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Sea level rises: Arguing the nanometre to defocus from the missed meter

A.Parker
School of Engineering and Physical Science, James Cook University, Townsville QLD 4811, (AUSTRALIA)
E-mail: albert.parker.2014@gmail.com

ABSTRACT

The sea level rates of rise of the worldwide surveys by the Permanent Service on Mean Sea Level (PSMSL) or the United States surveys by the National Oceanic and Atmospheric Administration (NOAA) have shown stable sea level rises, with average values over hundreds of tide gauges very small, and negligible time rates of changes of these values, but eventually negative. To defocus from the only +0.25 mm/year of about constant sea level rises at the more than 100 worldwide tide gauges of length exceeding 60 years (the minimum to clear the trend of the multi decadal oscillations), translating in only 3.75 mm sea level rise after 15 years, an incredible paper has recently argued that the sea level acceleration, rather than being small negative when computed over a significant population of tide gauges as the time rate of change of the sea level rise obtained by linear fitting of all the recorded data, could possibly be small positive changing the way sea level rate of rise and acceleration are computed. I comment as this latest work is only the latest attempt of a long series to make unclear what is otherwise very clear – there is no alarming sea level rise.

KEYWORDS

Databases;
Geosciences;
Information technology;
Education;
Mining.

ARGUING THE NANOMETRE TO DEFOCUS FROM THE MISSED METER

If somebody could be really interested in understanding the present pattern of sea levels, this can be done without too much effort by considering the relative sea levels measured by the tide gauges in many locations worldwide, and their relative rate of rise(SLR) computed by linear fitting of all the data recorded up to a given time (www.psmsl.org). These results obviously are not perfect, only the theory of man-made catastrophic global warming is believed to be perfect. The computed SLR may certainly be imperfect, the different lengths of the records may give a bias, the natural oscillations of the sea levels relevant on time scales up to multi-decades and their phasing relative to the time window may play a role, the completeness of the record may have an influence, the larger or smaller subsidence of the instrument may give a bias, all factors unquestionablyall contributing to the accuracy of the computed SLR at a given time and producing variations from one survey to the other. However, by looking at the PSMSL worldwide surveys without any

