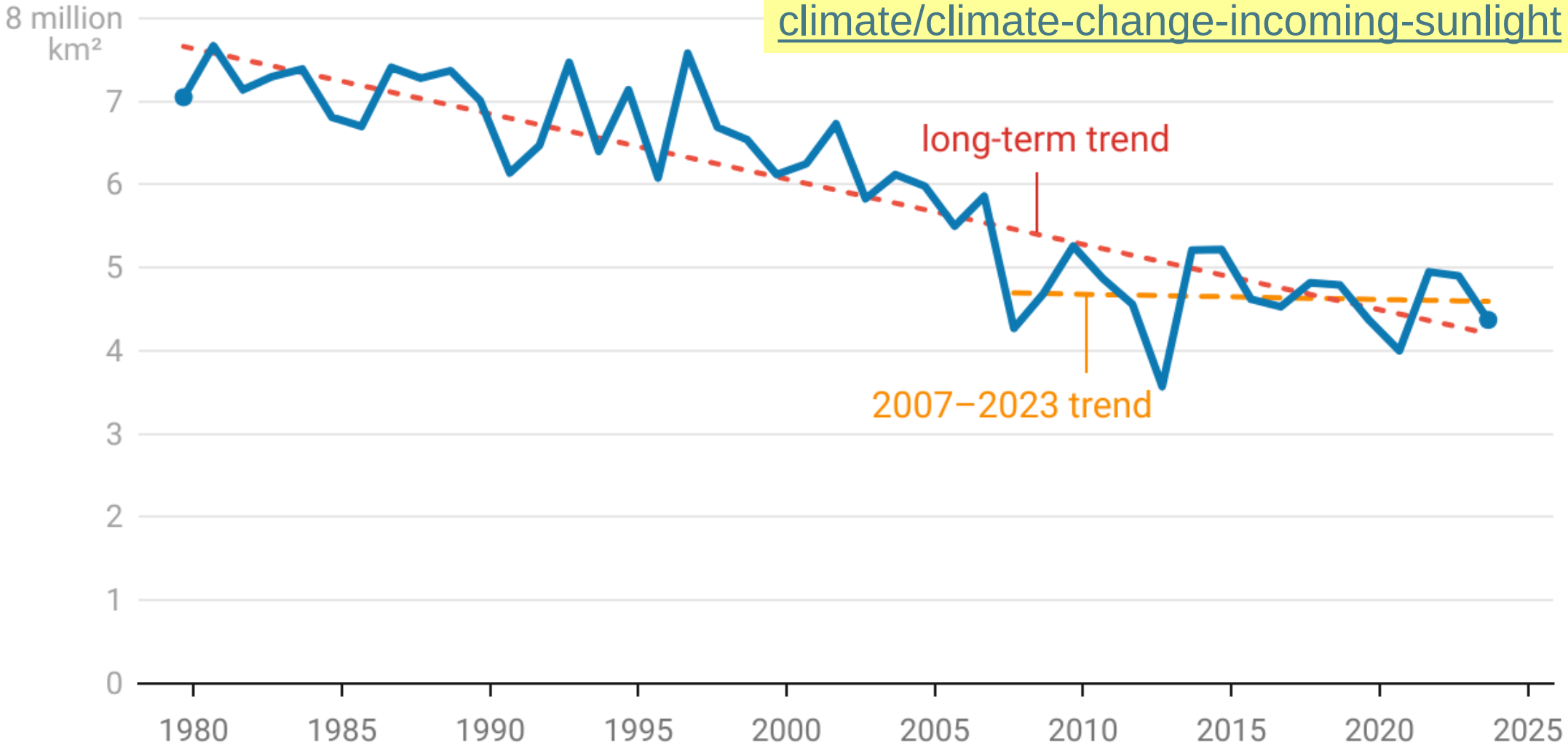


Chart: NOAA Climate.gov • Source: NSIDC • Created with Datawrapper

https://notrickszone.com/2024/07/18/arctic-sea-ice-choke-points-reducing-nw-passage-shipping-season-length-by-5-14-weeks-since-2007/

Browse: Home / 2024 / July / 18 / Arctic Sea Ice 'Choke Points' Reducing NW Passage Shipping Season Length By 5-14 Weeks Since 2007

Arctic Sea Ice 'Choke Points' Reducing NW Passage Shipping Season Length By 5-14 Weeks Since 2007

By Kenneth Richard on 18. July 2024

Global warming was supposed to open up Arctic region shipping routes, making the Northwest Passage easier and less risky to traverse. Per a new study, the opposite has happened.

As we reported earlier this year, while a declining trend in Arctic sea ice was observed from the 1990s to 2007, there has been no trend reduction in Arctic sea ice since then. A 17-year pause.

Planetary Ice Sheets

Antarctica

These are a series of stories and references showing that the Antarctic seems to have been a lot warmer than today in the recent past, and that claims of extremely WARM conditions now are belied by recent measurements.

https://realclimatescience.com/2015/11/west-antarctic-ice-sheet-was-rapidly-melting-in-1948/#gsc.tab=0

20 May 1948

Reports of Antarctic Ice melt, which NPR ascribes to recent human CO2 emissions are not new at all, if you look at old Newspaper articles.

The Bend Bulletin (Bend, Oregon) • 20 May 1948, Thu

By Sigmund Mathiesen
(United Press Staff Correspondent)

Oslo (UP)—A remarkable thinning out of the polar ice cap in the Antartic is reported by a Norwegian expedition which found bare stretches of earth on an island thickly covered with ice only 20 years ago.

The news was brought back to Norway by an expedition which came into the news some months ago when its research vessel, the Brattegg, was intercepted by Argentine authorities near Deception island. The ship was refused permission to operate in what were declared to be Argentine waters.

Capt. Nils Larsen of the Brattegg said on the return of his ship to the important whaling town of Sandefjord, at the outlet of the Oslo fjord, that the Deception island incident had been exaggerated. He said his contacts with the Argentines had been on the friendliest footing.

Several nations, including the United States and Great Britain, are interested in the area, which is [illegible] to contain valuable mineral resources, possibly including uranium.

Evidence Presented

The scientific head of the expedition, Holger Holgersen, said the Brattegg had evidence of climatic changes in the South Pole region similar to those reported from Arctic waters. The evidence was gathered in extensive surveys of the Bellinghausen sea, the Ameundsen sea and on Peter I island, over which Norway has claimed sovereignty since Capt. Larsen first landed there in 1929.

Holgersen said observations on Peter I island showed that many glaciers had been considerably reduced since 1929. Many places which were covered with snow and ice at that time are now bare. He added that the evidence of a softening in the polar climate was confirmed by a southward movement in the border between the tropic and the polar water.

The expedition, he said, took thousands of observations at oceanographic stations and brought back thousands of samples of water, plankton (minute marine life) and polar fish for study by Norwegian experts.

Bulletin Classifieds bring results.

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Bulletin Classifieds bring results.

"…The Ross Ice Shelf in West Antarctica retreated 30 miles from 1840 to 1930, about five feet per day. The retreat "may have been going on for centuries"

21 July 1932

https://trove.nla.gov.au/newspaper/article/23150667

Trove…
is the name of Australia's on-line newspaper archive.

The Queenslander (Brisbane, Qld. : 1866 - 1939) (about) Thursday 21 July 1932

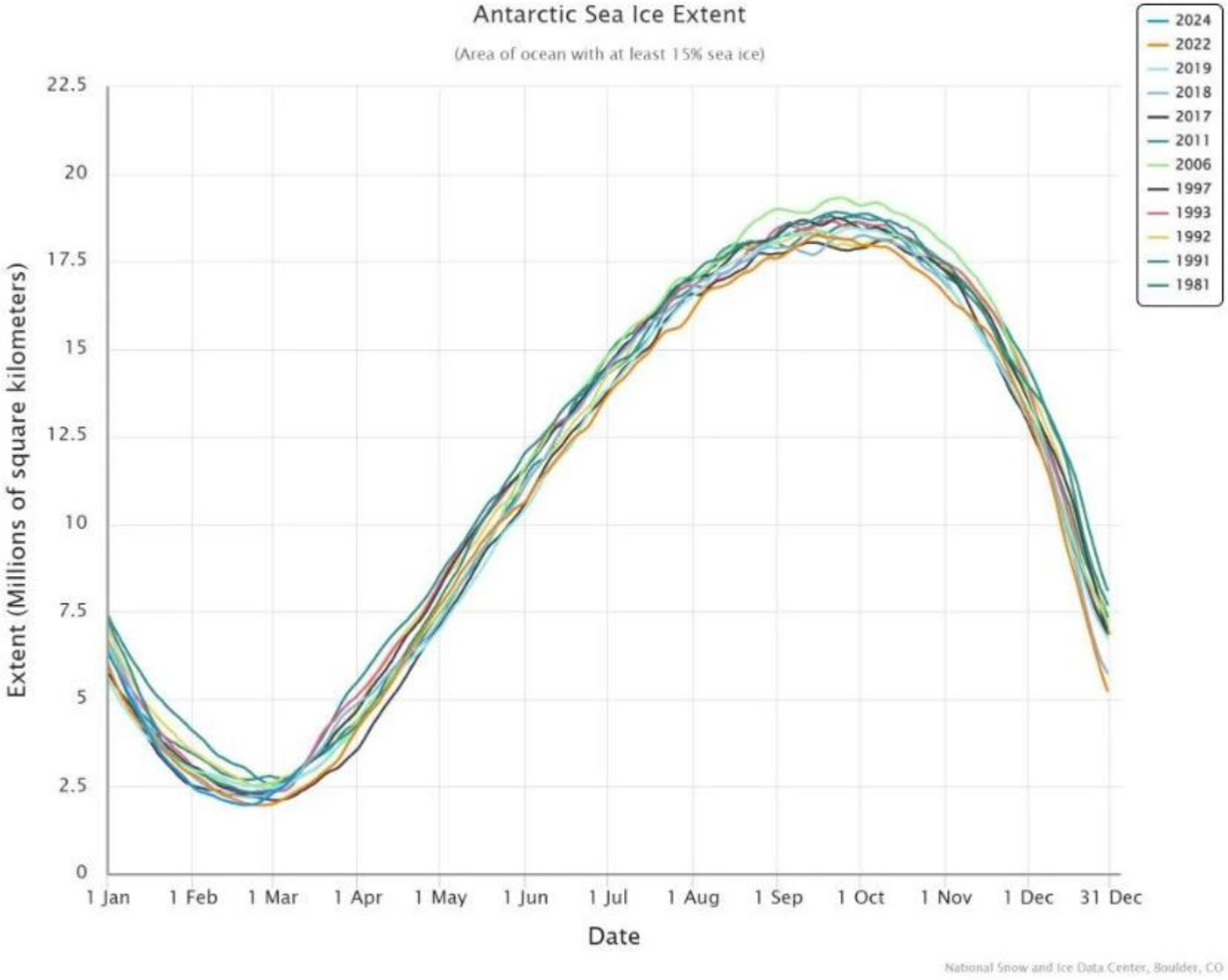
A Warmer World.

SOME great world change is taking place on the Antarctic Continent. Its glaciers are shrinking. Commander L. A. Bernacchi, who visited the South Polar land 30 years ago, says that the Great Ice Barrier which fronts the continent with a wall of ice for 250 miles has receded at least 30 miles since it was first seen and surveyed.

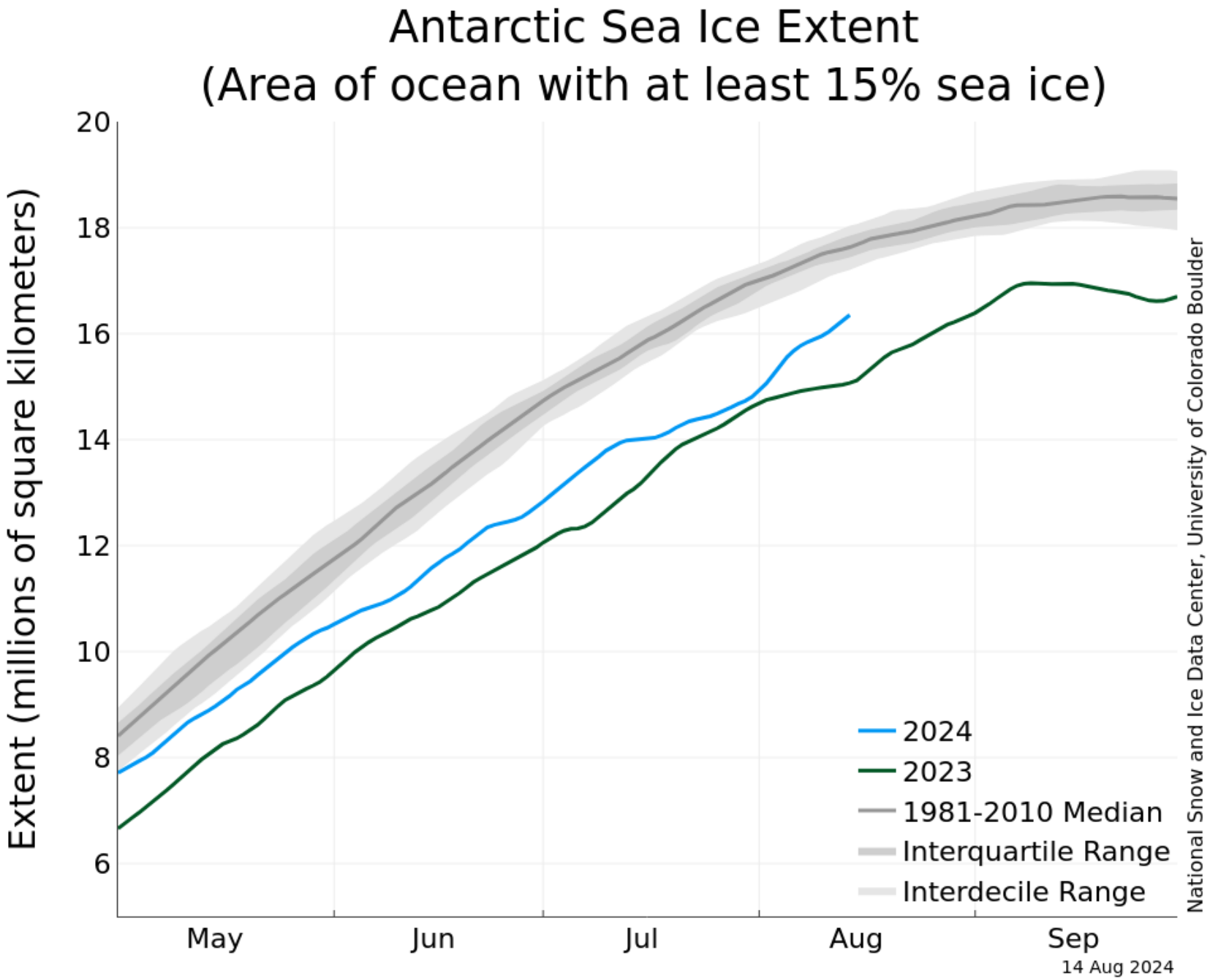
Sir James Ross, who went out on the earliest Antarctic expedition of the nineteenth century, and those who followed him, left clear descriptions of this tremendous ice frontage and its position. It was a cliff 150ft. high and 1000ft. thick. But now it appears to be continuing its century-long process of shrinking; and that process may have been going on for centuries.

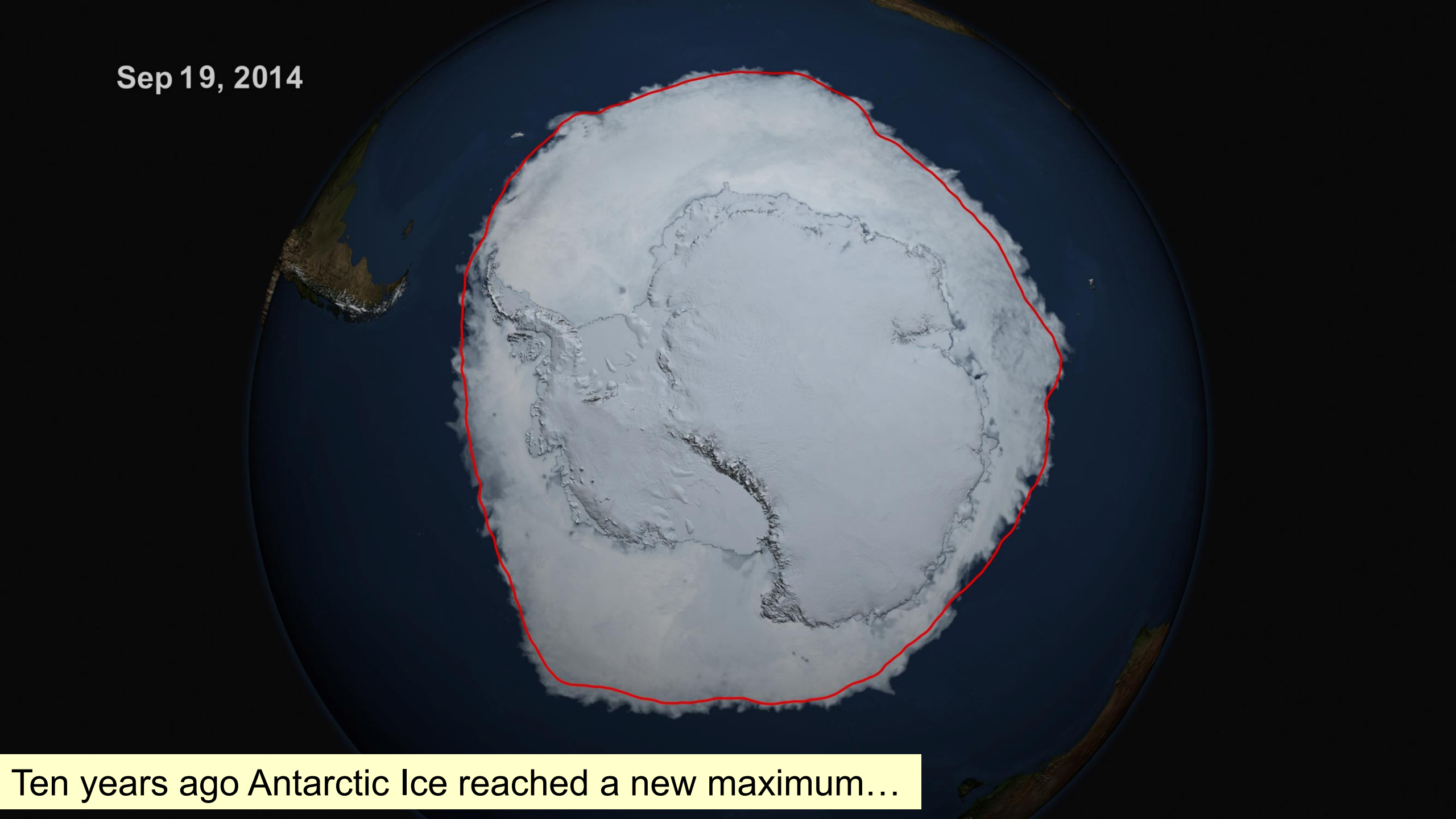
https://notrickszone.com/2024/03/19/though-europe-was-mild-winters-been-a-beast-over-much-of-northern-hemisphere/

