

2015 NC SLR Report - Draft #4 (12/31/14): **Comments***

Page i (*first bullet point*): This is the first time (of many) that the phrase “relative sea level rise” appears in this Report. It does not seem that this phrase is ever actually defined. [Note that it becomes “RSLR” on page 18.]

Page i (*sixth bullet point*): “Inclusion of scenario based global SLR predictions from the most recent IPCC Report (AR5).”

Insert the word "hypothetical". The linear fits in Figure 7 of the Report show no evidence of curvature/acceleration.

Page i: Recommend adding a bullet item to the report, material on Charleston (SC) and Sewells Point (VA) to provide context for the NC SLR locations.

Page i (*in Summary*): “(2) effects of water movement in the oceans (including the shifting position and changing speed of the Gulf Stream).”

Suggest adding: "neither of which humans have any control over.”

Page ii (*in 3rd paragraph*): Our position is that the 1.7 mm/yr global number should be less, e.g.: **a)** 1.4 mm/year (per comments submitted by D. Burton), and **b)** 1.0 mm/year (per [detailed calculations](#) by Dr. Nils-Axel Mörner).

Page iii (*first paragraph*): “The IPCC’s most recent ...”

As the Report’s Figure 7 does not show acceleration, we recommend omitting the IPCC scenarios — or to use RCP 2.6 as the high end case. IPCC thinking is largely driven by models of temperature, and those models have failed to predict 18 years of no temperature rise, while CO₂ has increased by 10%. As the NC SLR issue will be revisited periodically, scenarios based on IPCC can wait for more data. Where IPCC scenarios are referenced, they should be labeled "hypothetical". Any estimates of acceleration should be based on quadratic terms of fits to NC data.

Page iii (*first paragraph*): “Table 1” should be “Table ES1”

Page iii (*second paragraph*): “sustainability”.

We are not aware of any fixed state of nature. Clearly on a geologic time scale, Figures 1 and 2, the earth is a very dynamic place. We would replace "sustainability" with something like "human well-being".

Page iv (*third bullet point*): Suggest replacing “rapidly changing” w "current".

Page vi & vii: The lists of Figures and Tables are hard to read. Second (and subsequent) lines should be indented.

Page 1 (*first paragraph*): “~15 inches”. Where does this number come from (as the max table ES3 increase is 12.1 inches)?

Page 1 (*second paragraph*): The Science Panel was asked to do a “Scientific” assessment of future sea levels for NC. Please insert that key word.

Page 1 (*third paragraph*): “Since ... after fielding 50,000 comments.”

Recommend omitting this paragraph. Science is not based on votes, and an appeal to authority is not a method of argument that should be used.

Appeal to "peer reviewed" papers is also not a good argument. In the first place, IPCC often cites non-peer reviewed literature. More importantly, *peer review* is no guarantee of **validity**. Note:

“The peer review process, however, provides assurance only that an act of research complies with accepted methods in a field of investigation. The process provides no assurance about the methods themselves, particularly if the reviewing experts also establish and maintain the very methods that they are asked to approve.” [Feinstein, AR. (1988) [Scientific standards in epidemiologic studies of the menace of daily life](#). *Science* 242, 1257-1263.]

Page 1 (*last paragraph*): [NYSERDA](#) exists to eliminate fossil fuels. Their belief is the IPCC is not an objective endorsement of the IPCC’s accuracy.

Page 2: “3)” The wording has been improved from the prior version. We are repeating the three projections that make sense to us:

1. Linear projection for each NC tidal gauge.
2. Quadratic projections for each NC tidal gauge, if the quadratic regression coefficient is statistically justified.
3. If a projection is based on a IPCC scenario then it should be labeled "hypothetical" in that it is model-based, not empirical data based.

Page 2: “4) Provide guidance as to how to interpret and make use of these values” comes across as policy, so suggest omitting this part.

Page 2: “2. Sea Level Change: What influences ocean water levels? The sea level ... is known at the Relative Sea Level or RSL, which is...”

In the Report, the phrase “Relative Sea Level” is defined in three (3) places [see also page 5 ¶2.3, and page 12 ¶4] — and somewhat differently each time. For example “VLM” is defined as “Vertical Land Movement” in one place, and “Vertical Land Motion” in another. The recommended solution is to define RSL only once, and early on in the Report.