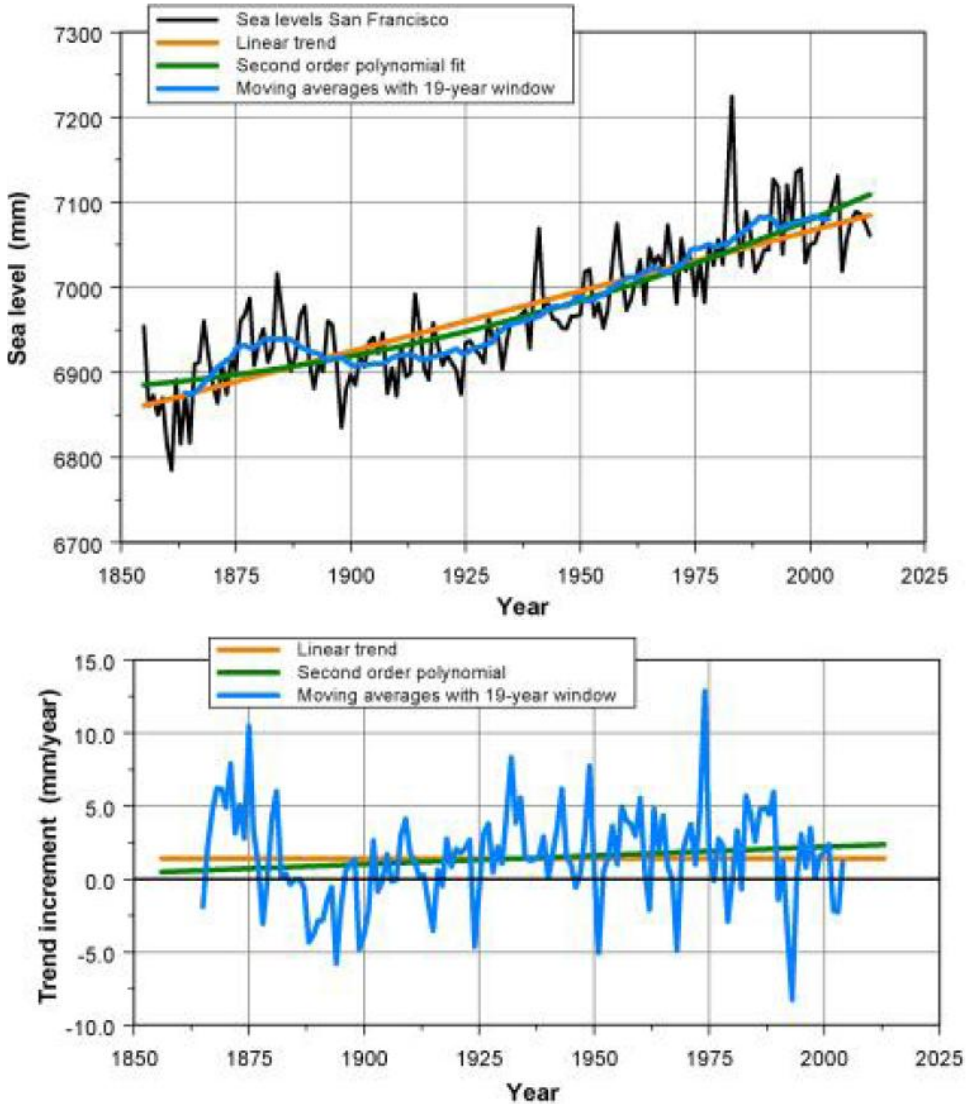

Figure 1 : Different trend options considered in Ref.[1] for analysing the San Francisco tide gauge.The three trend models μ1,t, μ2,t, and μ3,t, are linear, second-order polynomial, and moving averages with a 19 year window. Sample period is 1855–2013. The three corresponding trend increment series [μ1, t - μ1,t-1], [μ2, t - μ2,t-1], and [μ3, t - μ3,t-1]. Image reproduced from Ref.[1].

cherry picking approach and a misleading intention, the naive averaging of the SLRcomputed with the same imperfect procedure in the same tide gauges is about the same (but it is eventually reducing even if of minimal quantitiesif spasmodically looking at the nanometre per year squared) and quite small over this century. Over the first 15 year of this century the sea levels have risen of fifteen 15 mm on average in the more than 500 tide gauges of any length in the PSMSL data base, and of only 3.75 mm on average in the more than 100 tide gauges in the data base of length exceeding the 60 years periodicity (sea levels as temperatures oscillates with up to a quasi-60 years periodicity detected, so it makes sense to have more than 60 years to assess a trend). The naïve averaging of more than 500 different tide gauges has been about +1 mm/year all over this century, while only considering the more than 100 longest tide gauges of length above the 60 years,their naïve averaging has been an even smaller +0.25 mm/year all over this century.

If the surveys of PSMSL from one year to the other have shown SLR values not increasing over this century, obviously when computed with the same technique in the same locations, same pattern is shown by the tide gauges of other more geographi-