"Just as in 1997, the ice extent today is greater than in 2023, 2022, 2019, 2018, 2017, 2011, 2006, 1993, 1992, 1991 and 1981:"



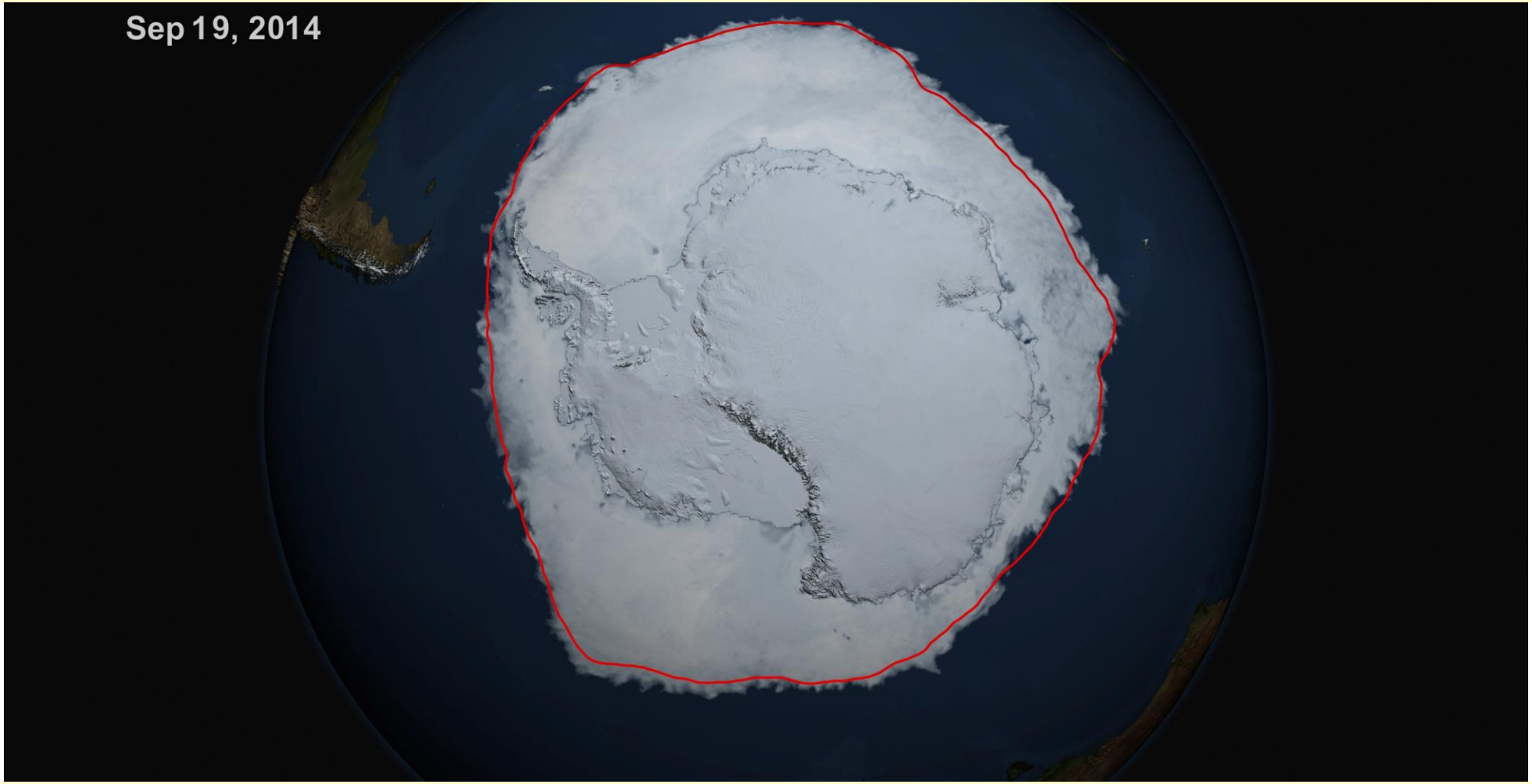
Measurements show increasing amounts of Antarctic Sea Ice extent from 2023 to 2024





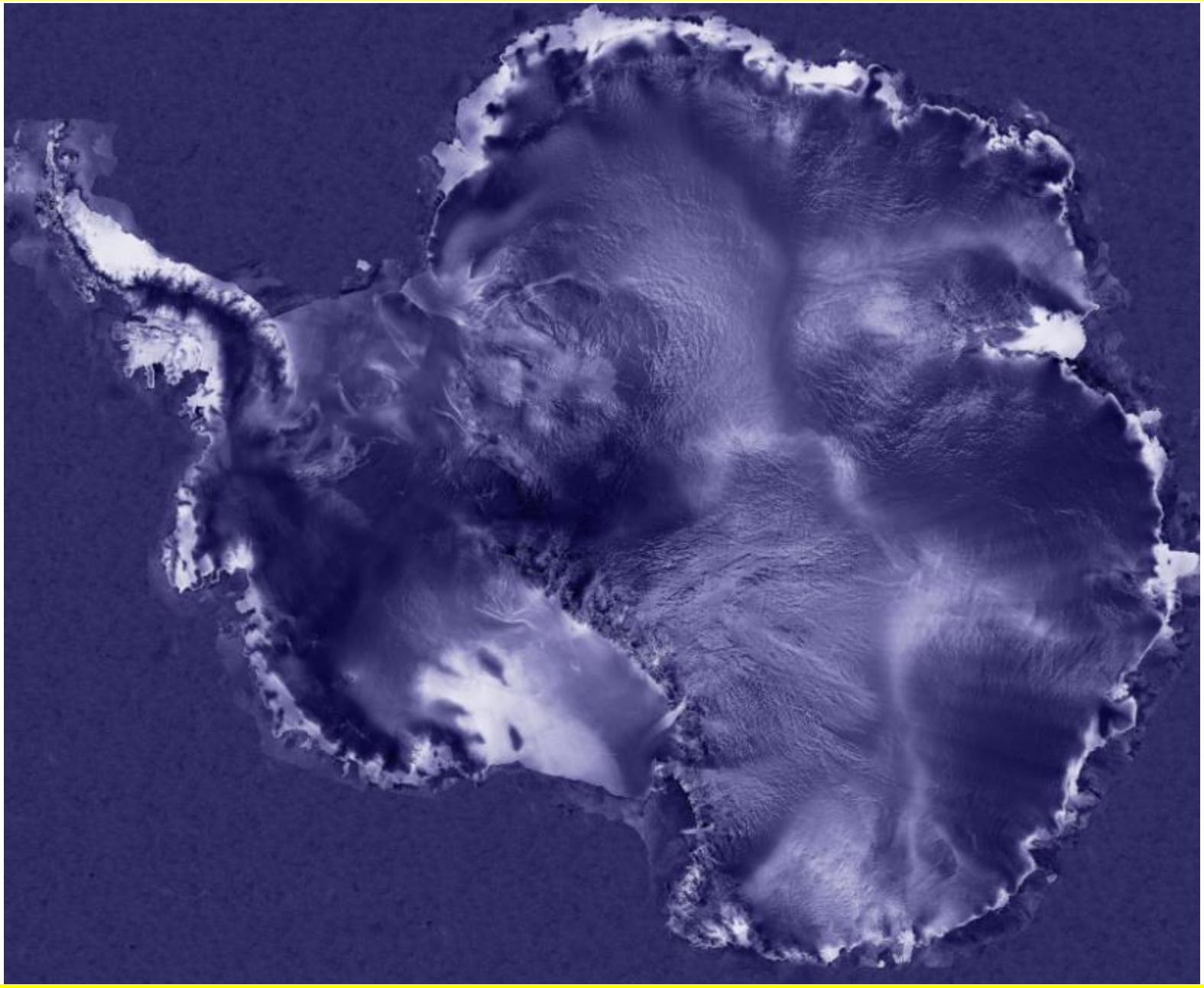
Ten years ago Antarctic Ice reached a new maximum…

https://wattsupwiththat.com/2014/10/08/antarctic-sea-ice-reaches-new-record-maximum



On Sept. 19, 2014, the five-day average of Antarctic sea ice extent exceeded 20 million square kilometers for the first time since 1979, according to the National Snow and Ice Data Center. The red line shows the average maximum extent from 1979-2014. Image Credit: NASA's Scientific Visualization Studio/Cindy Starr

https://notrickszone.com/2024/07/27/chinese-academy-of-sciences-antarctic-cold-spells-shattered-records-in-july-august-2023/



https://link.springer.com/article/10.1007/s00376-024-4139-1 **“Extreme Antarctic Cold of Late Winter 2023”**

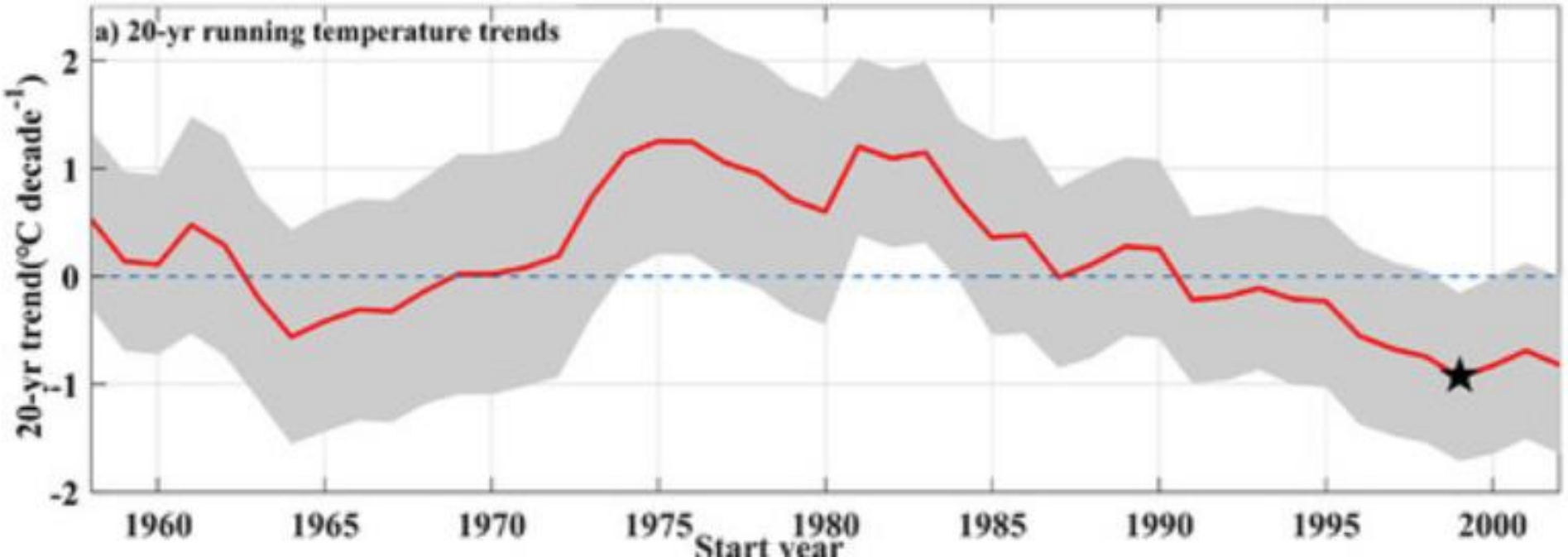
https://notrickszone.com/2024/04/15/antarctica-is-colder-icier-now-than-any-time-in-5000-years-the-last-warm-period-was-1000-years-ago/

Browse: Home / 2024 / April / 15 / Antarctica Is Colder, Icier Now Than Any Time In 5000 Years. The Last Warm Period Was 1000 Years Ago.

Antarctica Is Colder, Icier Now Than Any Time In 5000 Years. The Last Warm Period Was 1000 Years Ago.

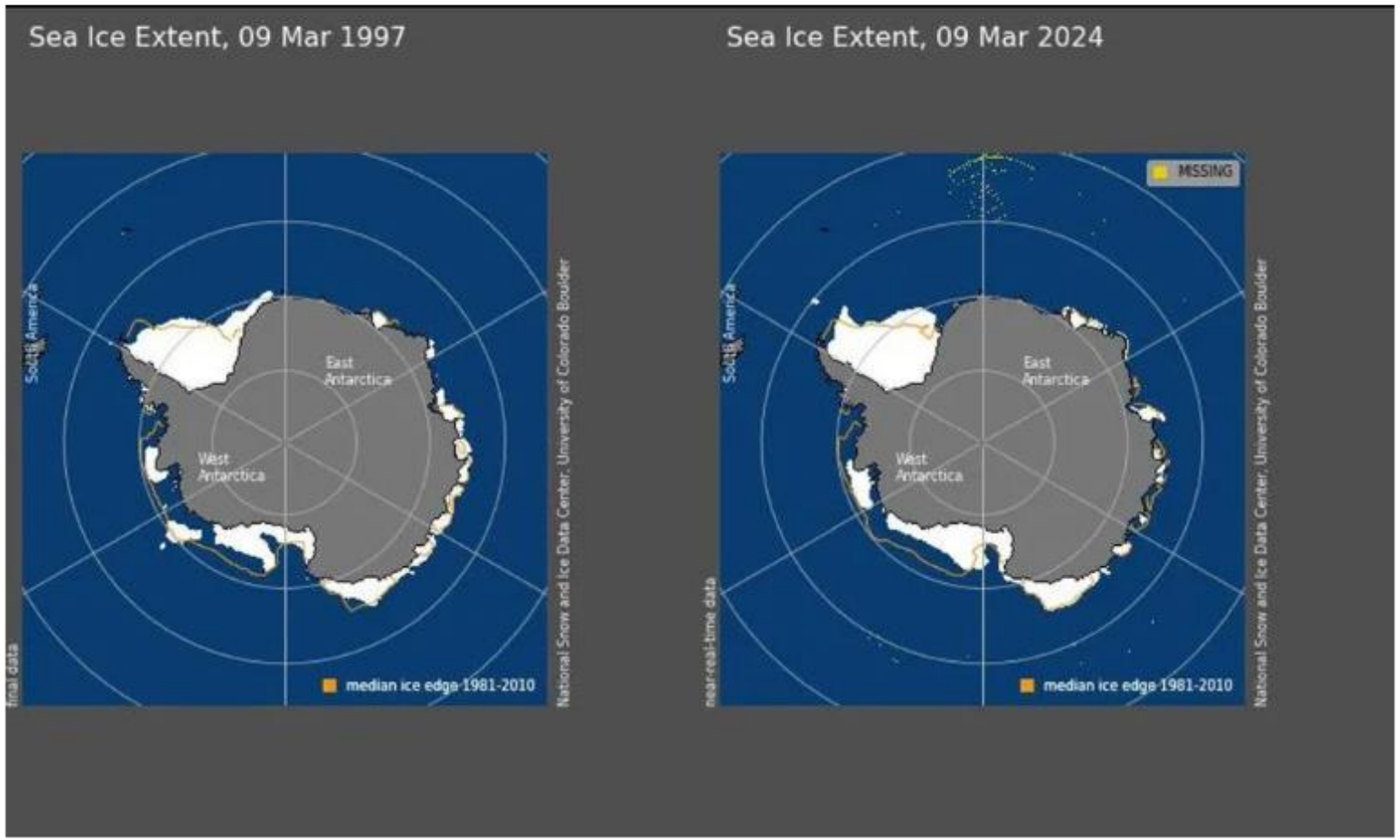
By Kenneth Richard on 15. April 2024

More evidence emerges that Antarctica has undergone rapid glacier and sea ice expansion in recent centuries, in line with the long-term and recent Antarctic cooling trend.



As for Antarctic sea ice, a remarkable – and "overlooked" by the MSM – reversal of fortune is taking place. The once cripplingly low extent is now higher (3,165,625 km²) than it was 27 years ago (3,075,000 km²).

https://notrickszone.com/2024/03/19/though-europe-was-mild-winters-been-a-beast-over-much-of-northern-hemisphere/



Just as in 1997, the ice extent today is greater than in 2023, 2022, 2019, 2018, 2017, 2011, 2006, 1993, 1992, 1991 and 1981:

https://notrickszone.com/2024/07/27/chinese-academy-of-sciences-antarctic-cold-spells-shattered-records-in-july-august-2023

Browse: Home / 2024 / July / 27 / Chinese Academy Of Sciences: "Antarctic Cold Spells Shattered Records" In July-August, 2023

Chinese Academy Of Sciences: "Antarctic Cold Spells Shattered Records" In July-August, 2023

By P Gosselin on 27. July 2024

The Chinese Academy of Sciences found that the Antarctic cold spells shattered records amid global heat waves in late winter 2023, something we never heard from the mainstream media.

"Record cold temperatures were observed in our Automatic Weather Stations (AWS) network as well as other locations around the region," said Matthew A. Lazzara of the Antarctic Meteorological Research and Data Center at the University of Wisconsin-Madison (UW-Madison). "These phases were marked by new record low temperatures recorded at both staffed and automatic weather stations, spanning East Antarctica, the Ross Ice Shelf, and West Antarctica to the Antarctic Peninsula."

https://phys.org/news/2024-06-antarctic-cold-shatter-global-late.html

An analysis of 500-hPa geopotential height anomalies revealed strong negative anomalies in August 2023. This mid-tropospheric atmospheric environment played a crucial role in the observed extreme cold temperatures. The research suggests that both southerly flows from the continent and calm atmospheric conditions contributed to these cold spells.