Page 2: “RSL = GSL + VLM + OE”. Add words [also in section 3.2] to the effect that Oceanographic Effects (OE) are generally transitory.

Page 2: (*last paragraph*) It’s unclear what the “CO2 concentration in ice cores” readings have to do with past SLR. The Report should explain the connection.

Page 3: A reference to Kemp is in the Figure 3 description. The text statement “Figures 2 and 3; Kemp, et al.” is confusing as Kemp only applies to Figure 3.

Page 3: Figure 2. The 45 mm/yr slope period does not look as steep as the previous time interval of 40 mm/yr. Is the graph correctly labelled?

Note: Figure 2 might give the impression of "always upward," whereas Figure 1 shows some very dramatic decreases in sea level.

Page 4: Per previous comment (*Page i*), suggest adding Charleston (SC) and Sewells Point (VA) to tables and figures as reference points for the reader.

Page 4: Table 1: This table is suspect. Contrary to the impression given in the Report: **a)** this is not independent data, but rather [IPCC material](#) (see page 1151), and **b)** this is not just empirical data, but models [with up to 95% uncertainty], and **c)** parts of this chart do not even appear in the original work that is referenced. The bottom line is that this is wild, self-serving conjecture.

Page 7: It’s not clear how the Report authors determined that there is “no evidence” of subsidence due to fresh-water extraction “even ... where high levels of fresh-water aquifer pumping occurs.” Please explain in the Report.

Page 11: It’s not clear how the information in Figure 5 relates to the rest of the report — especially the NC conclusions. Please explain in the Report.

Page 11: Figure 5(b) SLR acceleration is small for locations south of Hatteras.

Page 13: Table 3, etc: Per earlier comments, suggest adding Charleston (SC) and Sewells Point (VA) to tables and figures as reference points for the reader.

Page 15: Figure 7. These graphs strongly imply that there is no NC SLR acceleration. Therefore the IPCC scenarios do not seem reasonable — and certainly should not be highlighted. Church and White claim acceleration elsewhere, but the degree of acceleration is very small.

Page 16: This lists all “adjustments” that were done to the data. The suspicion is that the data was massaged to bring about a desired result... Having “Pers Comm” in both the title *and* Table 4 is a duplication. There are some major discrepancies between Table 4 and the information on Page 7. Why?

Page 18: Table 6. This is the first time that the acronym "RSLR" appears in the report, so it needs to be defined before that.

Page 19: (*first paragraph*) The Panel “researched the possibility” of SLR deceleration, and says they could find “few” reports. A brief search came up with [this study](#), and [this](#), and [this](#), and [this](#), and [this](#), and [this](#). Although we are not supporting a deceleration position, the topic deserves more than one dismissive paragraph in an objective Scientific Assessment Report, and the conclusions of those “few” studies should be revealed.

Page 19: (*second paragraph*) In our view this section is the most egregious of the entire Report. Strong exception is taken to blind adherence to the IPCC's opinions.

All the fawning over the IPCC is in stark contrast with the [2010 Report](#) (*from the same authors!*) which dismissed the IPCC's SLR findings as unsatisfactory. If their answer is that “a lot has been learned since AR4,” then the response to that is: “such significant changes, in so short a time period, are testimony to how little we actually know on this topic.” That needs to be acknowledged.

There have been numerous critiques of the IPCC that have concluded that it is more of a political body, actively trying to deceive the public by representing itself as a scientific one. See **Appendix A**, which discusses this and lists sample studies about the IPCC (and its SLR projections) by qualified experts.

As a minimum, the Panel should reference dissenting sources, like the studies identified in **Appendix A** — *and* acknowledge that there is significant scientific uncertainty in this field.

It would appear that a more Science-based 30 NC SLR year projection would have a linear extrapolation of longer-term NC tide gauges as the likely expectation, with the IPCC 2.6 scenario as the worst-case high end. The IPCC 8.5 scenario is wildly speculative and is unworthy of mention.

Page 23: “6. Making Sense of the Predictions” This section appears to go into policy. Is it necessary? If anything, the report should state something to the effect that “This Report should not be the basis for coastal policies”.