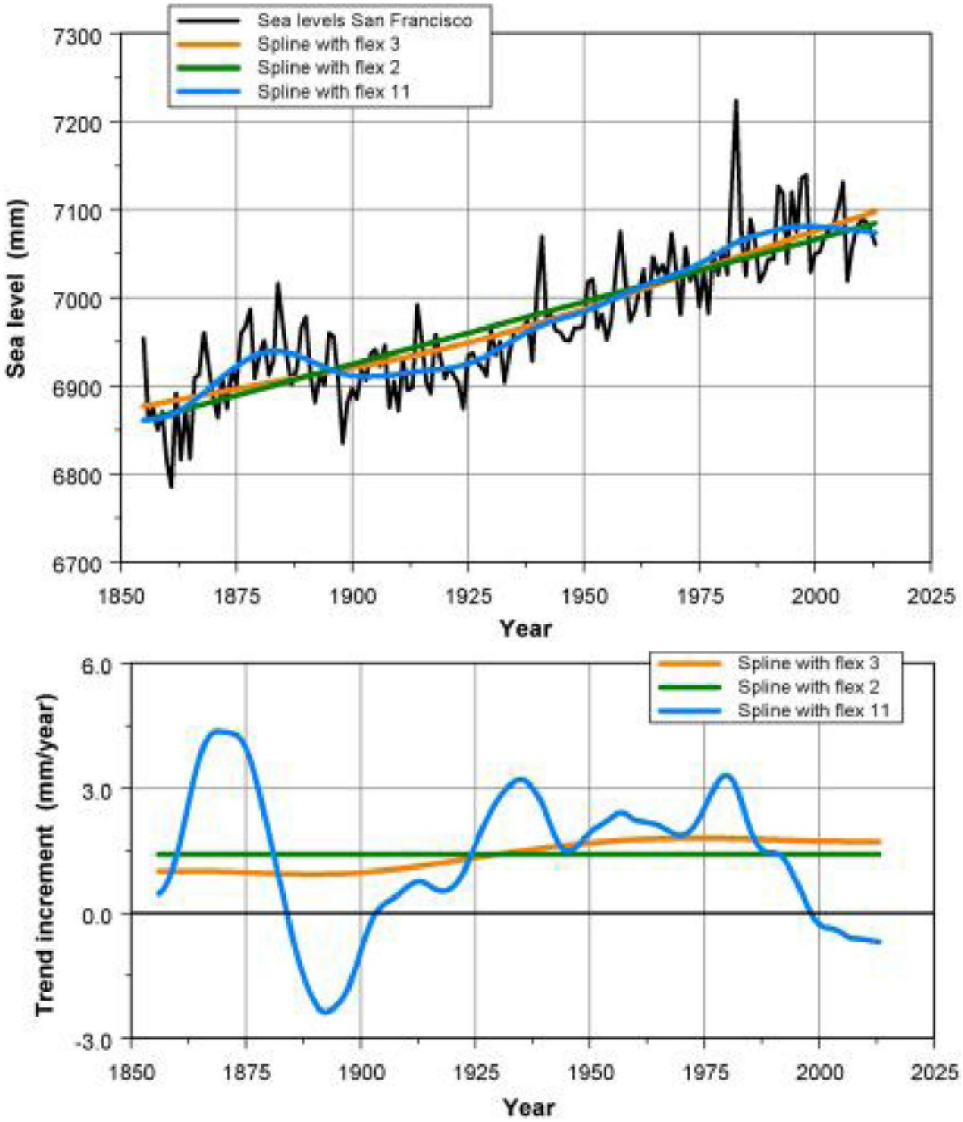

Figure 2 : One more trend option considered in Ref.[1] for analysing the San Francisco tide gauge. The spline trend model, estimated for three flexibilities and the three corresponding trend increment series.Image reproduced from Ref.[1].

cally localised surveys as the United States surveys by NOAA (tiesandcurrents.noaa.gov).

Thesemultiple lines of evidence of slow rising not accelerating sea levels should not be a surprise as the lower troposphere temperature is flat over thiscentury, after a warming that has been constantly reducing since 1979 to 1998 to reach the present 18 years long hiatus (vortex.nsstc.uah.edu), the global sea ice extension is similarly not shrinking over this century when the increasing Antarctic sea ice has outpaced the shrinking Arctic sea ices (www.nsidc.org) and the ocean temperatures are also notrising free of arbitrary correction.

Properly not accounting for arbitrary corrections of measured relative sea levels to derive absolute values, the satellite monitoring of sea levels, either the gravity based experiment or by the altimeters, before arbitrary spreading worldwide of glacial isostatic adjustments (GIA) supposed to be confined to the polar regions,also supports the tide gauge result undoubtedly of slow rising not accelerating seas.

As meanwhile the global carbon and hydrocarbon fuel consumption (www.eia.gov) has continued to grow everywhere similarly to the world population that has now reached 7,5 billion (www.worldbank.com), there is not too much of science to support the climate model predictions. However, as the turnover of the climate industry has now