MESSAGE: THE WEATHER IS IMPORTANT!

With temperatures plummeting below -50°C, essential flight operations to key research stations were severely disrupted. These temperatures risked hydraulic failure and fuel gelling in aircraft, rendering safe flights impossible.

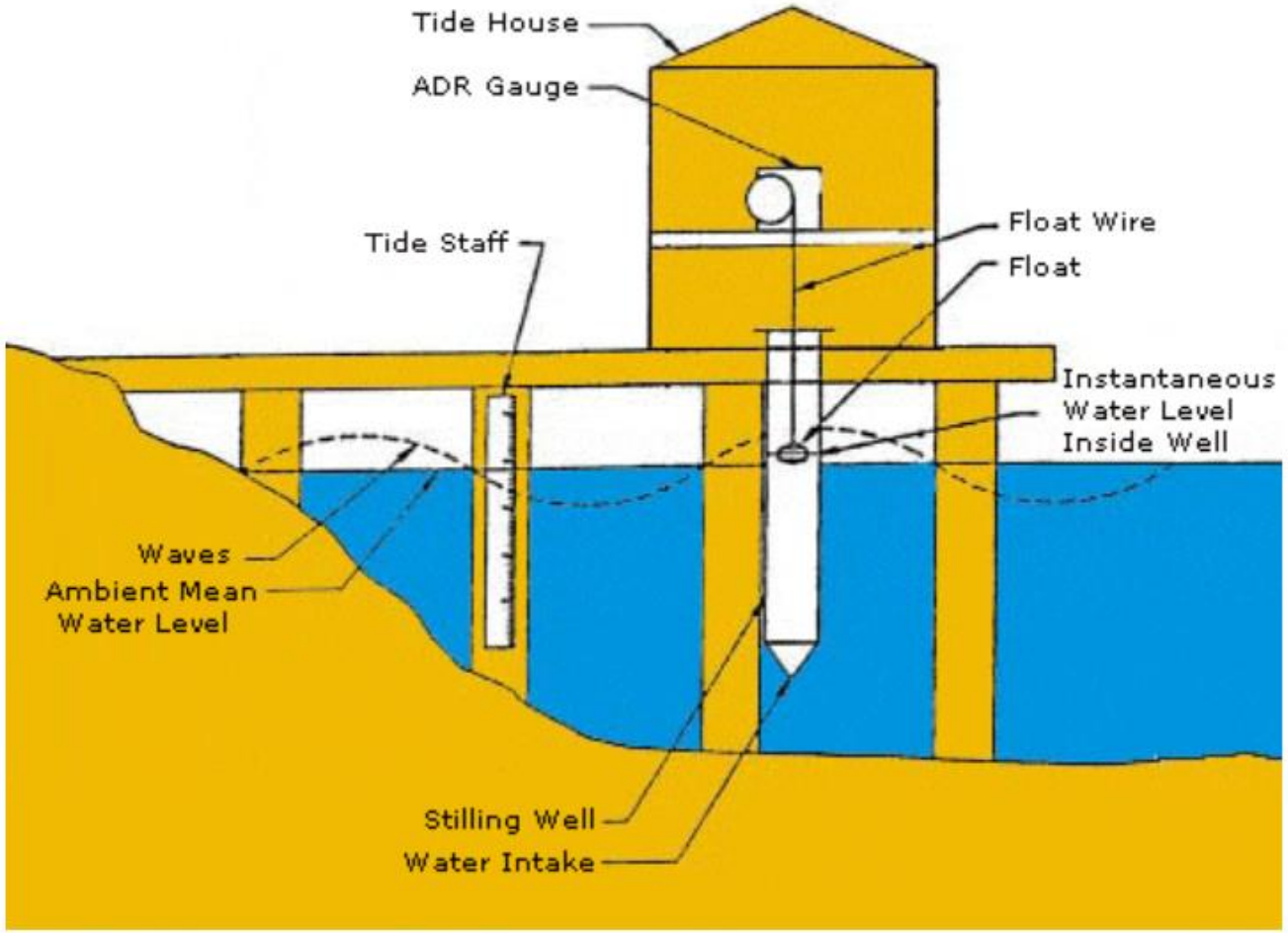
"These extreme cold events were unprecedented and had significant operational impacts," said David E. Mikolajczyk, the corresponding author of the study. "Understanding these conditions helps us better prepare for future challenges in Antarctic logistics."

This study, conducted by a team of international scientists, underscores the importance of understanding atmospheric environments that lead to extreme cold temperatures. Their findings are vital for improving the safety and efficiency of Antarctic operations. <underlining added>

Sea Level Measurements

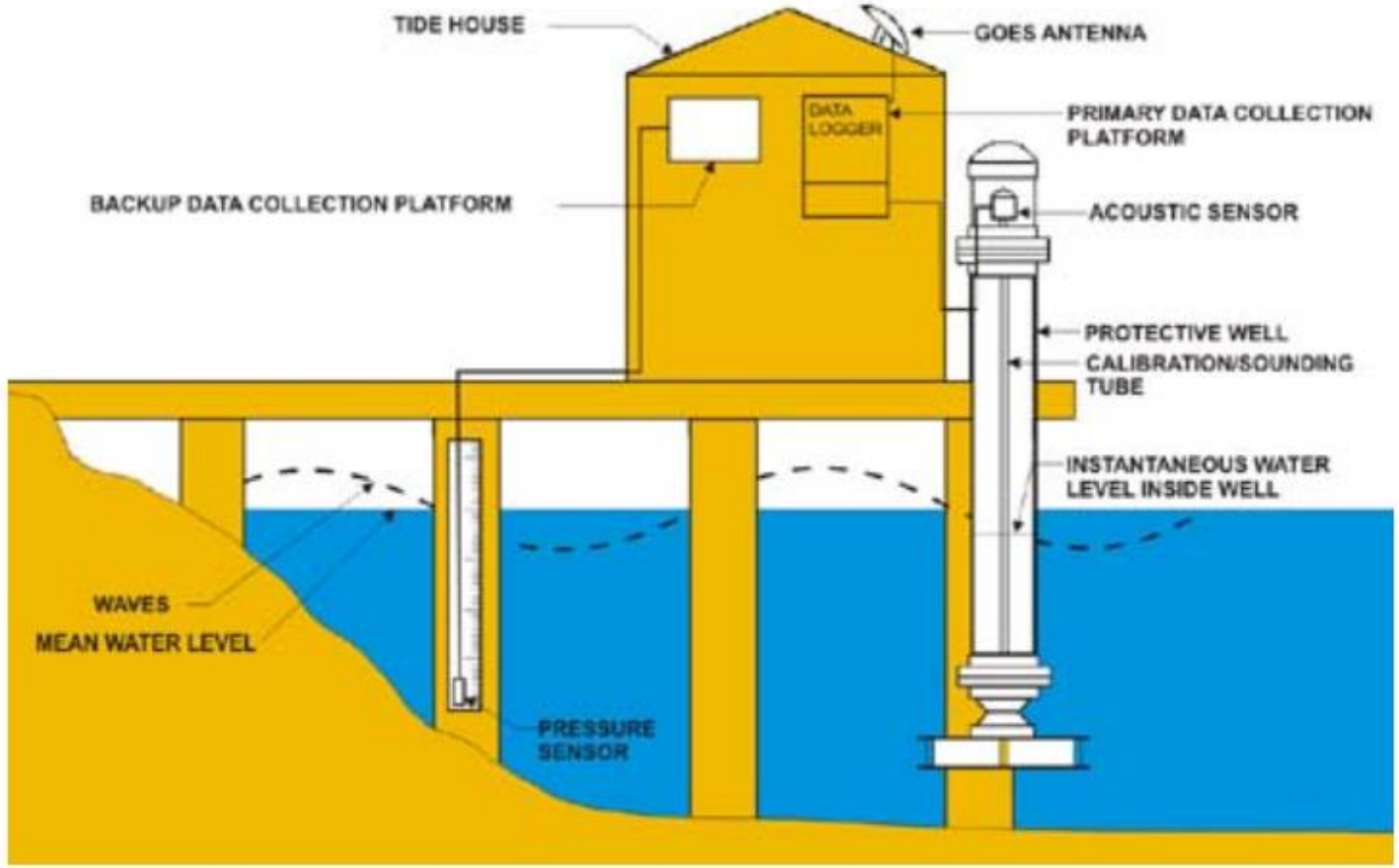
Tide Gages

https://oceanservice.noaa.gov/education/tutorial_tides/tides10_oldmeasure.html



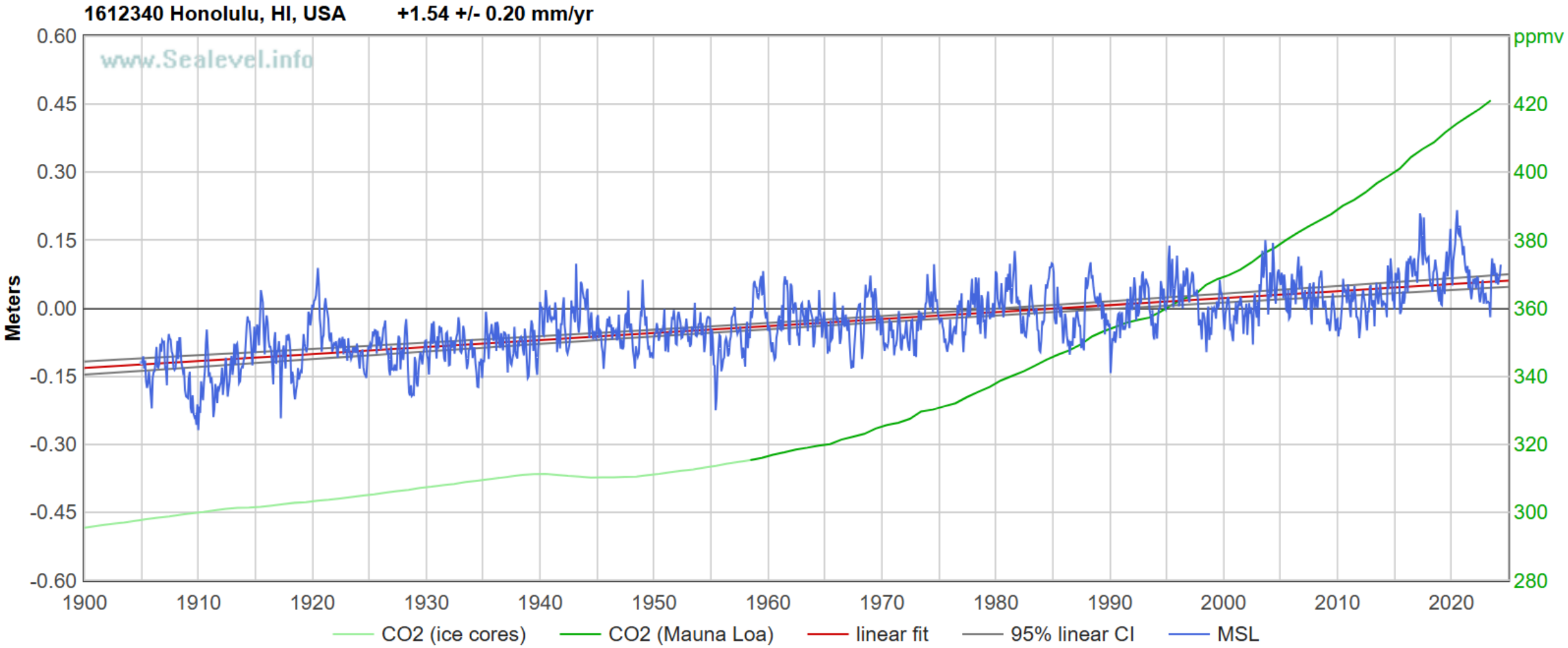
Special tide houses were constructed to shelter permanent water level recorders, protecting them from harsh environmental conditions. In this diagram, we can see how the analog data recorder (ADR) is situated inside the house with the float, and the stilling well located directly beneath it. Attached to one of the piers pilings is a tidal staff. Essentially a giant measuring stick, this device would allow scientists to manually observe the tidal level and then compare it to the readings taken by the analog recorder.

https://oceanservice.noaa.gov/education/tutorial_tides/tides11_newmeasure.html



While similar in design to older tide houses, these newer enclosures are designed to protect sensitive electronics, transmitting equipment, and backup power and data storage devices. The older stilling well has been replaced with an acoustic sounding tube and the tidal staff with a pressure sensor. The new field equipment is designed to operate with the highest level of accuracy with a minimum of maintenance, transmitting data directly back to NOAA headquarters for analysis and distribution.

Mean Sea Level at Honolulu, HI, USA (NOAA 1612340, 760-031, PSMSL 155)



The mean sea level (MSL) trend at Honolulu, HI, USA is +1.54 mm/year with a 95% confidence interval of ±0.20 mm/year, based on monthly mean sea level data from 1905/1 to 2024/5. That is equivalent to a change of 0.51 feet in 100 years. (R-squared = 0.529)

Dave Burton's web site and Learn More Page … https://sealevel.info/

This web site is a remarkably good source of info and data related to sea level Climate, and Climate Change.

Strongly Recommended!

https://sealevel.info/learnmore.html

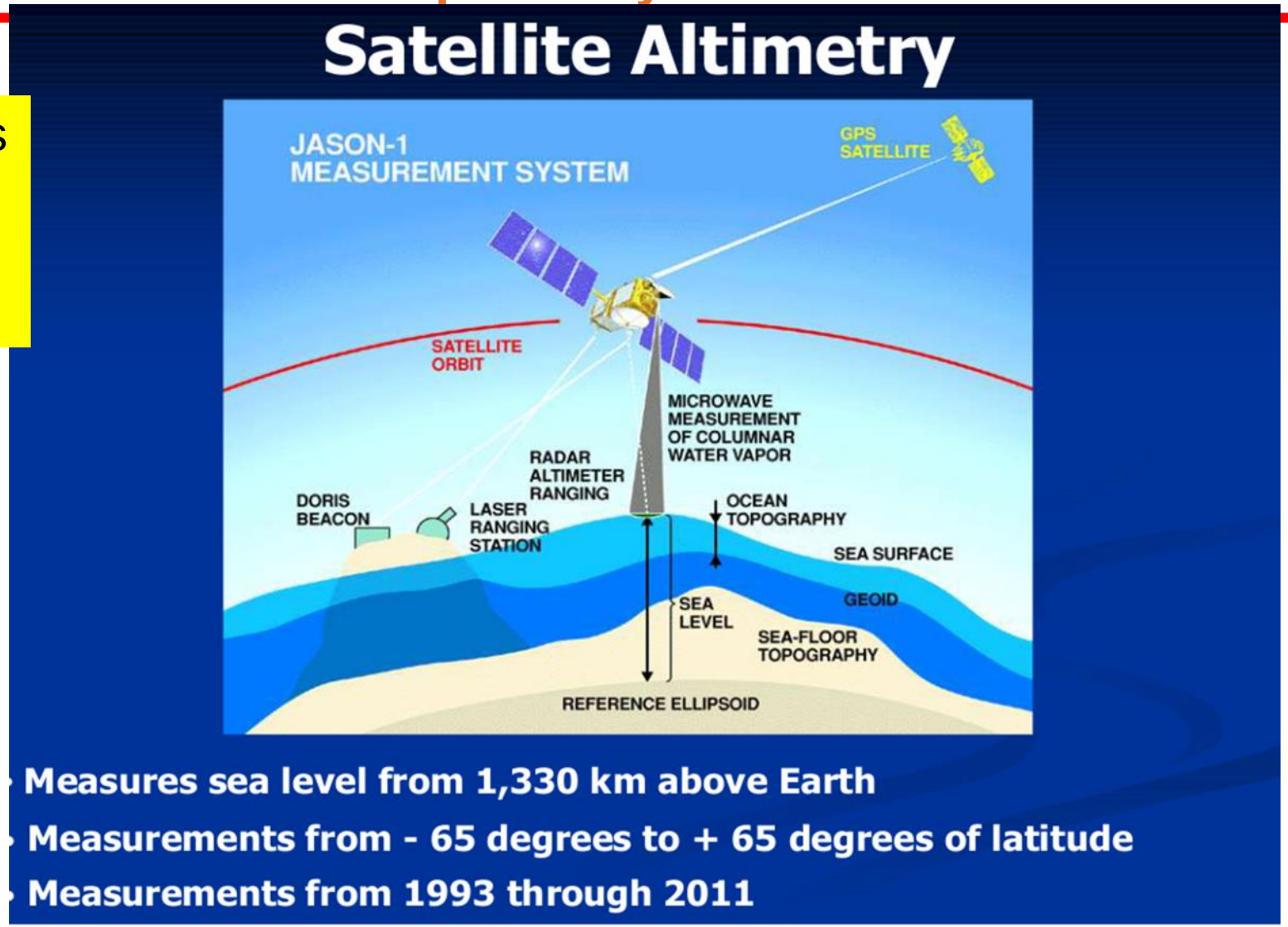
Sea Level Measurements

Satellite Measurements

Bad Assumption #1

Satellites can measure global sea level changes accurately and precisely

Many of these slides and ideas come from Willie Soon and his presentation to the DDP meeting in Houston, 2013



Source: Houston and Dean (2012) February 8 presentation

Basics:
Raw, uncorrected data series!