Page 24: (*first paragraph*) The statement “...which more rapid climate change is expected” is a political and unscientific opinion that is injected here. A more acceptable substitution is “...which more rapid climate change is possible”.

Page 24: (*first paragraph*) The term “ice shelves” is used, which refers to floating ice. When floating ice melts, SLR is not changed, so not sure the correct term is being used.

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12/15/14; revised: 1/23/15

* This is a resubmission of the comments made for Version 2 of the draft (12/10/14), as most of the items remain the same. (See Appendix B for the few comments that were incorporated.)

Appendix A

The intention of this Commentary is to achieve two objectives:

- a) a timely response to the NC 2015 SLR Report that is technically significant & accurate, *as well as*
- b) a response to the NC SLR Report that is understandable by the public, and our NC legislators.

To simultaneously achieve both goals, is a substantial challenge. *Appendix A* was setup to separate out some of the more technical parts of this complex subject — which the casual reader can just peruse, and still hopefully get the point. [BTW: here is a good [layman's overview](#) of SLR measurements.]

The key issue with this Report is the authors' adulation with the IPCC (Intergovernmental Panel on Climate Change). Yes, on the surface the IPCC seems like a credible, objective source — *but is it really?*

Let's start with this [insightful synopsis](#) that's a good overview of IPCC issues. Here's [another](#). As mentioned in those analyses, there is a significant and fundamental problem with the IPCC that needs to be clearly understood:

Many people believe that the IPCC objectively and scientifically looked at the whole climate situation — and then concluded that human factors were dominant. Subsequent to that presumed scientific assessment, the IPCC focused on the human related climate change elements.

However, that is **not the case**. Read what their [charter](#) said:

“The role of the IPCC is to assess on a comprehensive, objective, open and transparent basis the scientific, technical and socio-economic information relevant to understanding the scientific basis of risk **of human-induced climate change**, its potential impacts and options for adaptation and mitigation. **The IPCC does not carry out research, nor does it monitor climate related data or other relevant parameters.**”

I've put the key parts in red. What this says is that the IPCC, by *statute*, is forced to **ONLY** consider human related climate changes. No other climate related changes — *no matter how important* — are seriously analyzed.

Science is a **Process** that involves a *comprehensive, objective, transparent and empirical* analysis of a technical issue. Understanding the IPCC's directive makes it clear why their reports focus on human related climate change: *not that it's necessarily so important, but rather that this is what their charter had mandated them to do*. So, no matter how many scientists work with the IPCC, or how much “peer-review” there is, or how polished their methodology seems, the IPCC's charter **is fundamentally contrary to how real Science works!**

On January 2nd, 2015, a request was sent to several SLR experts — asking that they review the Version 4 draft of the CRC advisory Panel SLR Report. Below is a brief summary of some of the more applicable studies received to date, in response:

1 - There was a well-known Australian Report ("South Coast Regional Sea Level Rise Policy and Planning Framework": summary [here](#)) that basically regurgitated the IPCC conclusions. That is of interest, as this is essentially the same position taken by the NC CRC's technical advisory Panel. There were two detailed critiques of the Australian Report, and arguments against the IPCC very much apply to the NC situation:

a - NIPCC [Commentary](#) (authored by 11 scientists). There is **considerable** information here about the veracity of the IPCC and satellite SLR data.

b - Dr. John Happs [Commentary](#) (sent by the author)

2 - [US Congressional testimony](#) (2/26/14) by Dr. Patrick Michaels and Dr. Paul Knappenberger. They have a section in that worthwhile document that deals with SLR, and the IPCC's models. Their point appears to be: if the IPCC can't get the temperatures right, how can they accurately forecast SLR?

3 - [US Congressional testimony](#) (2/26/14) by Dr. Randy Randol. He pointedly objects to the IPCC scenarios — noting that none of them have been calibrated. He has a particularly worthwhile section ("VI") on SLR.

4 - [US Congressional testimony](#) (5/29/14) by Dr. Daniel Botkin. His very reasoned discussion is about the accuracy of IPCC models, which is a key matter here.

5 - [State of the Climate Debate](#) (9/16/14) by Dr. Judith Curry. She likewise discusses the IPCC process and the accuracy of its assumptions.