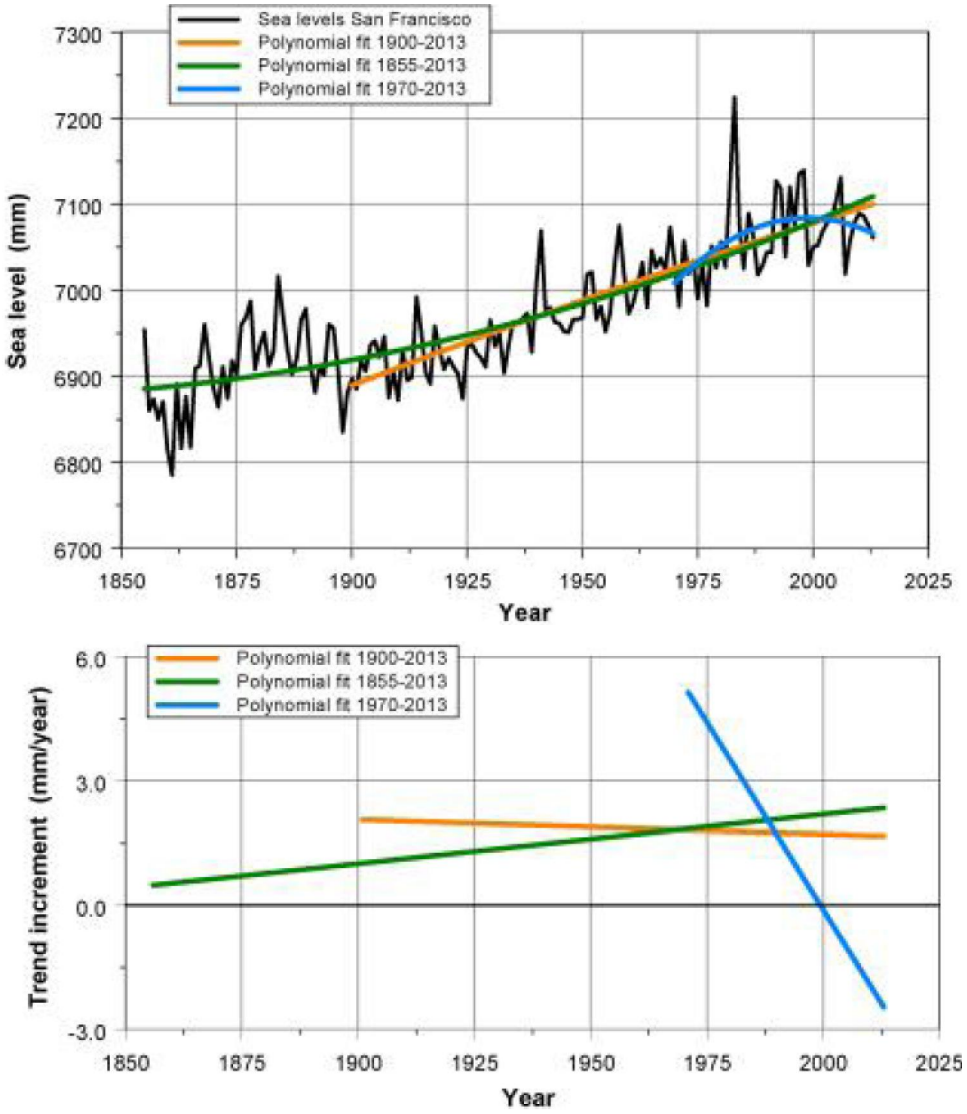

Figure 3 : One more trend option considered in Ref.[1] for analysing the San Francisco tide gauge. Second-order polynomial trend fit, estimated for three sample periods: 1855–2013, 1900–2013, and 1970–2013. Due to the definition of second-order polynomials, the trend increment curves are always a straight line as shown in the bottom plot.Image reproduced from Ref.[1]

reached 1.5trillion $ (www.climatechangebusiness.com), there are certainly many trying their best to negate the evidence.

As Australia is the top netsequestering country for the evil carbon based on measurements (www.gosat.nies.go.jp) and logic (6% of the population of Europe spread out in much more land and sea of Europe Russia excluded), and in case the net carbon dioxide emission could be of real concern to any one, Australia should certainly seek compensation from the top polluters starting from Europe and the United States (India and China are presently exempted from accountancy exercises), logic would not expect in Australia the top worldwide concentration of intergovernmental climate researchers and the leaders in the art of manipulating the experimental evidence.

The commented paper[1] is certainly competing with the best Australian inter-governmental sea level experts, taking inspirations from those more deeply involved in labour work for the noble quest to save the world from the rising seas, as it is supporting the possibility the climate model predictions are not wrong focusing on the nanometre per year squared from different acceleration by different methods missing completely the big picture.