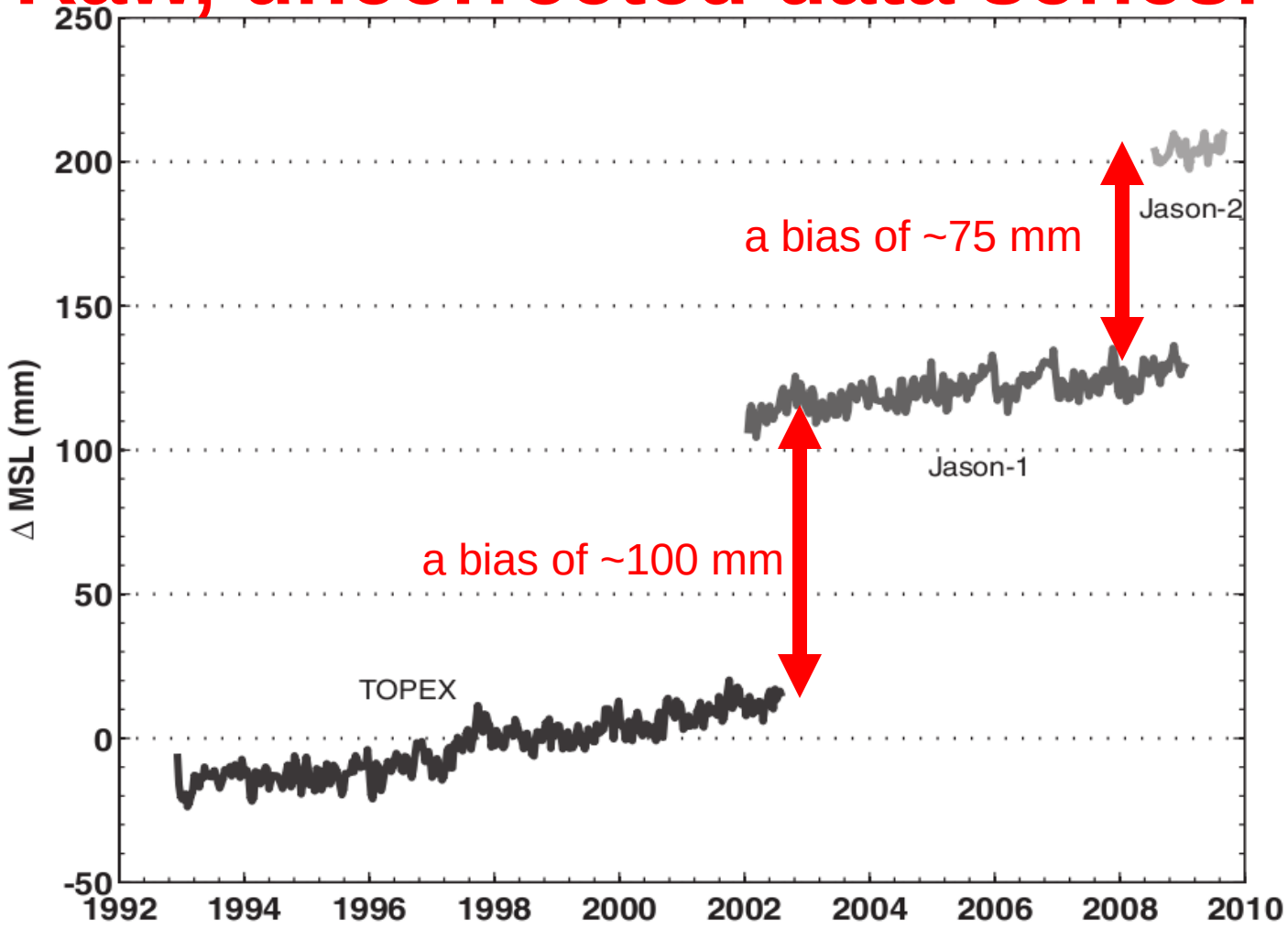
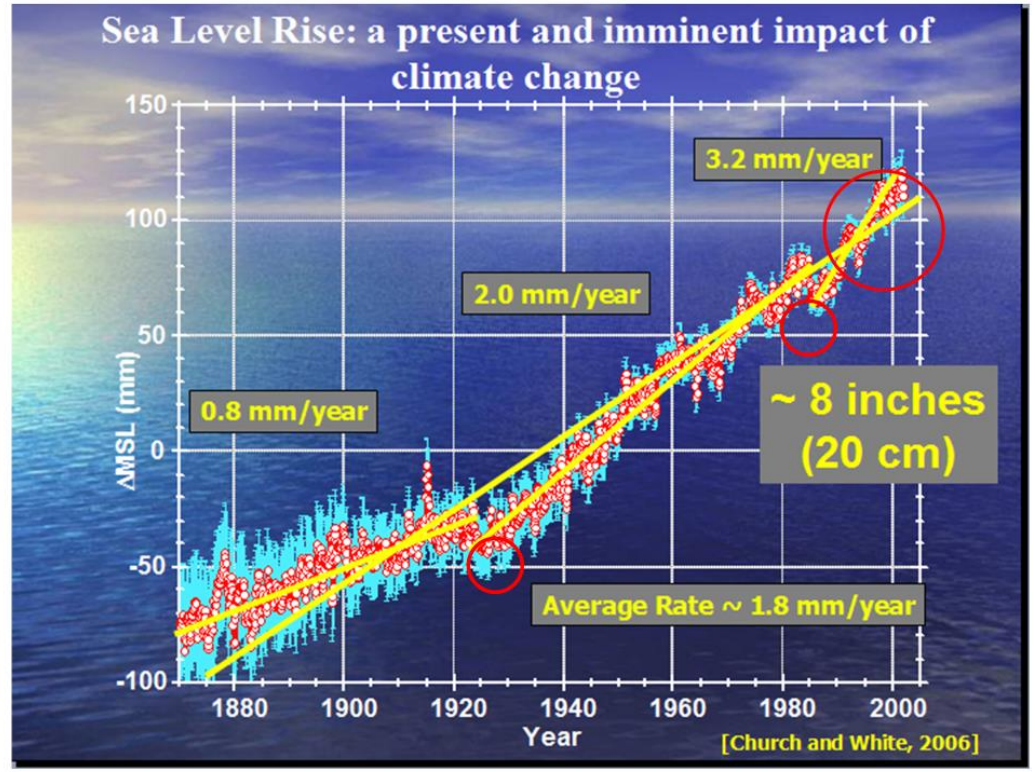


Figure 4. Global mean sea level variations from the T/P, Jason-1, and Jason-2 missions before the application of intermission measurement biases.

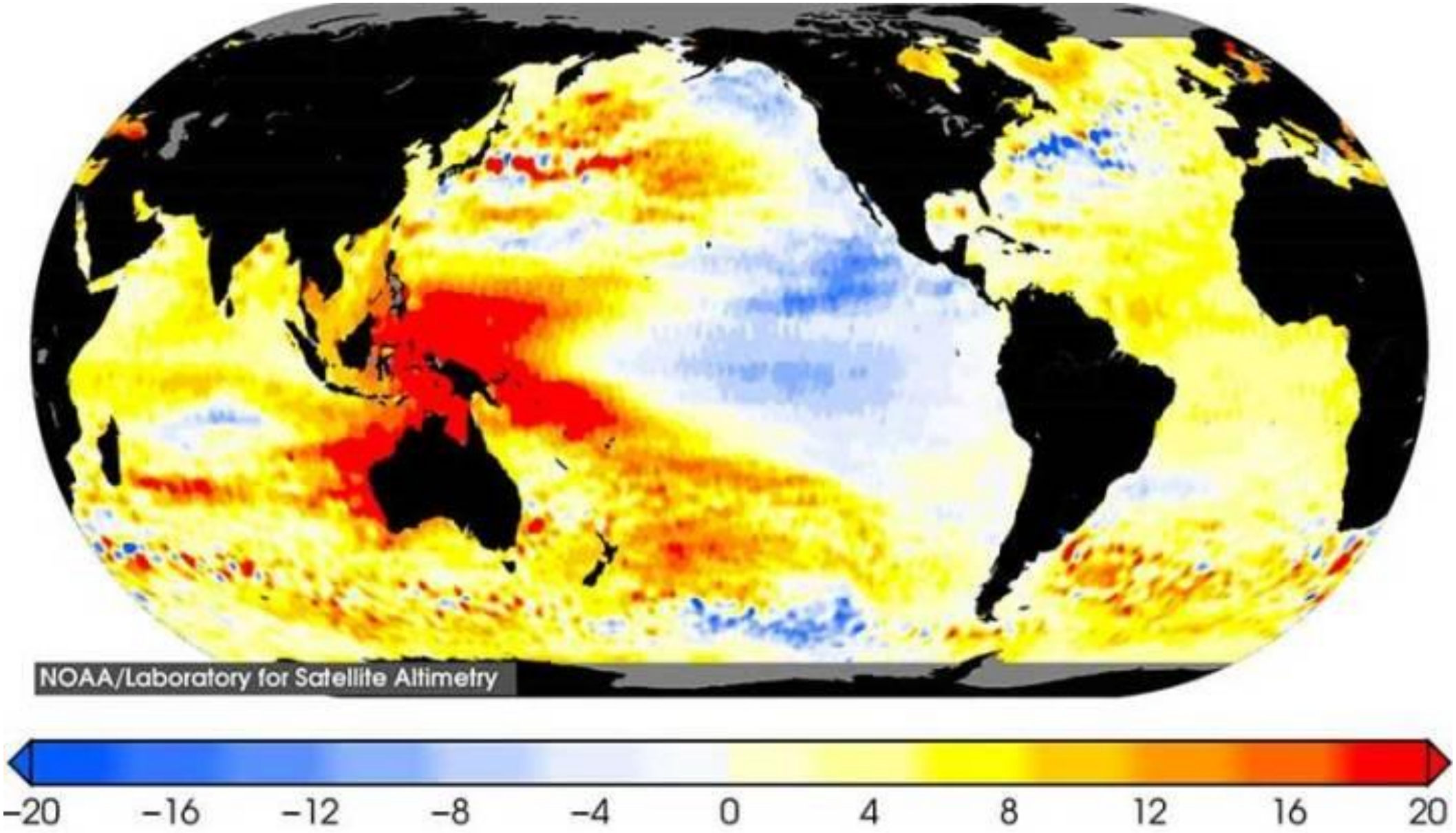
Nerem et al. (2010) Marine Geodesy, vol. 33 (S1), 435-446

False scare of rapid global sea level acceleration using satellites

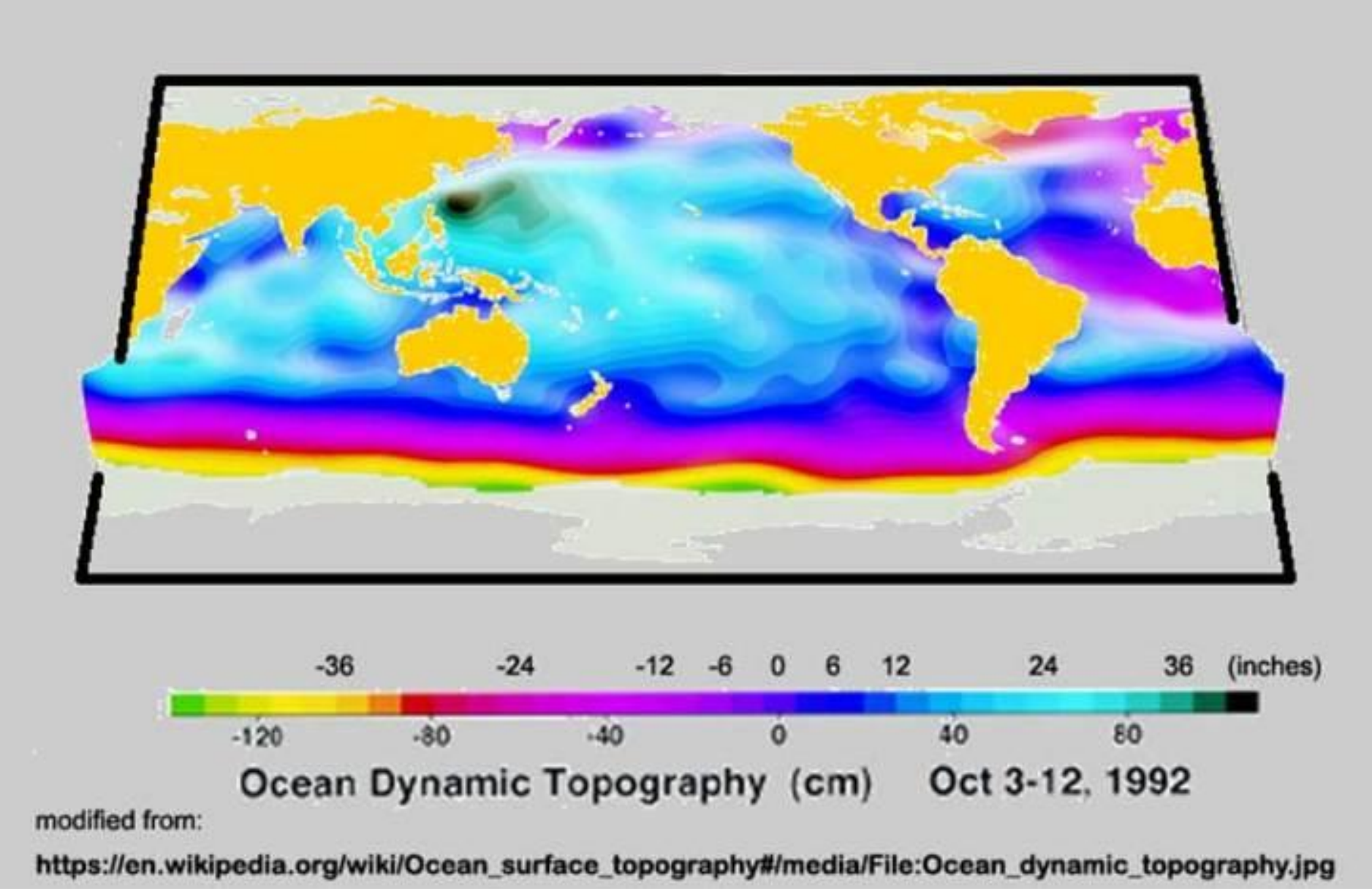
Accelerating Sea Level Rise?



NASA JPL Climate Symposium, Oct 24, 2009 (Lee-Leung Fu)

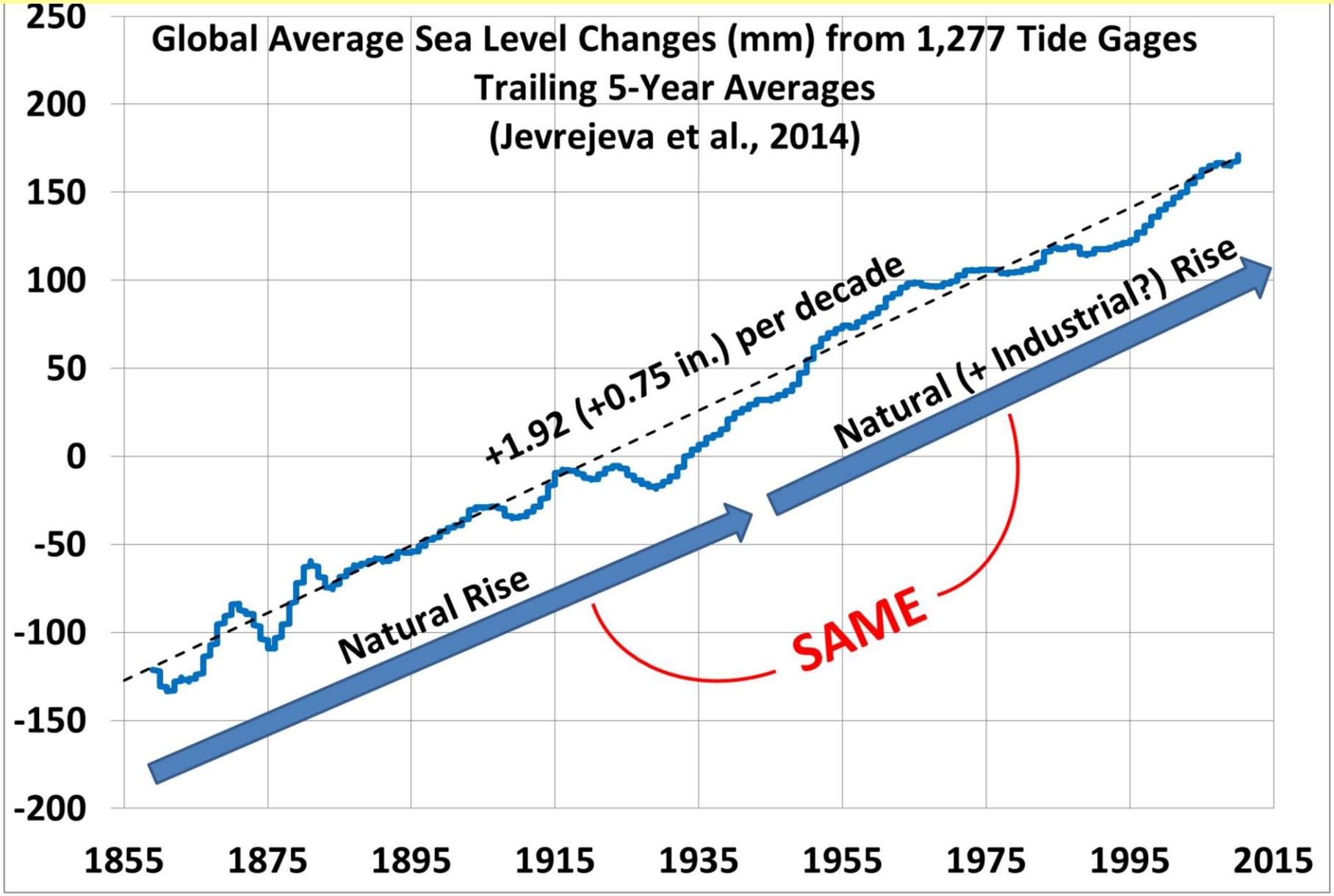


The image above shows sea level change since 1993 and demonstrates the variation globally.



This image shows a maximum difference of over 66 inches <2 meters> in sea surface heights — very high near Japan and very low near Antarctica, with quite a bit of lumpiness in the Atlantic

http://www.drroyspencer.com/wp-content/uploads/Sea-level-data-since-1855.jpg



Sea Level History

Sea Levels were higher in Antiquity, the Roman and Medieval Warm Periods.

