

Remarks of David A. Burton at the Nov. 19, 2014 meeting of the NC CRC Science Panel, in Morehead City, NC.

1. I would like to be added to the email list to receive these drafts and other materials that are circulating, when they're sent out. The reason for these open meetings is so that the process is transparent. The unavailability of these materials impedes that goal.

Also, I'm available for reviewing drafts. [I also raised my hand when Prof. Sciaudone asked for volunteers to help with the writing.]

2. I'm glad you did not decide to use two different numbers for eustatic sea-level rise (SLR). It's a global quantity, and for predictive purposes it doesn't matter which number you use. The number you choose just changes how local SLR is divided between eustatic (global) sea-level change and local factors like subsidence. However, 1.4 mm/yr would be a better number than 1.7; I'll get to that.

3. It's very important that the new report explicitly correct the errors in the previous Report, or at least the major ones, such as the false statement that SLR has accelerated in response to global warming. The lack of that was a defect in the Addendum to the previous Report.

Willingness to admit and correct errors enhances credibility.

4. The Union of Concerned Scientists is not a credible source. Please don't open yourselves to ridicule by citing them! They're even worse than the IPCC (which has severe credibility issues, too).

[\[1\]](#) [\[2\]](#) [\[3\]](#) [\[4\]](#) [\[5\]](#) [\[6\]](#)



UCS member Kenji Watts

The NC Legislature wants you to seek balance. You can't balance the IPCC with sources like that. You need sources like the [Nongovernmental International Panel on Climate Change](#) (NIPCC).

5. The [literature indicates that a 60+ year record is needed](#) to measure a robust sea-level trend from a tide gauge. However, I think Tom Jarrett's method of matching short tide gauge records like Duck's to longer records from nearby gauges, to deduce local subsidence differences, and hence trend differences, is innovative, practical and robust. I encourage you to use it.

6. Church & White add a 0.3 mm/yr adjustment from Richard Peltier, to offset hypothesized sinking of the ocean floor. That is useful for mass balance calculations, but wrong for calculating sea-level.

Sinking of the ocean floor lowers sea-level at the coasts, so even if that model-derived 0.3 mm/yr number is accurate, if you add it as a "correction" to measured sea-level rise, the result is not the rate of change of the level of the ocean's surface.

[Martin Vermeer explained it like this: "The ocean floor is still subsiding... as a plastic response to the increased ocean water load after deglaciation. This effect has been studied extensively by Richard Peltier of Toronto. What it means is that, if the total ocean volume were not to change at all, we would still see the ocean surface subside. Conversely, if we want to obtain a measure for the change in total ocean water volume... we have to add 0.3 mm/year to the 'raw' observed change in mean position of the sea surface... This [adjustment] is nowadays routinely made."]

If you subtract that 0.3 mm/yr from C&W's 1.7 you get 1.4 mm/yr, which is about what you really see from globally averaged tide gauges. [The median rate of SLR measured by NOAA's list of 285 analyzed U.S. and PSMSL tide gauges is 1.410 mm/yr.](#)

C&W also do some other strange things. For instance, they use a lot of low-quality, short term records, which I think degrades the quality of their result.

Also, here's a quote from C&W 2006. *"An additional spatially uniform field is included in the reconstruction to represent changes in GMSL. Omitting this field results in a much smaller rate of GMSL rise..."*