Critical Review

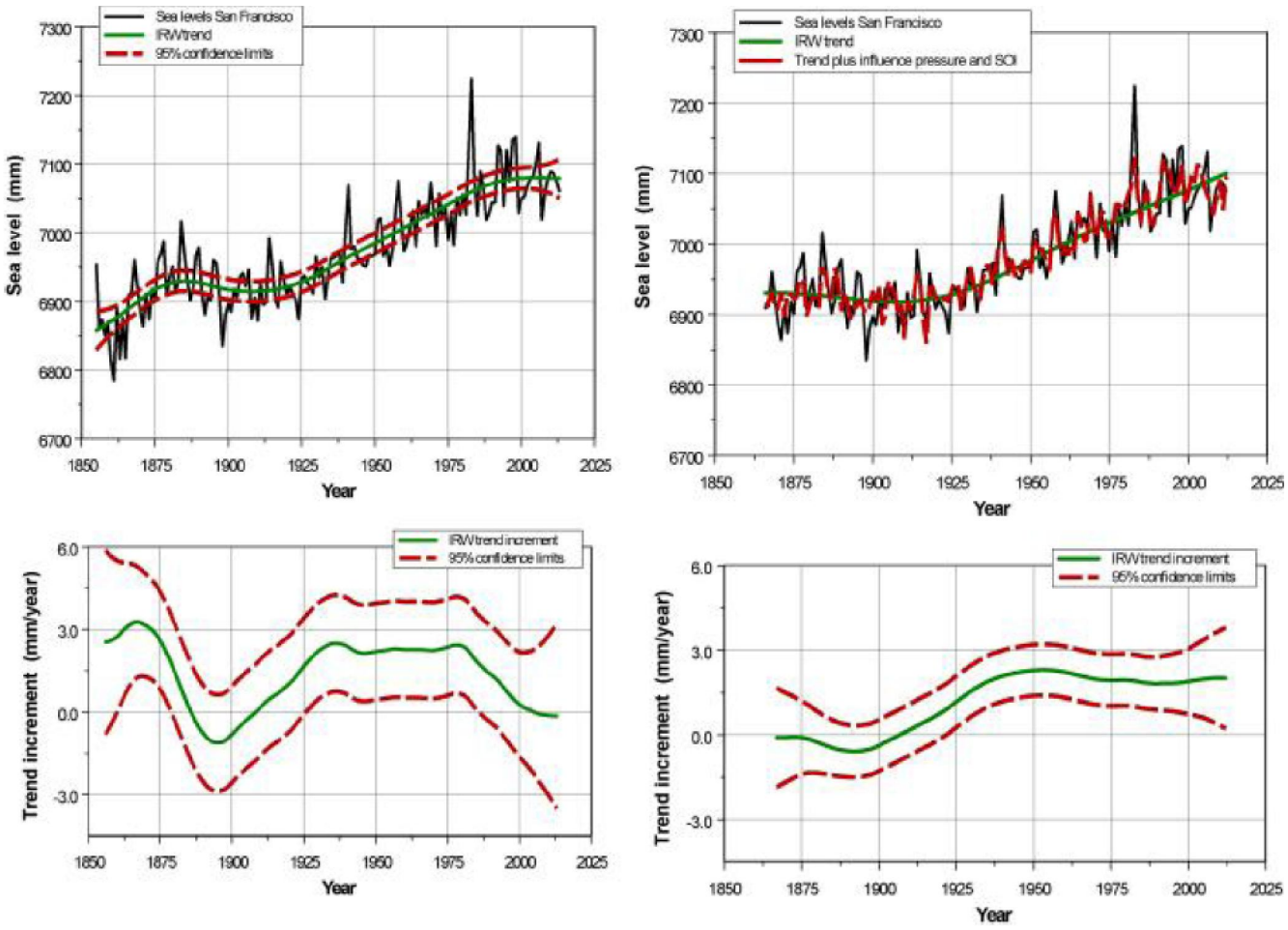

Figure 4 : One more trend option considered in Ref.[1] for analysing the San Francisco tide gauge. Two models estimated by Structural Time series Models (STMs). In the left plot, the IRW trend model is applied to the data (1855–2013). Dashed lines represent 95% confidence limits. In the right plot, IRW trend model is extended by adding two explanatory variables: local pressure and the Southern Oscillation Index (SOI) index (1866–2012). The IRW trend is given by the green line; the trend plus influence of local pressure and SOI is given by the red line. The explanatory variables yield a variance reduction of 42% in the sea level variability around the trend. Both bottom plots show the corresponding trend increment series, along with 95% confidence limits

Over the first 15 year of this century the sea levels have risen of fifteen 15 mm on average in the more than 500 tide gauge locations with any record length in the PSMSL data base, and of only 3.75 mm on average in the more than 100 tide gauge locations of record length exceeding the 60 years periodicity. To make the metre (and above) sea level rise by 2100 does not seem that easy.