Sea Level changes are a thicket:

Much of the East and Gulf coasts consist of unconsolidated sediments such as sands, gravels, clays, glauconite sands, marls. Groundwater pumping from unconsolidated sediments removes water mass from the interstitial spaces and the land subsides.

Tectonic plate movement sometimes allows land areas to subside.
Sometimes tectonic plate movement creates rising land masses and emergent coasts.

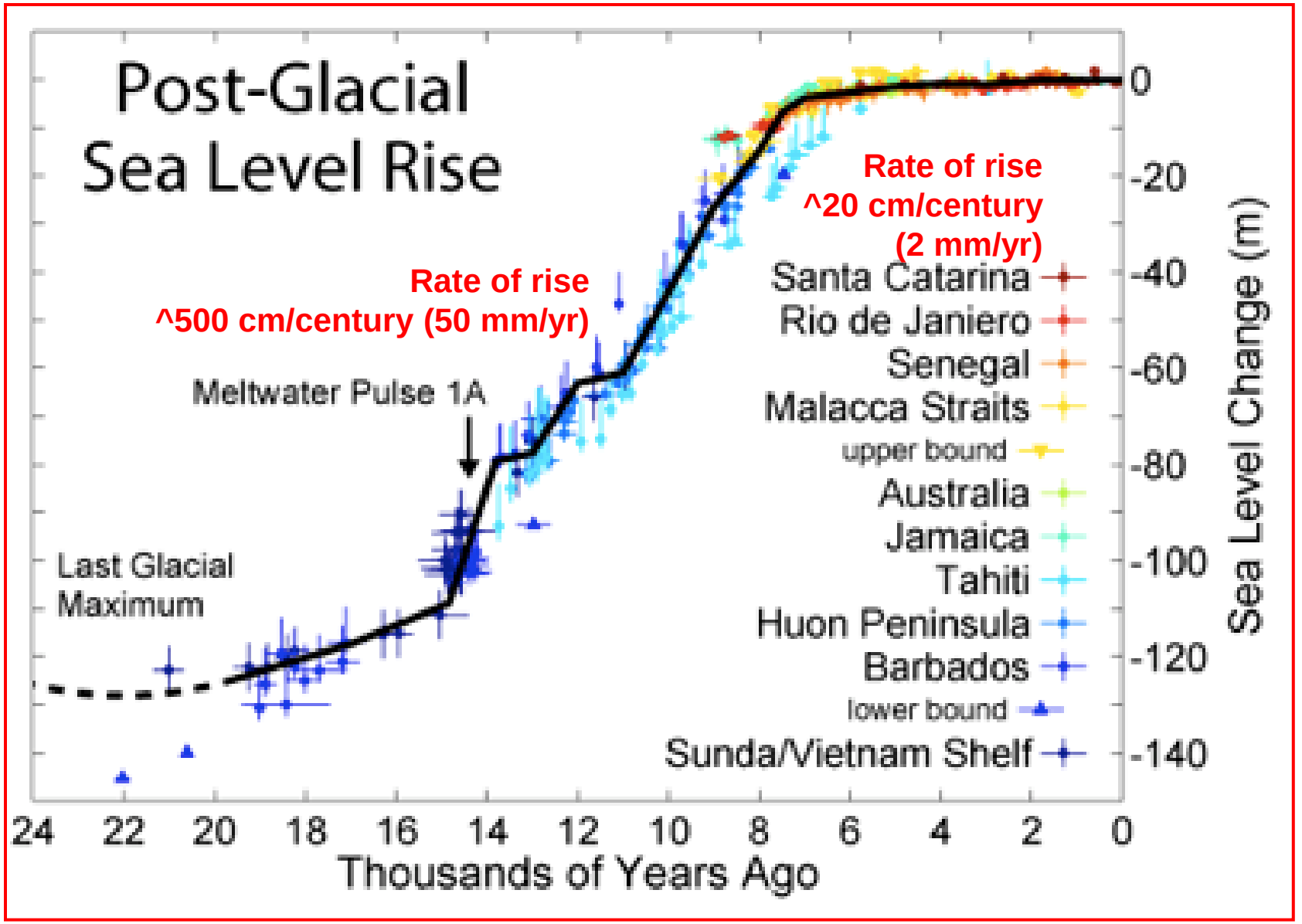
When land areas are stable, rising sea levels result in drowned river valleys.
Land levels are subsiding, stable, or emerging, depending on geographic shoreline.
These affect tide gage “data.”

Willie Soon shows that Envisat showed a change in the rate of sea levels from 2013 data appear fudged

This post, https://wattsupwiththat.com/2019/06/06/the-holocene-sea-level-highstand from 15 Jan 2019 shows sea levels higher than today at many places around the world, Part of The Thicket.

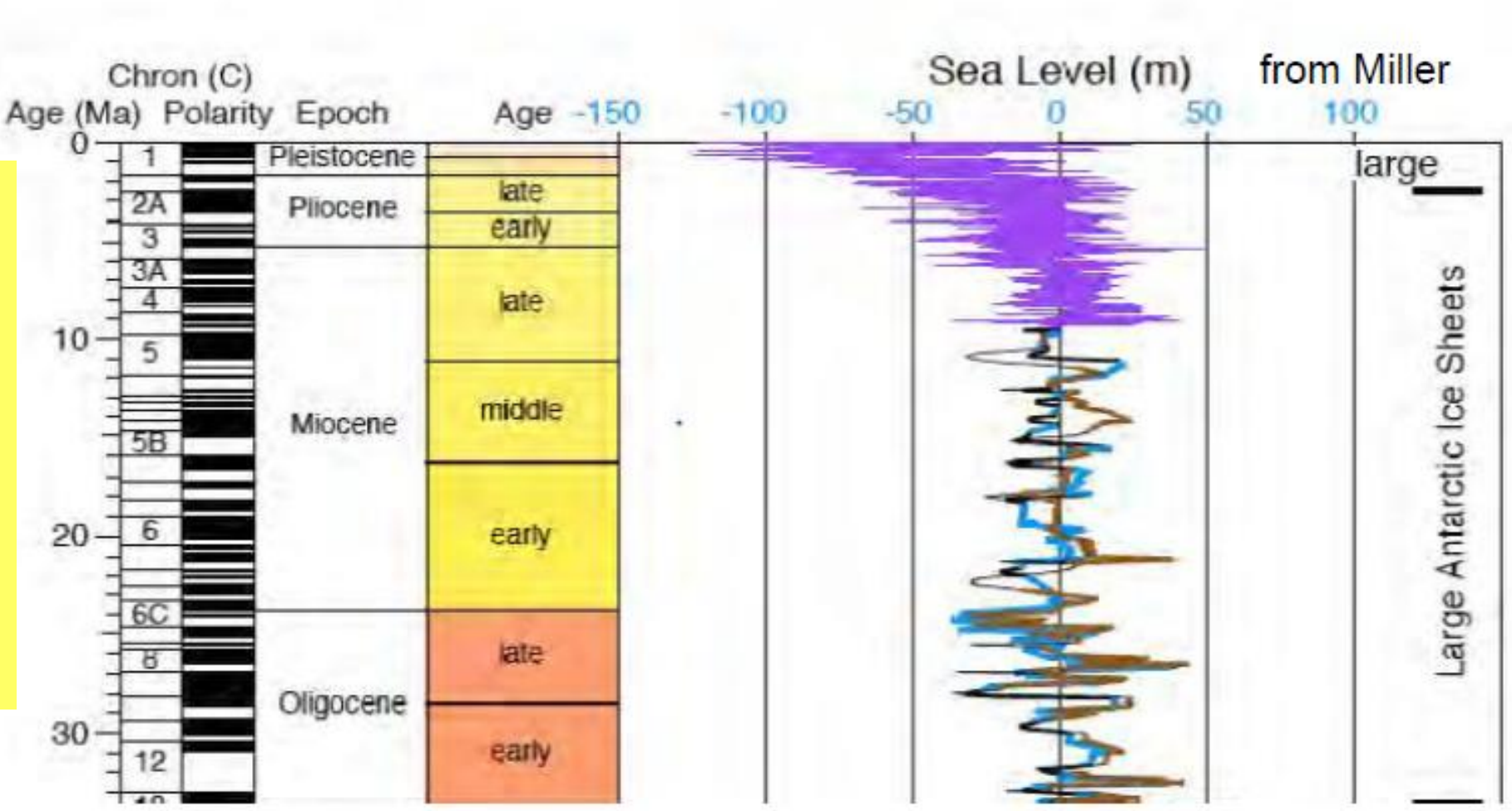
http://en.wikipedia.org/wiki/File:Post-Glacial_Sea_Level.png

TAB to show details



Adapted from Bob Carter's presentation May 2010 Heartland Institute Climate Conference

Another view of the remarkable Sea Level changes in the Pliestocene, in the past 2M years.



This chart is from Dr Ken Miller, head of the Geology Dept at Rutgers in 2012.

Dep't is now known as Earth and Planetary Sciences.

Where is the acceleration
In the rate of sea level change first influenced by our Additions of CO2?

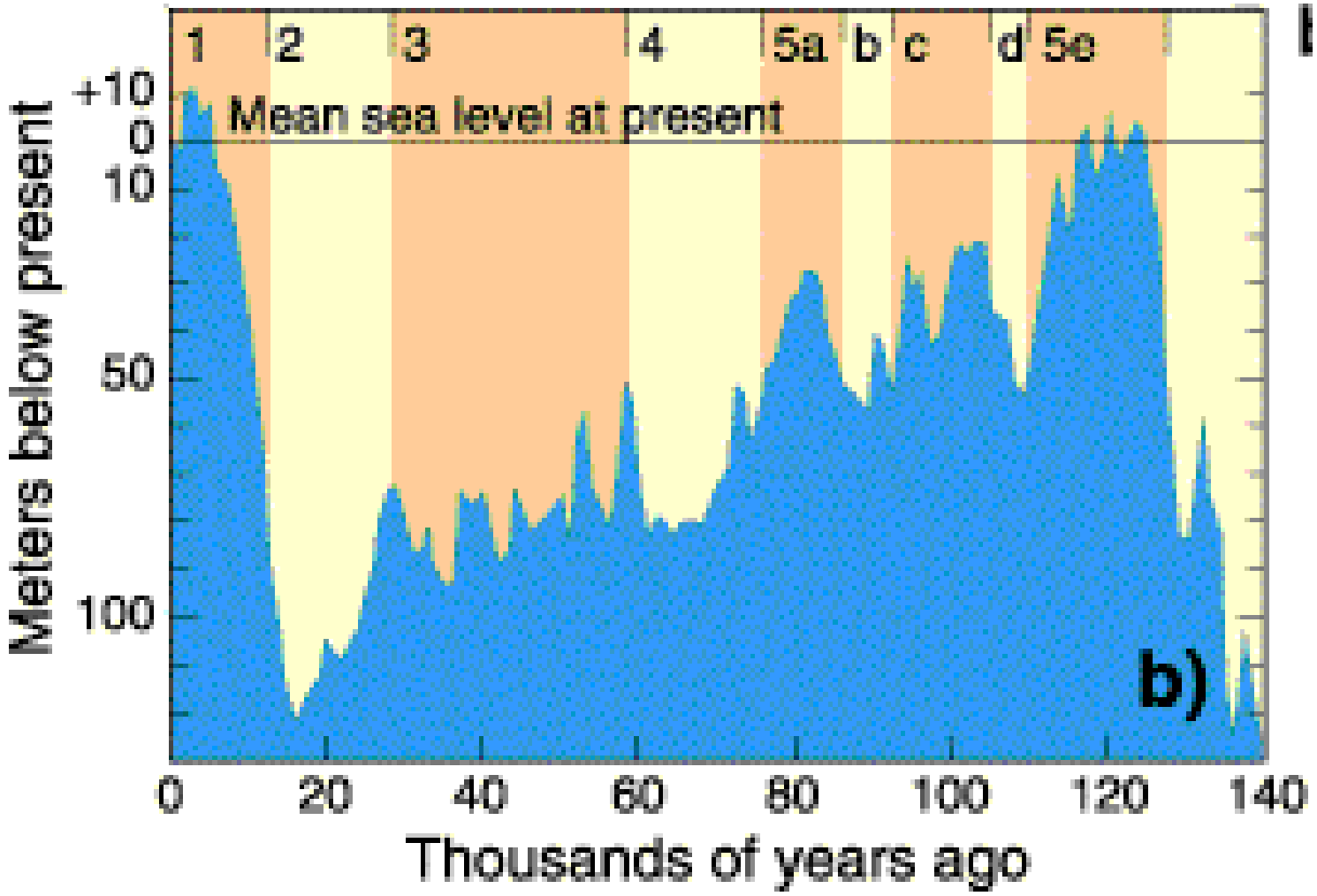
From this graphic, I deduce that Sea Level is a dynamic property of the Earth, with much still to be learned.

Miller postulates glacial-interglacial periodicity, seen with Vostok Ice Cores, and the Marine Isotope Stages will stop and we will enter monotonic increase in sea level, with Antarctica still at the South Pole?

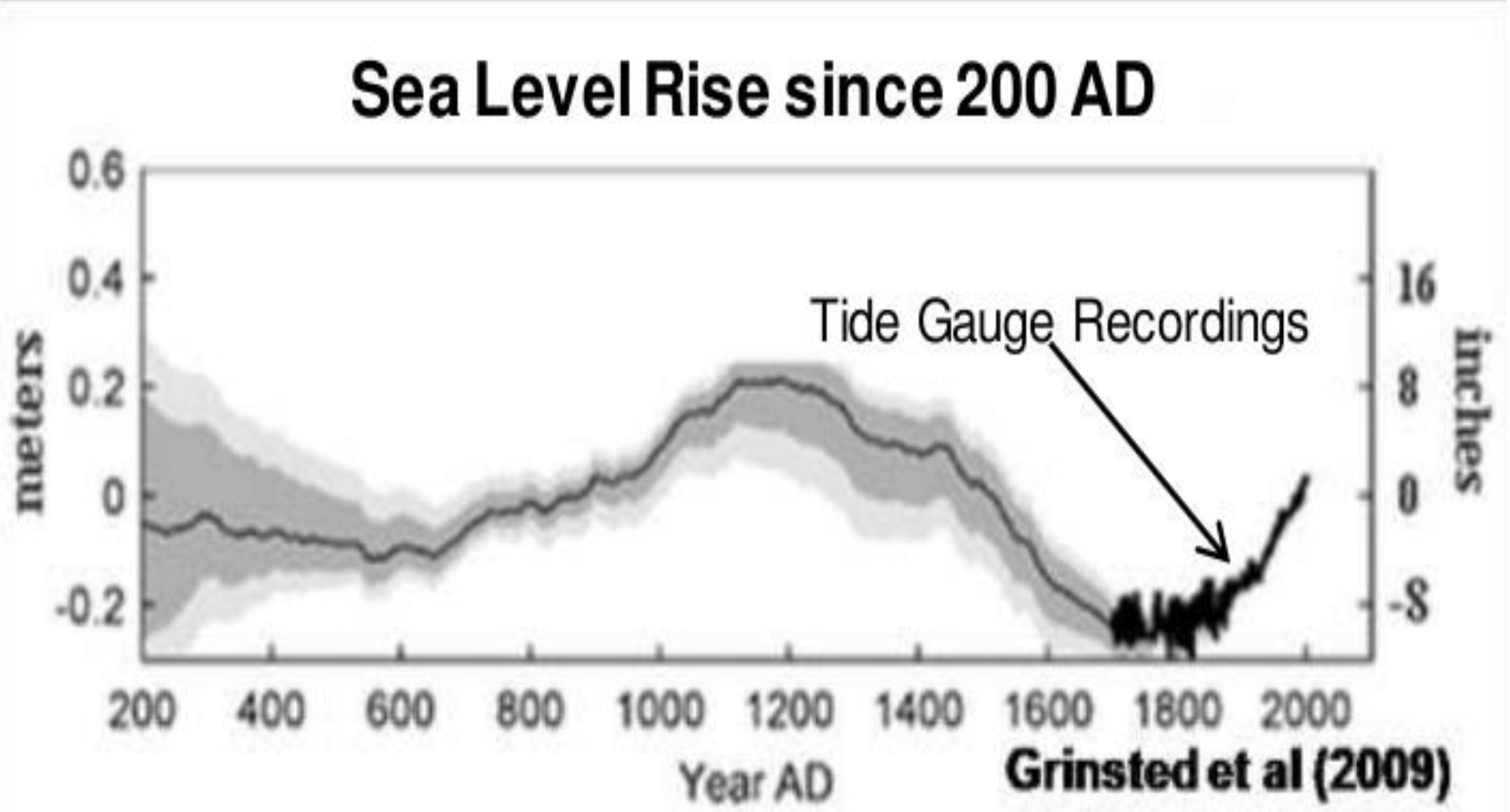
http://upload.wikimedia.org/wikipedia/commons/c/c0/Sea_level_temp_140ky.gif

Late Quaternary Sea Level History shows sea level higher within the Holocene …and a drop in Sea Level during the Little Ice Age within the past 1000 years.