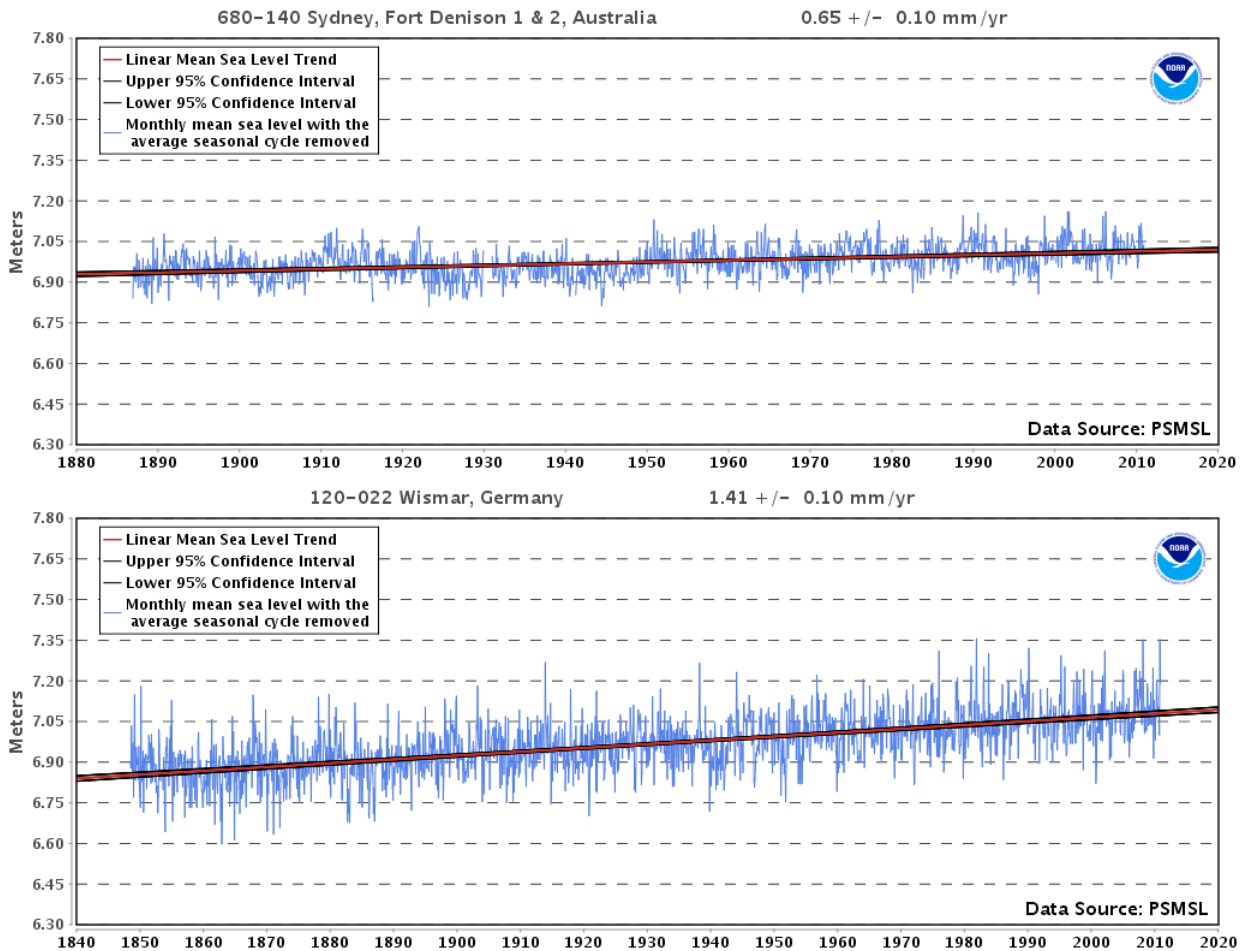
In other words, they added a fudge factor!

I wrote to them and asked why they used the adjective "spatial." Surely the "field" they added was at least temporally uniform, right? Wrong! To my astonishment, Dr. Church wrote back and said it was not temporally uniform!

Nevertheless, despite all that, if you just subtract the 0.3 Peltier adjustment from their 1.7 mm/yr number, the result is about right.

7. I'm disturbed that not everyone has accepted the fact that overwhelming measured evidence indicates that **anthropogenic GHGs are not causing accelerated sea-level rise**.

Mankind has been driving up GHG levels dramatically for 2/3 century, yet there's been no acceleration at all in SLR in that time. E.g.:



What's more, the physics of greenhouse warming means that additional CO2 has a logarithmically diminishing effect on warming. The NCAR radiation code says just 40 ppm of CO2 would produce fully half the warming of the current 400 ppm. [MODTRAN Tropical Atmosphere says just 20 ppm CO2 would do it](#). Either way, we're well into the area of diminishing returns w/r/t warming from CO2.

That means the next 100 ppm of CO2 will have much less effect than the last 100 ppm, and we'll probably have less than 80 ppm added in the next 30 years.

I'm an IPCC AR5 WGI ("The Physical Science Basis") Expert Reviewer, and I'm here to tell you that the IPCC's acceleration scenarios are not credible. They're ideologically driven, not evidence driven.

8. Also, there's no reasonable possibility of a sudden "lurch" event from Greenland and Antarctic ice sheet melt.

Over 100 cubic miles of meltwater from grounded ice are added to the oceans in an average year, but it takes about that much (95 cubic miles of ice) to increase sea-level by 1mm.

Greenland is the greater meltwater contributor, but we know that Greenland was warmer than now for hundreds of years during [the MWP](#), centered around 900 years ago, yet there's no evidence that that warm period was accompanied by any lurch of accelerated sea-level rise.

9. Don't confuse thermal expansion with meltwater. Meltwater affects SLR everywhere. Thermal expansion (steric change) in the upper ocean (which is where most thermal expansion occurs) is a strictly local effect.

Thermal expansion in the upper layer of the ocean (due to warming or freezing) causes a "bump" in the ocean, but it doesn't change sea-level elsewhere. It changes average sea surface heights measured by satellites, but it doesn't affect the coasts, and isn't registered on tide gauges. The displacement of the measured water is unaffected; it simply rises up in place, like this:



So I'm glad you aren't making the too-common mistake of using satellite altimetry data for coastal sea-level projections.

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