Rather than arguing on which method works better than the classic linear fitting to assess the relative rate of rise (and the time rate of change of this parameter to assess the acceleration) the authors should accept the fact that with 985 probability over 1000, or also with 996.5 over 1000, the climate models are wrong and the sharply rising seas claims are only living in interested misinterpretations.

The authors of[1] have wrongly picked the San Francisco tide gauge to illustrate their flawed principles.

Figures 1 to 4 (images from[1], Open Access article published under Creative Commons) show the different trend options considered aiming the conclusion that uncertainty may hide the trend rise so the climate model predictions may be correct.

As shown in Figure 5 (monthly average mean sea level data downloaded from www.psmsl.org) since 1993, start of the satellite altimeter era, the relative rate of rise of sea levels is negative (-0.935 mm/year), while all over the time record since 1854 the relative rate of rise is positive. The relative sea level rise over the large time window is very likely

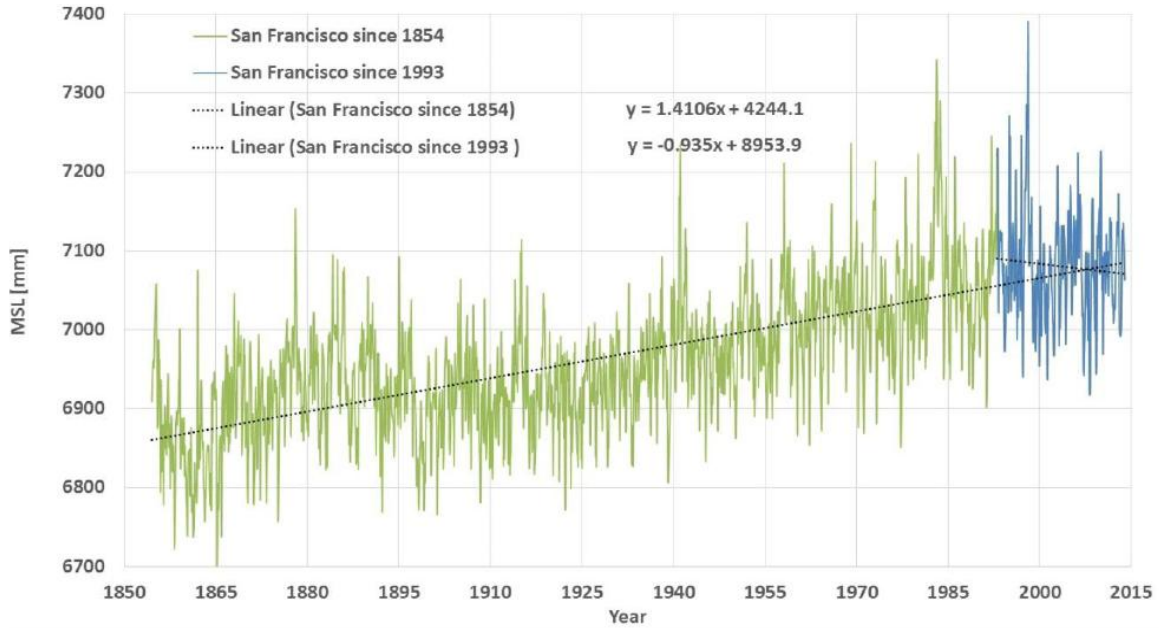

Figure 5 : Monthly average mean sea levels measured in san francisco. due to the phasing of the natural oscillation the west coast of the united states has been in recent years a cold spot of decelerations, with same logic the east coast of the united states was claimed in recent ears a hot spot of accelerations. over the time window 1854 to 2015, the relative rate of rise by classic linear fitting is +1.41 mm/year. over the time window 1993 to 2015 (the satellite altimeter era), the relative rate of rise by classic linear fitting is – 0.935 mm/year