http://en.wikipedia.org/wiki/Sea_level



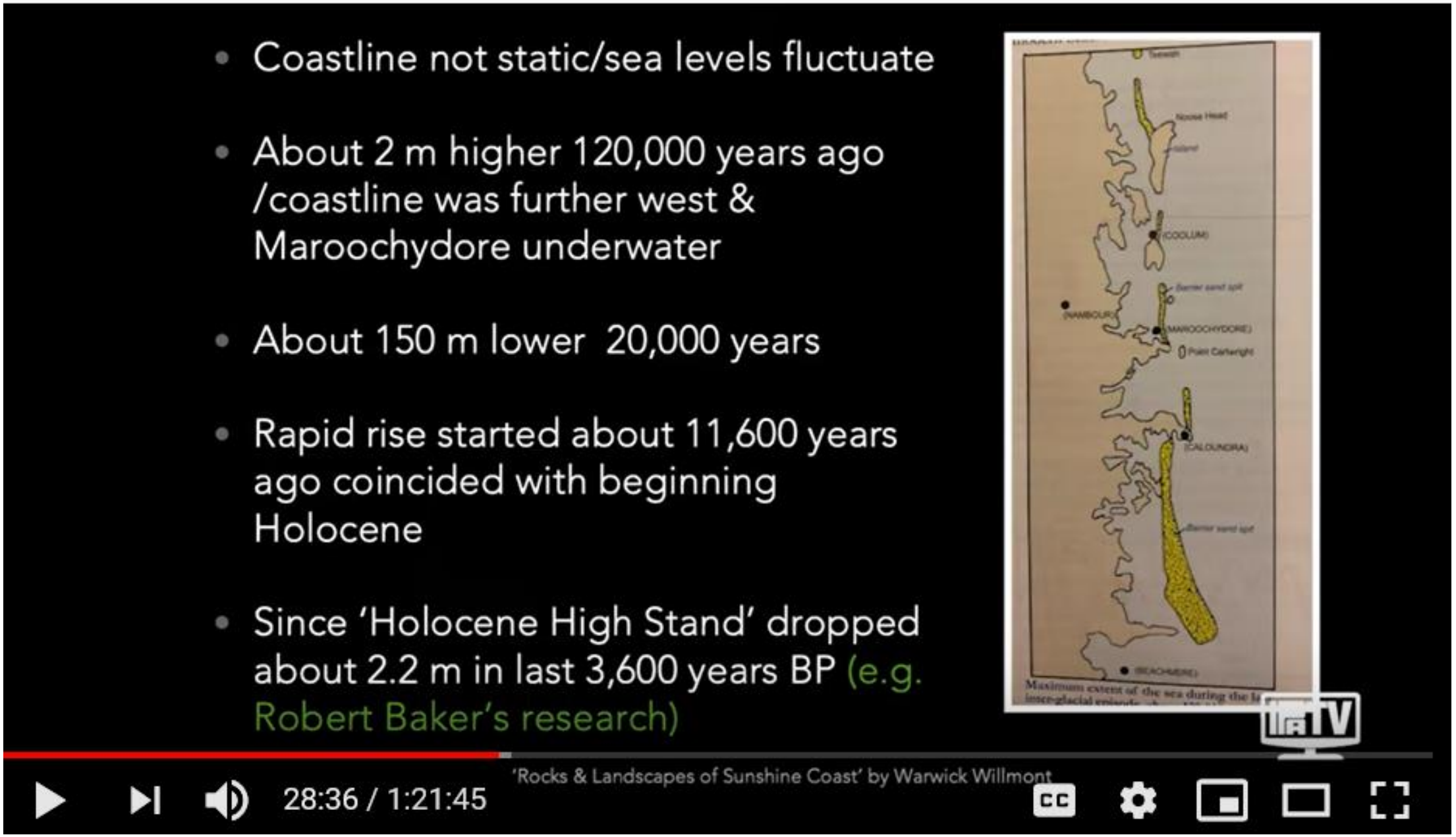
Sea level history for the past 1800 years



Source: Houston and Dean (2012) -- February 8, 2012 presentation

https://www.youtube.com/watch?v=dVlu-7_FxD8

Dr Jennifer Marohasy IPA TV 3600 years ago Sea Levels were 2.2 meters higher than today in Australia



http://www.archatlas.org/SitesFromSatellites/sites.php?name=uruk-ur

"… a landscape now radically different from the fourth and third millennia BC…
Uruk and Ur are far from the present head of the Persian Gulf;
..Ur was a sea-port and Uruk was situated on a major riverine artery.

Sea Level was a lot higher at the time of Ur's prominence, 3000 BC.

WIKIPEDIA
The Free Encyclopedia

Article Talk

Ur

The ruins of Ur, with the Ziggurat of Ur visible in the background

From The Ancient History Encyclopedia: http://www.ancient.eu/ur/

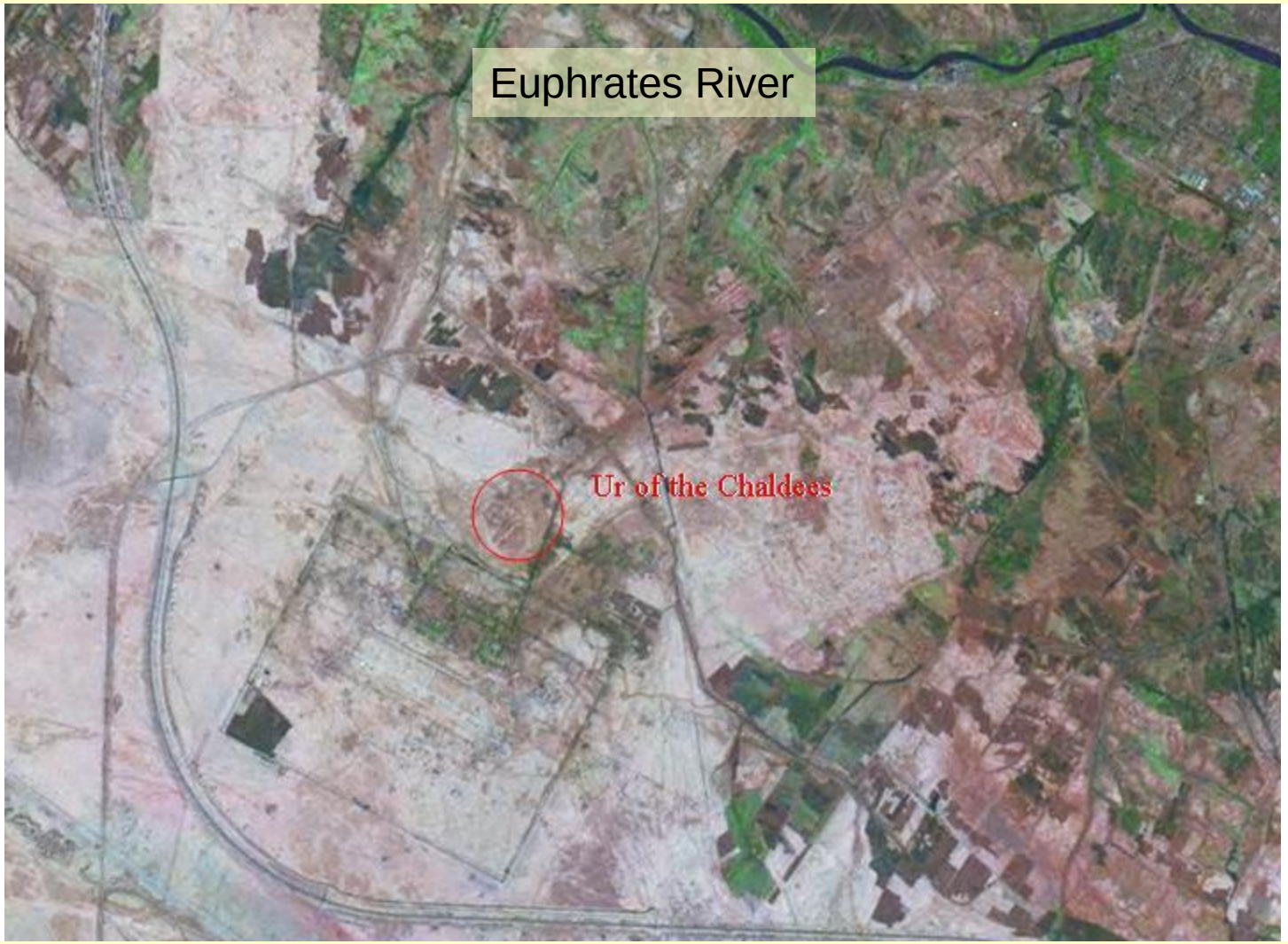
“Whatever its biblical connections may have been,

Ur was a significant port city on the Persian Gulf which began, most likely,

as a small village in the Ubaid Period of Mesopotamian history (5000-4100 BCE)

and was an established city by 3800 BCE continually inhabited until 450 BCE.”

http://www.archatlas.org/SitesFromSatellites/sites.php?name=uruk-ur



The present-day setting of Ur, next to the Tallil air-base (rectangle) and its supply-roads.
Landsat TM imagery provided by NASA.
The elevation of Ali Air Base (Tallil) is 13 Ft MSL https://en.wikipedia.org/wiki/Ali_Air_Base

https://en.wikipedia.org/wiki/Notitia_Dignitatum

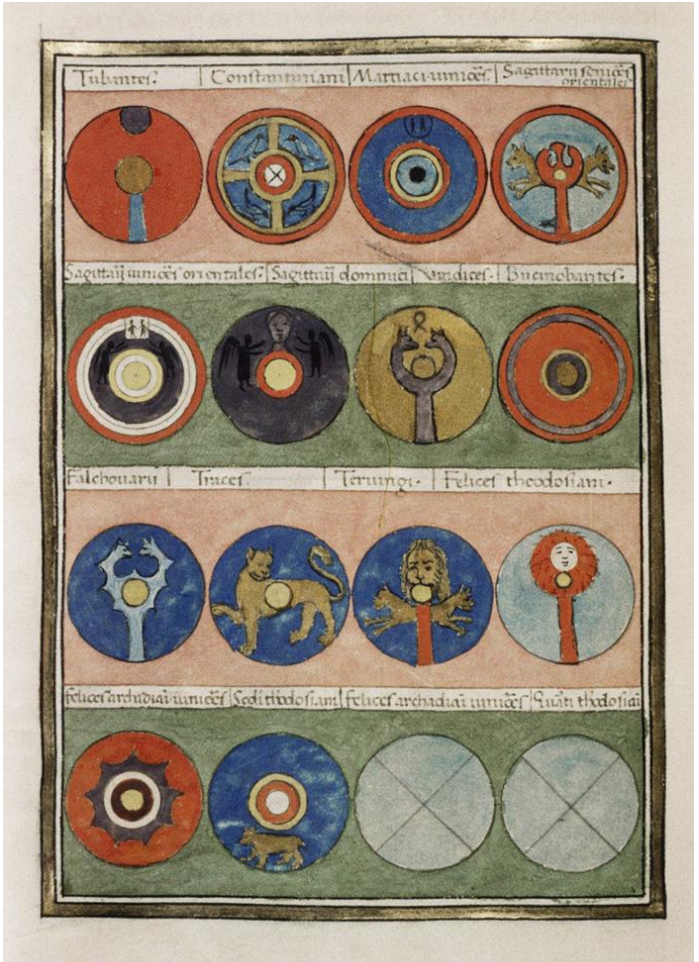
Notitia Dignitatum

From Wikipedia, the free encyclopedia

Notitia Dignatatum: C 420 AD

The ***Notitia Dignitatum*** (Latin for "The List of Offices") is a unique document of the late Roman Empire. One of the very few surviving documents of Roman government, it details the administrative organization of the Eastern and Western Empires, listing several thousand offices from the imperial court down to the provincial level, diplomatic missions and army units. It is usually considered to be up to date for the Western Roman Empire in the 420s and for the Eastern or Byzantine Empire in the 390s. However, no absolute date is given in the text itself and omissions complicate deriving an absolute date from its content.

Page from a medieval copy of the *Notitia Dignitatum* commissioned in 1436 by Pietro Donato, depicting shields of *Magister Militum Praesentalis II*, a late Roman register of military commands



https://en.wikipedia.org/wiki/Saxon_Shore#/media/File:Litus_Saxonicum.png

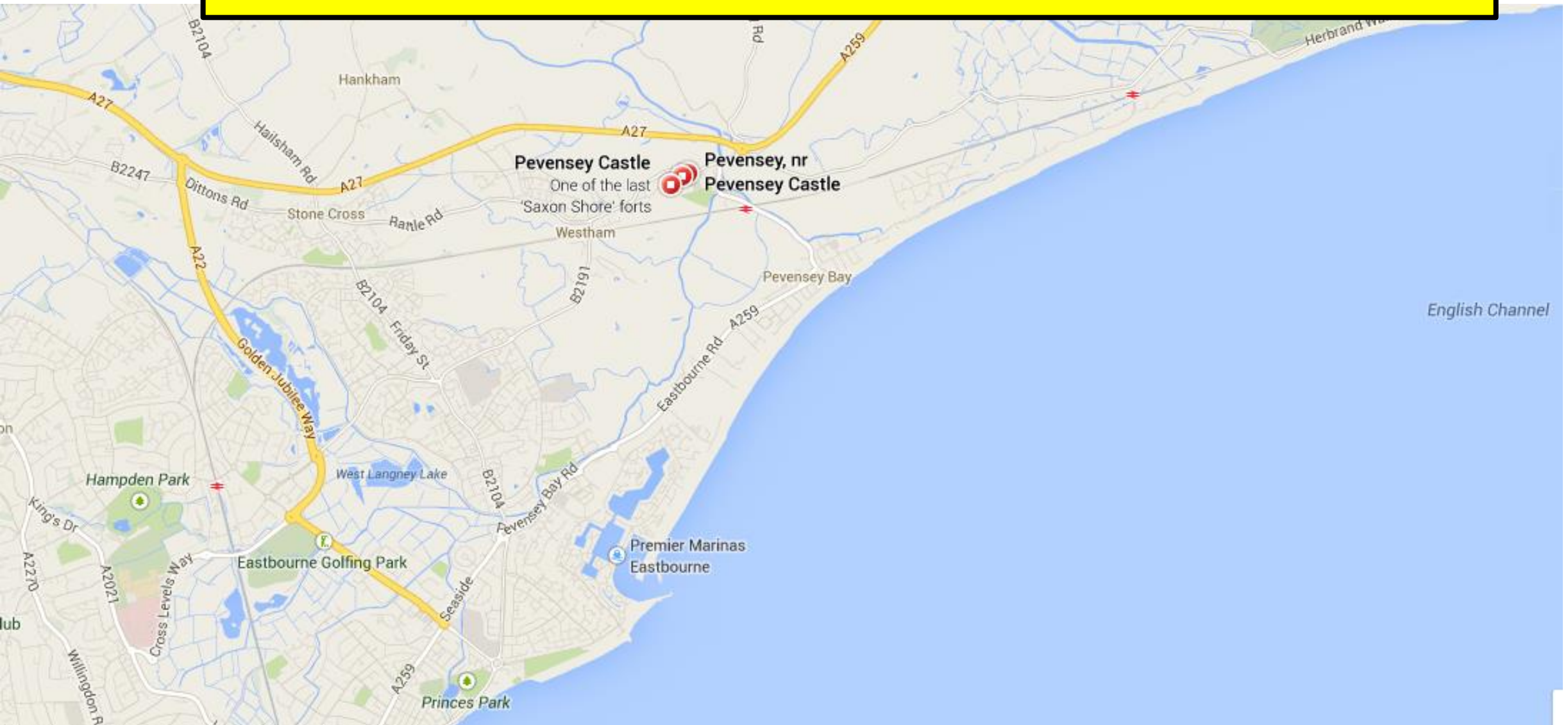
From the *Notitia Dignatum*: Saxon Sea Forts

Branodunum	Brancaster
Gariannonum	Burgh
Othona	Bradwell-on-Sea
Portus Adurni	Portchester
Rutupiae	Richborough Castle
Dubris	Dover
Portus Lemanis	Lympne
Anderitum	Pevensey

Locations of major events in 1066

Pevensey Castle Today

Today, Pevensey Castle is over a mile inland from the English Channel



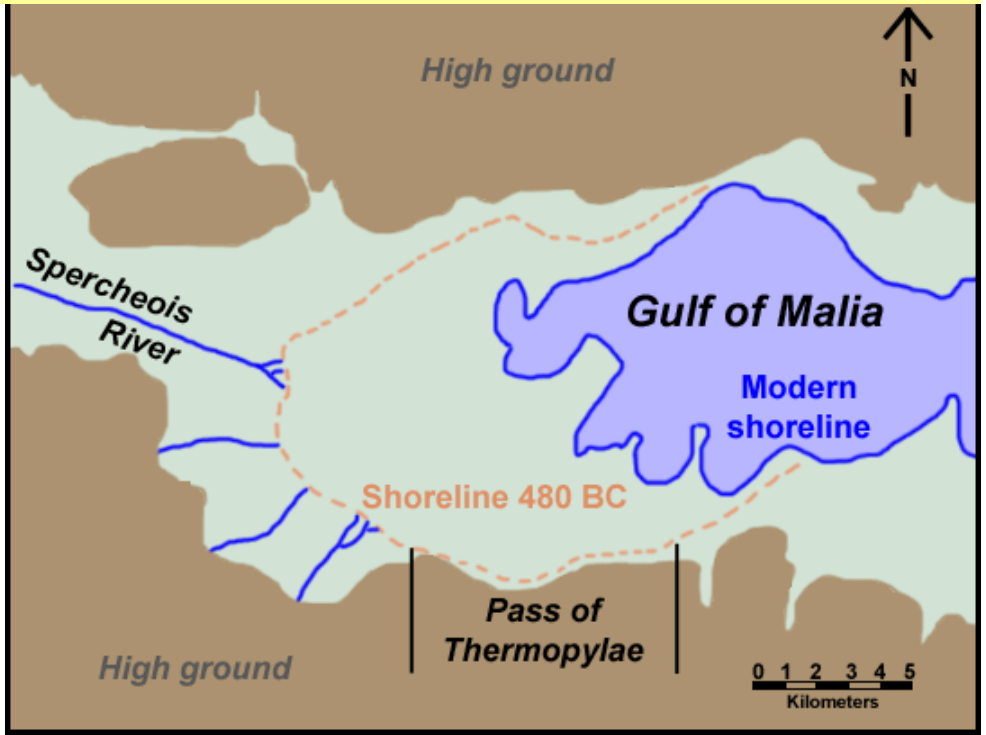
https://en.wikipedia.org/wiki/Battle_of_Thermopylae

Thermopylae: 480 BC

Thermopylae ("hot gates") is a place in Greece where a narrow coastal passage existed in antiquity. It derives its name from its hot sulphur springs…

Thermopylae is world-famous for the battle that took place here between the Greek forces including the Spartans and the Persian forces…

This passage from north to south along the east coast of the Balkan peninsula requires use of the pass, and for this reason Thermopylae has been the site of several battles.