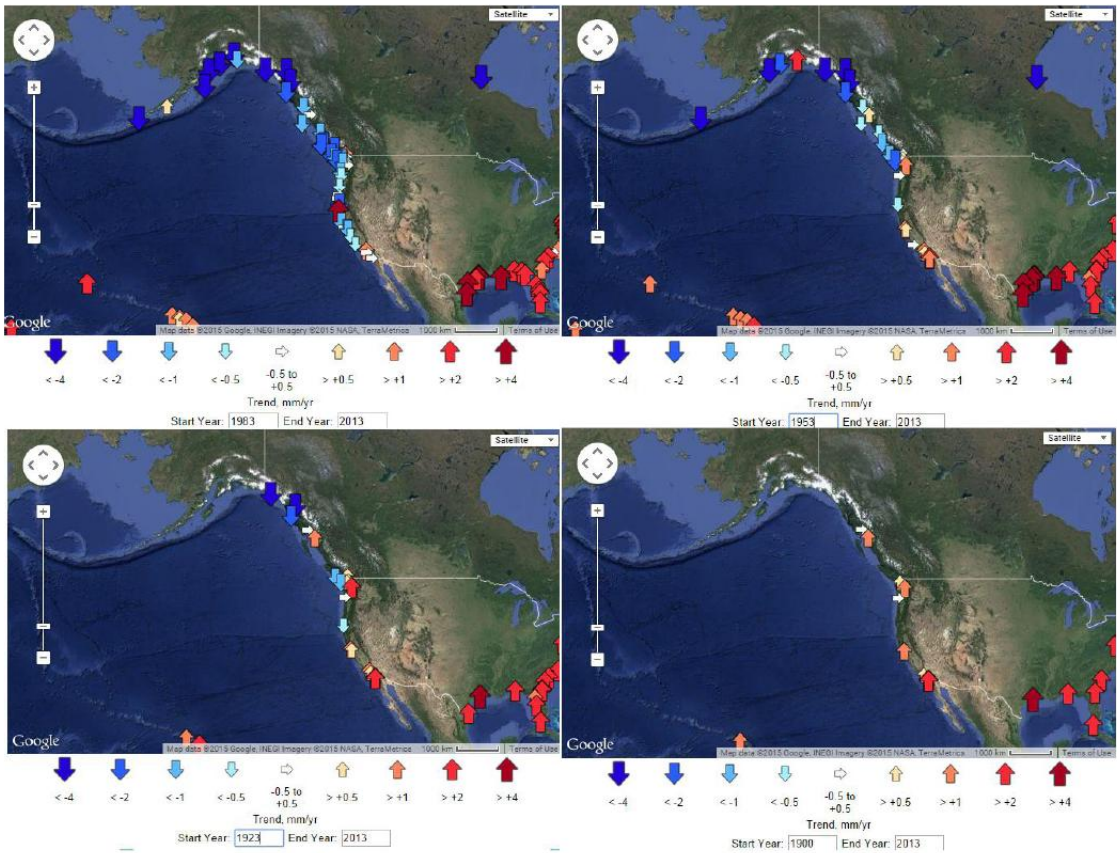

Figure 6 : Sea level trends by PSMSL along the west coast of the united states and canada computed over the windows 1983 to 2013(minimum, 30 years), 1953 to 2013 (60 years), 1923 to 2013 (90 years) and 1900 to 2013 (maximum, 113 years)

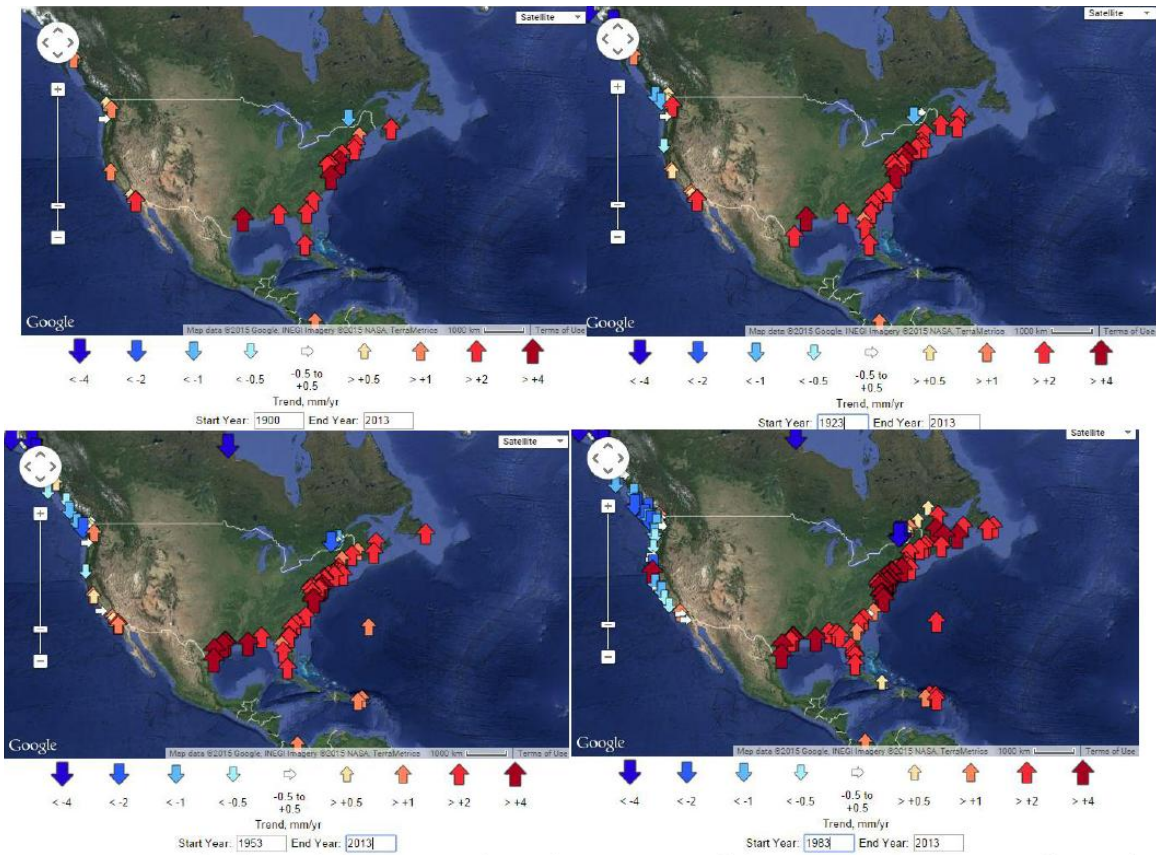

Figure 7 : Sea level trends by PSMSL along the east coast of the united states computed over the windows 1983 to 2013(minimum, 30 years), 1953 to 2013 (60 years), 1923 to 2013 (90 years) and 1900 to 2013 (maximum, 113 years).

mostly due to subsidence at the tide gauge. The relative sea level rise over the small time window is not due to global cooling, but simply the phasing and the amplitude of the multi-decadal oscillations for the specific area.

Importantly, the sea levels monthly averages are lower now than at the end of the 1990s (when the hiatus in global temperatures started).

Figures 6 and 7 (images fromwww.psmsl.org) are the rates computed by linear fitting of data by PSMSL for the tide gauges along the West coast of the United States (and Canada) and the East Coast of the United States. The East Coast of the United States has presently positive oscillations, the West Coast negative oscillations.There is no hot spot of acceleration along the East Coast of the United States due to global warming as there is no cold spot of deceleration along the West coast of the United States due to global cooling. Despite California is one of the hubs of the scaring industry, along the West coast of the United States (and Canada)almost all the sea levels are lower now than in 1983 even in areas of subsidence. Worth of mention, over the last 15 years the subsequent surveys of NOAA have globally indicated a decline in the rate of rise of sea levels for all the tide gauges of the United States.

No matter which is the method adopted to compute a local trend, the inconvenient truth is that in the more than 500 worldwide tide gauges of PSMSL the sea level has growth only of 15 mm in the last 15 years, and in the more than 100 longest with more than 60 years of recording the sea level has growth only of 3.75 mm in the last 15 years. These rates positive or negative are basically unchanged over the 15years. I believe this is enough evidence to conclude the climate model predictions are a complete failure for sea levels as they are for all the other climate parameters.

CONCLUSIONS

The sea levels rates of rise as computed by the

linear fitting of all the data recorded by the world-wide tide gauges show locally oscillations in positive or negative, but globally no sign of acceleration[2-19]. On average, the rates of rise are also small in addition to constant[2-19]. There is no support in the climate model predictions claiming a metre of sea level rise by 2100 when in 2015 the whole metre is still missed.

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