http://earlyworldhistory.blogspot.com/2012/02/persian-invasions.html

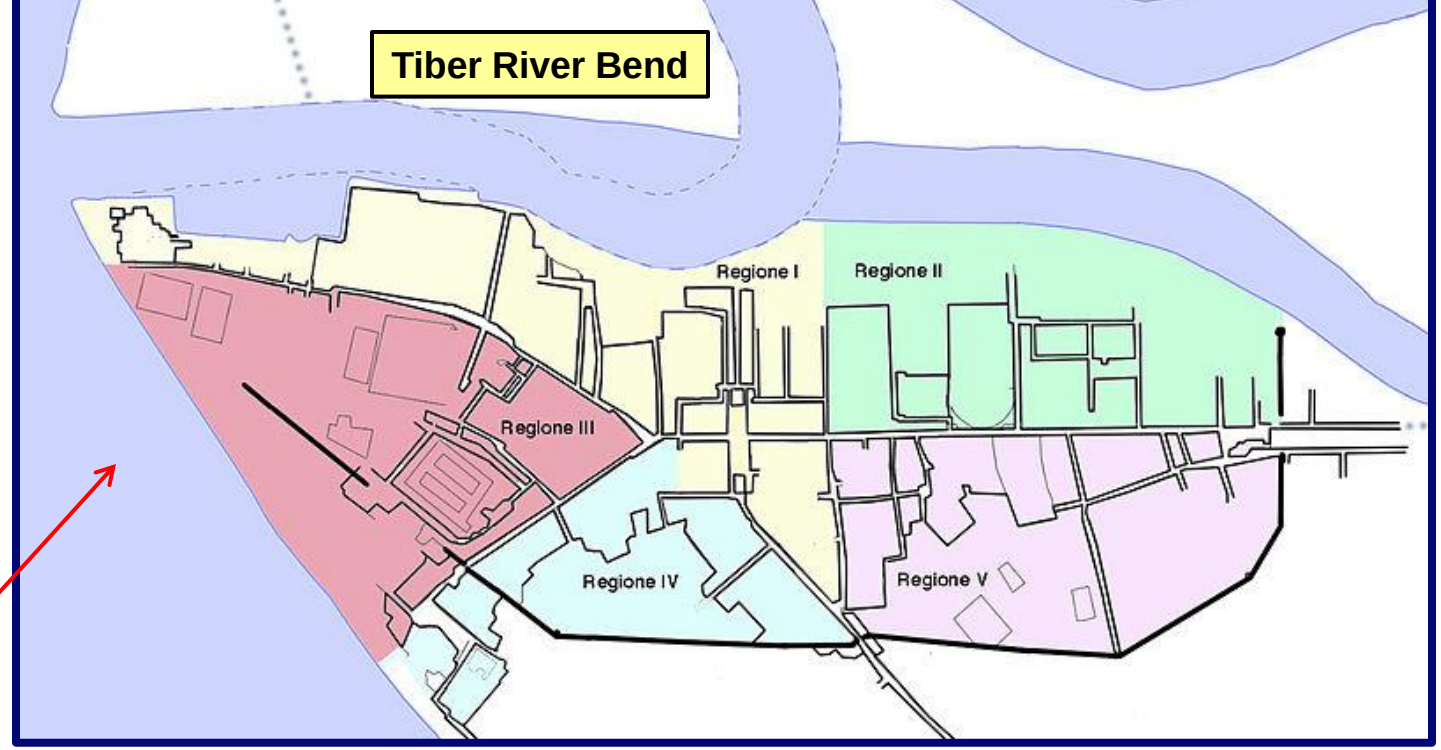
… Spartans sent their famed hoplite infantry to meet the advance of the Persians at the pass of Thermopylae. They withstood the continual Persian onslaught, aided by the narrow ground, which limited the number of Persian troops able to attack at one time…

https://en.wikipedia.org/wiki/Battle_of_Thermopylae#/media/File:Thermopylae_ancient_coastline_large.jpg

View of the Thermopylae pass at the area of the Phocian Wall. In ancient times the coastline was even closer to the mountain than where the modern road lies.

History

Sea Level Lessons from Ostia Antica, a port city of ancient Rome



Tyrrhenian Sea

Google Map of Ostia Antica today

Today, Ostia Antica is over two miles from the Tyrrhenian Sea

Battle of Ostia in 849 AD as depicted in a painting attributed to Raphael
/1/15/Raphael_Ostia.jpghttp://upload.wikimedia.org/wikipedia/commons

Sea Level History

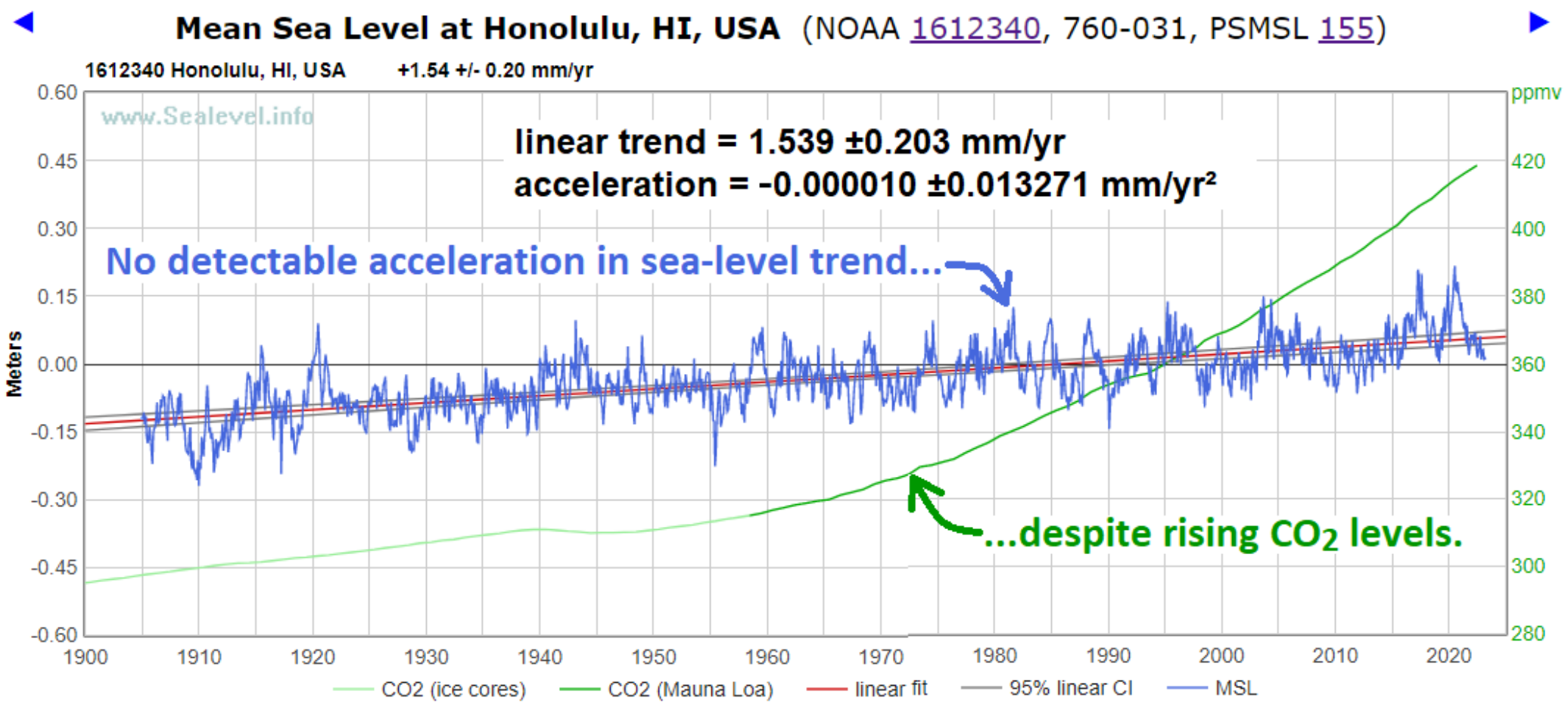
Tide Gage Records

https://sealevel.info/1612340_Honolulu_thru_2023-04_vs_CO2_annot1_1186x700.png

sealevel.info/learnmore.html

sealevel.info/MSL_graph.php?id=Honolulu

Sealevel.info → Data → 1612340

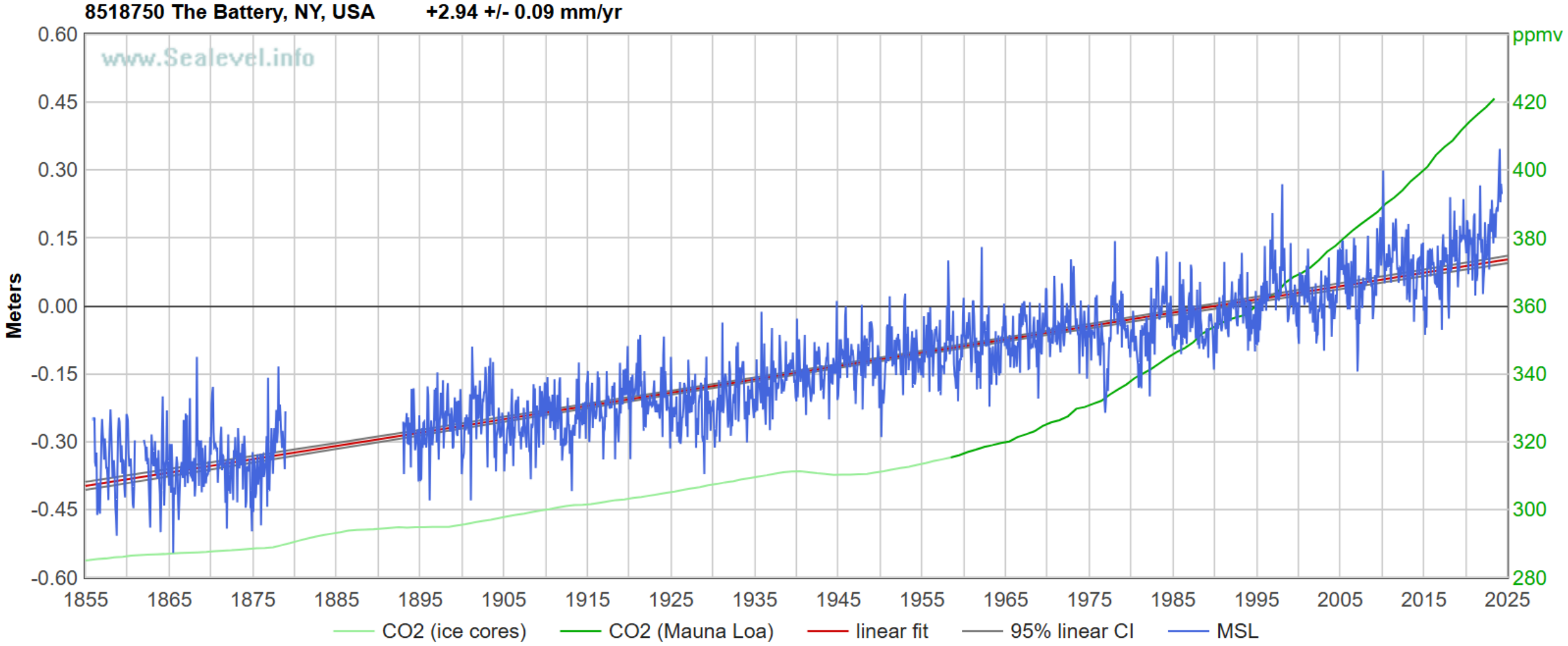


The mean sea level (MSL) trend at Honolulu, HI, USA is +1.54 mm/year with a 95% confidence interval of ±0.21 mm/year, based on monthly mean sea level data from 1905/1 to 2023/4. That is equivalent to a change of 0.50 feet in 100 years. (R-squared = 0.521)

https://sealevel.info/MSL_graph.php?id=Battery

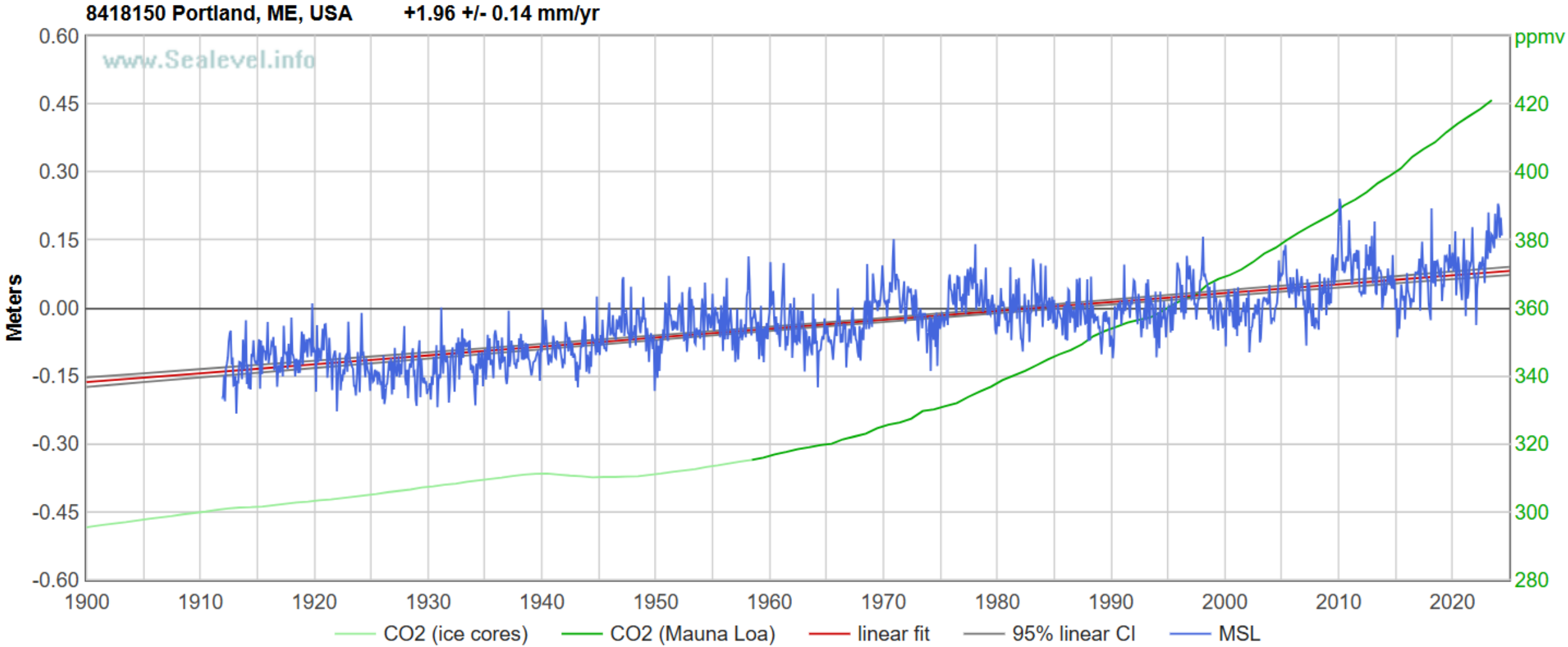
Sealevel.info → Data → 8518750

Mean Sea Level at The Battery, NY, USA (NOAA 8518750, 960-121, PSMSL 12)



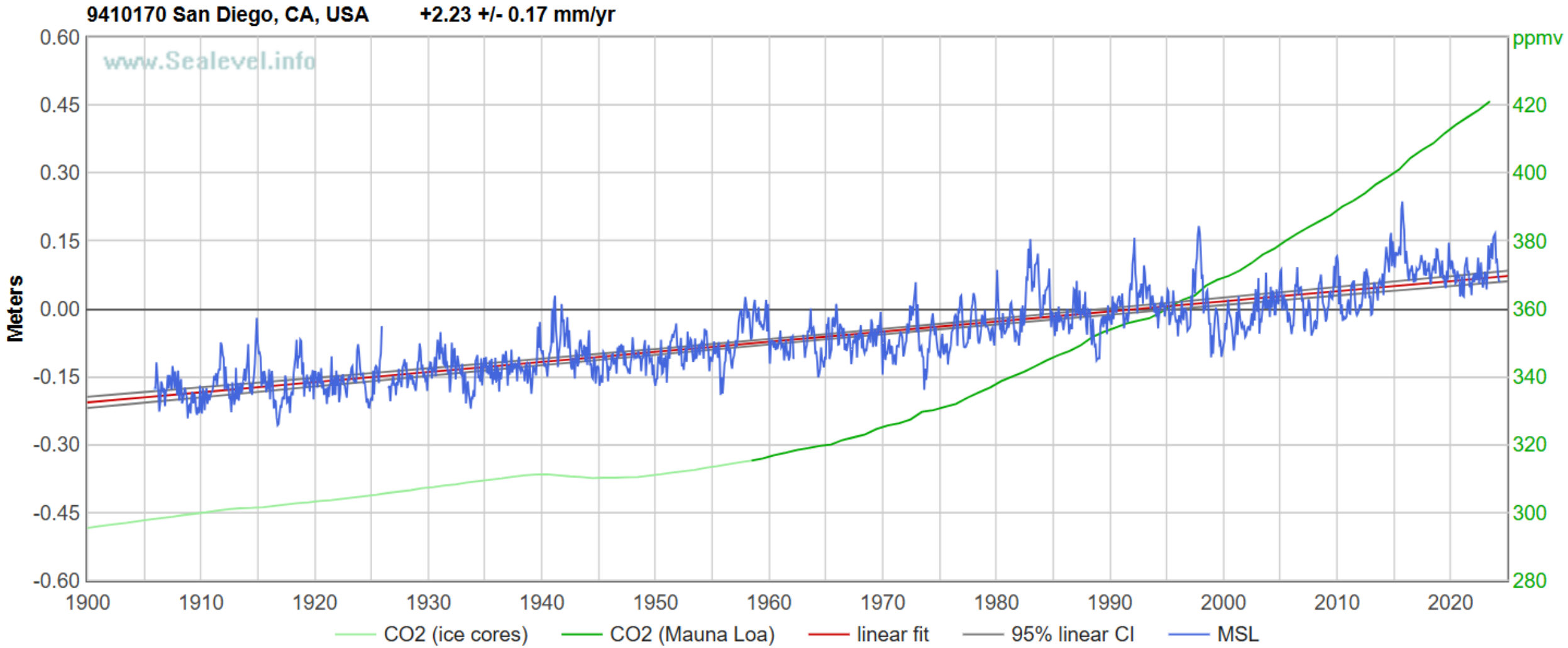
The mean sea level (MSL) trend at The Battery, NY, USA is +2.94 mm/year with a 95% confidence interval of ±0.09 mm/year, based on monthly mean sea level data from 1856/1 to 2024/5. That is equivalent to a change of 0.97 feet in 100 years. (R-squared = 0.840)

Mean Sea Level at Portland, ME, USA (NOAA 8418150, 960-181, PSMSL 183)



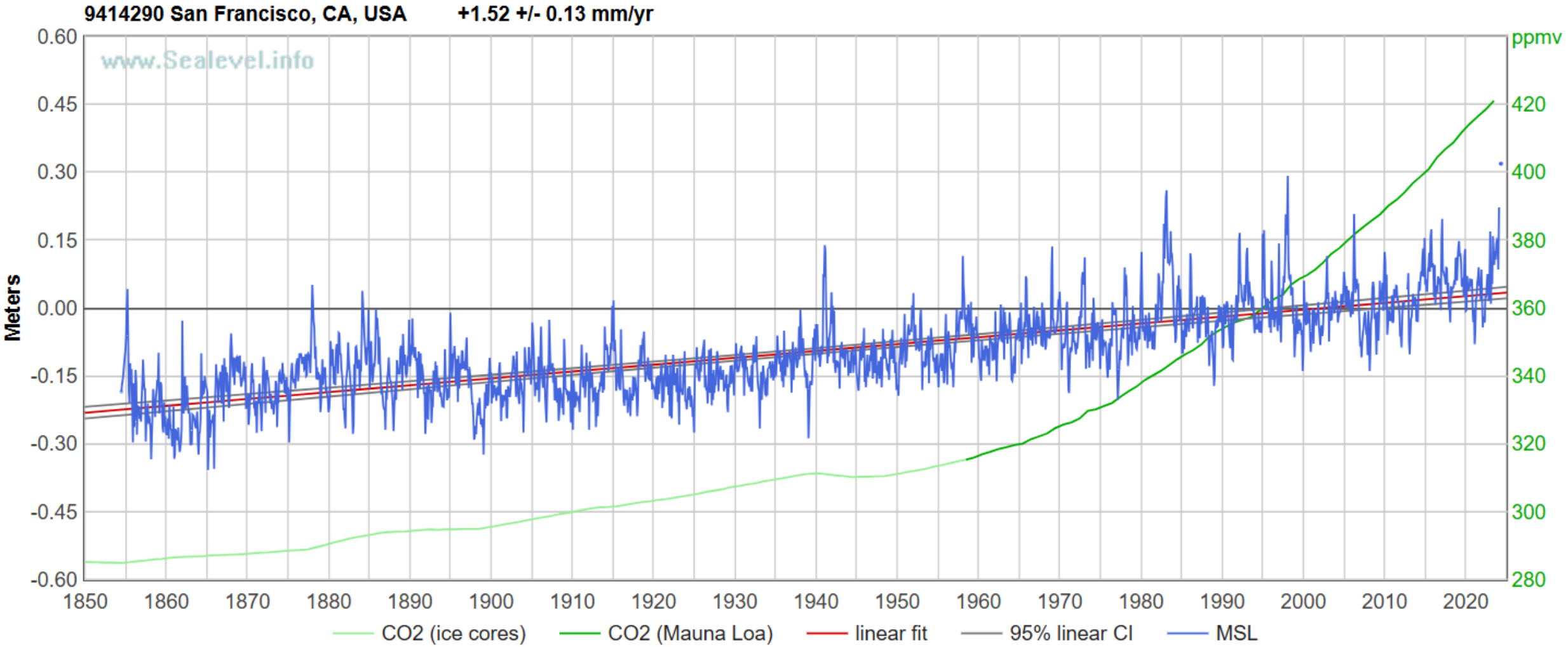
The mean sea level (MSL) trend at Portland, ME, USA is +1.96 mm/year with a 95% confidence interval of ±0.14 mm/year, based on monthly mean sea level data from 1912/1 to 2024/5. That is equivalent to a change of 0.64 feet in 100 years. (R-squared = 0.621)

Mean Sea Level at San Diego, CA, USA (NOAA 9410170, 823-081, PSMSL 158)



The mean sea level (MSL) trend at San Diego, CA, USA is +2.23 mm/year with a 95% confidence interval of ±0.17 mm/year, based on monthly mean sea level data from 1906/1 to 2024/5. That is equivalent to a change of 0.73 feet in 100 years. (R-squared = 0.751)

Mean Sea Level at San Francisco, CA, USA (NOAA 9414290, 823-031, PSMSL 10)



The mean sea level (MSL) trend at San Francisco, CA, USA is +1.52 mm/year with a 95% confidence interval of ±0.13 mm/year, based on monthly mean sea level data from 1854/7 to 2024/5. That is equivalent to a change of 0.50 feet in 100 years. (R-squared = 0.590)

The IPCC AR5 SPM22 makes the following statements regarding global sea level rise:

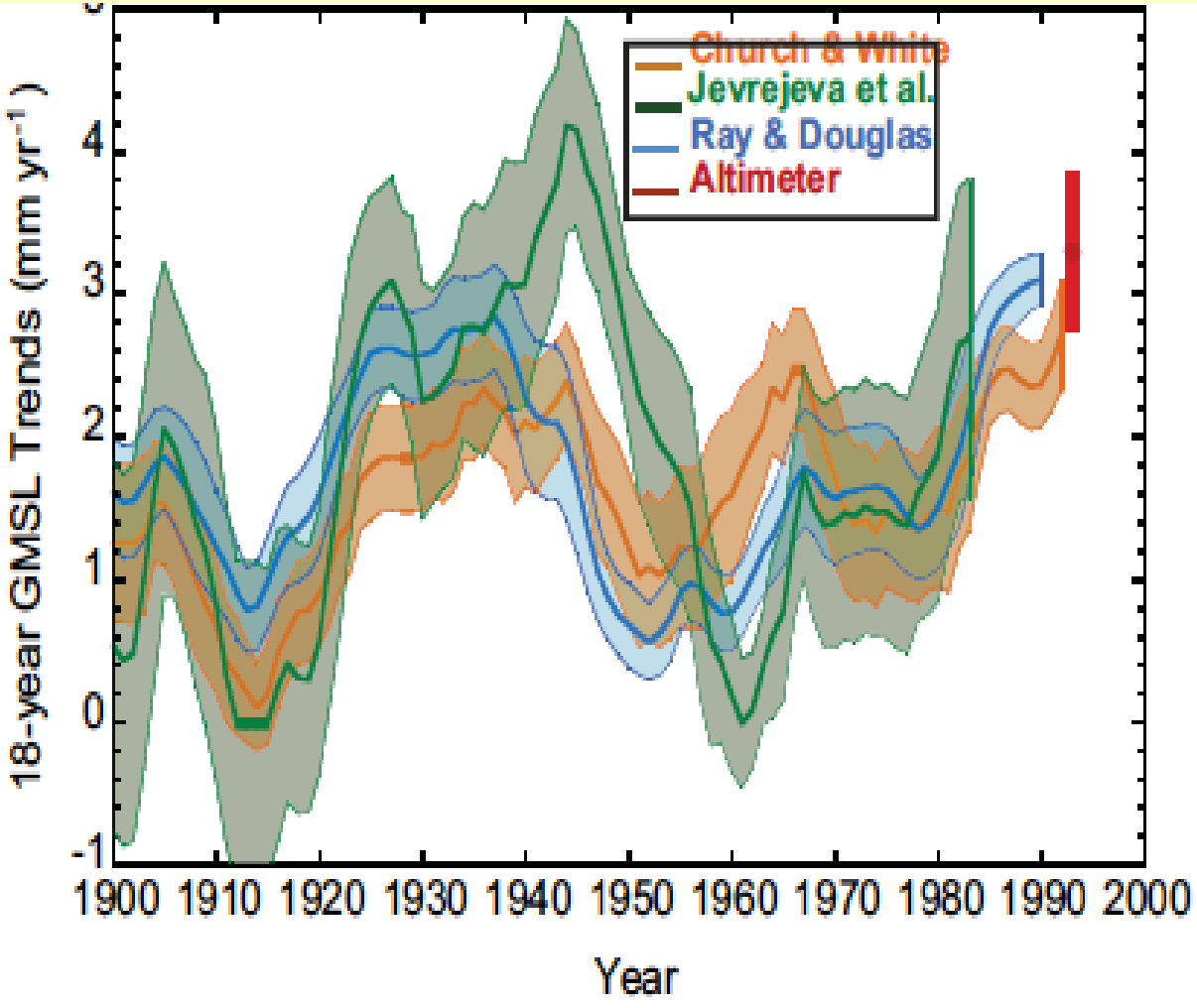
"Over the period 1901–2010, global mean sea level rose by 0.19 [0.17 to 0.21] m" [about 7-8 inches]

"It is very likely that the mean rate of global averaged sea level rise was 1.7 [1.5 to 1.9] mm yr–1 between 1901 and 2010 . . . and 3.2 [2.8 to 3.6] mm yr–1 between 1993 and 2010. ***It is likely that similarly high rates occurred between 1920 and 1950."***

<bold added>

The rate of global mean sea level rise as portrayed in the IPCC AR5 is shown in below.

Dr Judith Curry
written testimony to
US Senate, 8 Dec 2015



The IPCC AR5 then concludes:

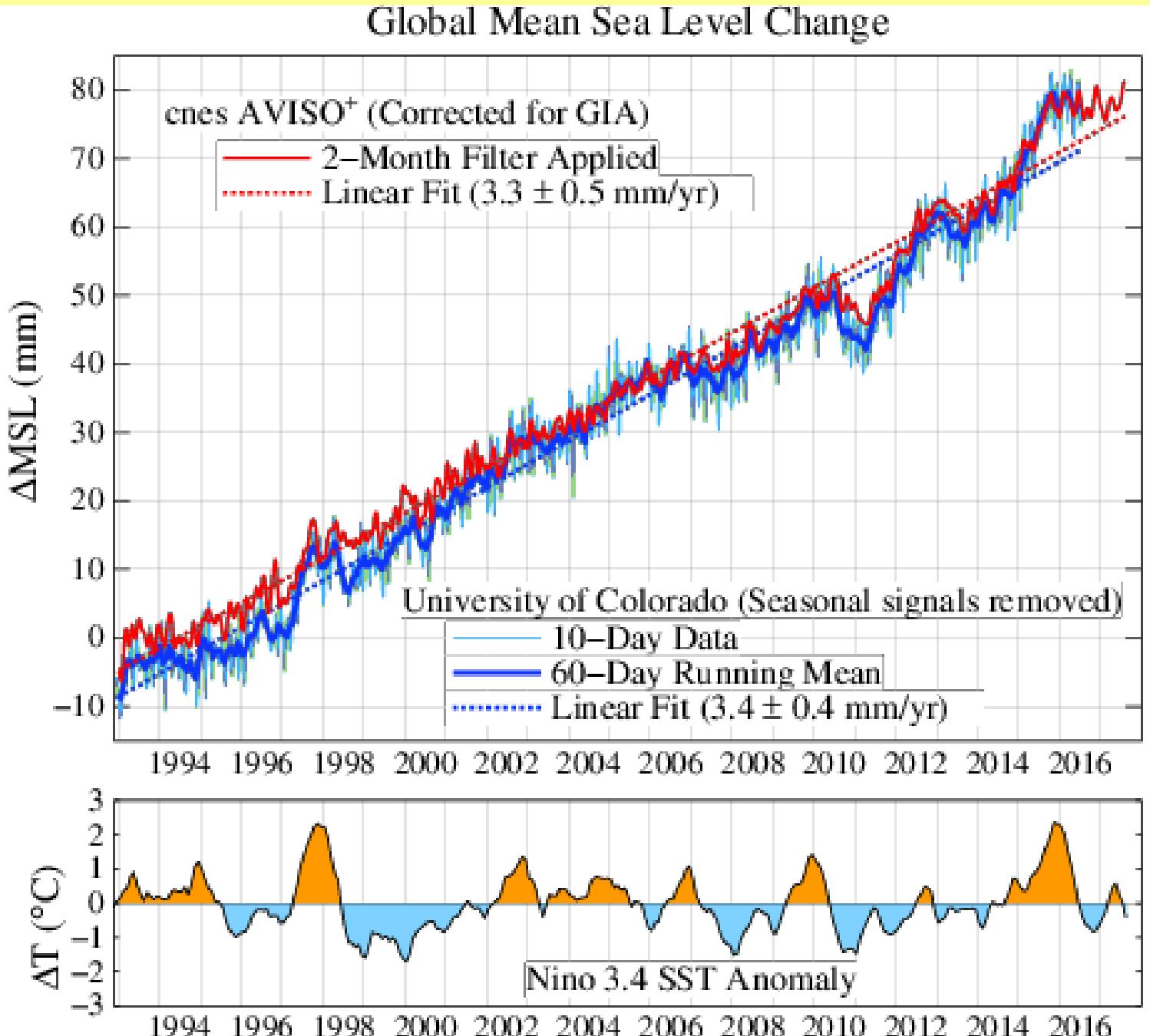
*"It is **very likely** that there is a substantial contribution from anthropogenic forcings to the global mean sea level rise since the 1970s."*

Global sea level has been rising for the past several thousand years.
The key issue is whether the rate of sea level rise is accelerating owing to anthropogenic global warming.

It is seen that the rate of rise during 1920-1950 was comparable to, if not larger than, the value in recent years (a period contributing less than 10% of the human caused CO_2 emissions since 1900).

Hence the data does not seem to support the IPCC's conclusion of a substantial contribution from anthropogenic forcings to the global mean sea level rise since the 1970s…

https://wattsupwiththat.com/2017/10/07/sea-level-rise-and-fall-part-2-tide-gauges/



Sea Level Fraud


PRESIDENT OBAMA
"THIS WAS THE MOMENT WHEN THE RISE OF THE OCEANS BEGAN TO SLOW AND OUR PLANET BEGAN TO HEAL."
ACTUALLY, I'D SETTLE FOR A WORKING WEBSITE.
OBAMACARE TROUBLE
H. Payne
©13UFS comics.com EMAIL:hpayne@detroitnews.com

Fudged and disappeared sea level rise data from NOAA'S Tides and Currents

12 April 2016

http://realclimatescience.com/2015/12/nasa-sea-level-fraud/ https://archive.is/k6AGa#selection-1751.397-1751.475

This is a “disappeared” NOAA web page which states that sea level rise is 1-7 – 1.8 mm/year.

Dave Burton thinks it is less, because of fudged “Glacial Isostatic Adjustment.”

archive.is
webpage capture

Saved from https://web.archive.org/web/20150910050658/http://www.tidesandcurrents.noaa.gov/ search 6 Nov 2015 22:37:40 UTC

no other snapshots from this url

Original http://www.tidesandcurrents.noaa.gov/sltrends/globalregional.htm 10 Sep 2015 05:06:58 UTC

no other snapshots from this url

All snapshots from host archive.org

from host www.tidesandcurrents.noaa.gov

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SEA LEVEL TRENDS

Home/Map

U.S. Stations

Global Stations

Data Tables

Select a Dat

U.S. Trends

Home/Map / U.S. Trends Map / Monthly Anomalies / Anomaly Count/Year

Global Regional Trends Comparison (4 Main Regions, various subregions)

The graphs compare the 95% confidence intervals of relative mean sea level trends for CO-OPS and global stations. Trends with the narrowest confidence intervals are based on the longest data sets. Trends with the widest confidence intervals are based on only 30-40 years of data. The graphs can provide an overarching indication of the differing rates of regional vertical land motion, given that the absolute global sea level rise is believed to be 1.7-1.8 millimeters/year. Note that they are relative sea level trends, and are not corrected for local land movement. The calculated trends for all CO-OPS stations are available as a table in millimeters/year and in feet/century. A complete table of non-CO-OPS station trends are available as a table in millimeters/year and in feet/century.

1. Atlantic Ocean & Seas

a. Northwest Atlantic

Dave Burton discovers from Church and White there was no 20th Century Sea Level Rise Acceleration
http://wattsupwiththat.com/2014/09/16/decrying-wishful-science-on-npr/

daveburton says: September 16, 2014 at 10:06 pm

The talk about disappearing negative results reminds me of an example… In 2006, Church and White published, "A 20th century acceleration in global sea-level rise." It got huge press, and to this day it is still frequently cited as proof that man-made global warming is causing accelerated sea-level rise.
However, their reported error bar for the amount of acceleration they found for the 20th century as a whole went all the way down to zero, and one detail that their paper didn't mention was that all of the acceleration they found was prior to 1925 — which means it was almost certainly unconnected to anthropogenic GHG emissions.

Dave Burton discovers from Church and White there was no 20th Century Sea Level Rise Acceleration Pg 2

In 2009, Church and White posted a new data set on their web site, but, mysteriously, published no paper about it. I wondered about that, so I reproduced their 2006 calculations using their 2009 data.

Guess what? All the 20th century acceleration was gone. I shared my results with Drs. Church & White, and on June 18, 2010, Dr. Church cordially replied, confirming my analysis: *For the 1901 to 2007 period, again we agree with your result and get a non-significant and small deceleration*."

You can see why they didn't publish a paper about their 2009 results. If they would have published such a paper, the title would have had to have been something like, "Oops, never mind: No 20th century acceleration in global sea-level rise after all."

BTW, before someone asks, I did publish my results: doi:10.1007/s11069-012-0159-8
<Paragraphing, spacing, italics underlining added>

“Climate Change Making Days Longer,” studies say

What NPR really wanted to say was that Human-Caused, CO2-Fueled Global Warming was causing another problem that could only be solved by Big Government.

What the data shows is that the definition of a 24-integer-hour day, invariant with time never existed.

As we learn more, climate change is the norm, and climate is and was never in stasis.

The climate change bandwagon is merely a pretext for the Big Government Elites to extract money from the middle and lower classes, many of whom are living in poverty.

More importantly, is this is a methodology to impose Big Government Power and impose restrictions on our freedoms.