6 - [Understanding The IPCC AR5 Climate Assessment](#) (10/13) by Dr. Richard Lindzen. He writes that "the IPCC report ... is a political document, and as George Orwell noted, 'is designed to make lies sound truthful.'"

7 - [The IPCC AR5 Report: Facts -vs- Fictions](#) (10/13) by [Dr. Don Easterbrook](#), concludes that: "the IPCC report must be considered the grossest misrepresentation of data ever published." See also this [critique](#).

8 - [Sea Level Changes in the 19, 20th and 21st Centuries](#) (10/14) by Dr. Nils-Axel Mörner. He cites considerable empirical records, concluding that: "This data set is in deep conflict with the high rates proposed by the IPCC."

9 - [German Review: Sea Level Rise Way Below Projections – No Hard Basis For Claims Of Accelerating Rise](#) (1/23/14) by Dr. Sebastian Lüning. This very detailed analysis concludes that the IPCC projections are "unscientific."

10-[IPCC AR5: Unprecedented Uncertainty](#) (10/13) by Dr. Euan Mearns. He concludes that “The IPCC has become confused... The consensus is broken.”

11-A [strong critique](#) (7/16/14) by Larry Hamlin concludes: “IPCC AR5 claims of increasing rates of sea level rise from 1971 to 2010 are unsupported.” That, in turn, undermines the veracity of their proposed scenarios.

12-[Multi-scale dynamical analysis \(MSDA\) of sea level records versus PDO, AMO, and NAO indexes](#) (5/14) by Dr. Nicola Scafetta. He concludes that SLR predictions (like IPCC's) are inaccurate as their basic methodology is flawed.

13-[Ethics and Climate Change Policy](#) (12/15/14) by Dr. Peter Lee. Although a bit more general, he analyzes the IPCC and its methodology. There is a subsequent discussion of this insightful paper on Dr. Curry's [site](#).

14-[Regional Climate Downscaling: What's the Point?](#) (1/31/12) by Dr. Roger Pielke. This well-researched paper discusses the differences and limitations between short term weather predictions, and long term climate predictions.

15-[Twentieth-Century Global-Mean Sea Level Rise](#) (6/13) by Gregory, et al. “Semi-empirical methods for projecting GMSLR depend on the existence of a relationship between global climate change and the rate of GMSLR, but the implication of the authors' closure of the budget is that such a relationship is weak or absent during the twentieth century.”

16-[Secular and Current Sea Level Rise](#) (2014) by Dr. Klaus-Eckart Puls is mostly about how satellite readings have diverged from tidal gauges. However, he strongly criticizes the IPCC saying: “IPCC forecasts do not have much to do with objective science any more.”

17-[Evidence for Long-term Memory in Sea Level](#) (8/5/14) by Dangendorf, et al observes that “natural variations could be playing a large role in regional and global sea level rise than previously thought.”

18-[Stop Climate Fear Mongering](#) (12/23/14) by Dr. William Gray. His conclusion about the IPCC scenarios: “The science behind these CO₂ induced warming projections is very badly flawed and needs to be exposed.”

19-[Video Link to Sea-Level Rise Reality](#) by Dr. Tom Wismuller. He wrote me: “the NC SLR report treats the Glacial Isostatic Adjustment rather poorly (as does the University of Colorado and the IPCC).” [Ref page 7 of the Report.]

20-[Statistical analysis of global surface air temperature and sea level using cointegration methods](#) (2012) by Dr. Torben Schmith, et. al. They conclude that “the number of years of data needed to build statistical models that have the relationship expected from physics, exceeds what is currently available by a factor of almost ten.”

Appendix B

Much of this document was [submitted earlier](#) in response to Version 2 of the report (12/10/14). The items below were the only ones incorporated. No response has been received as to why 27 out of the original 32 comments (85%±) didn't make it.

Page ii: Table ES1 is in a different format than the following two tables. To be consistent, the third column of ES1 should be the **total**.

Page iii: "Agency groups involved in planning ...through ES3."

We would omit these sentences. They come across as "preachy". Presumably, government agencies know their duties.

Page 12: "The 2010 SLR Assessment Report based its projections on the Duck gauge, the only ocean gauge with a long term record." This sentence appears to be a walk back from the original Report, without adequate explanation.

Page 23: The website ClimateCentral.org comes across as scare mongering. This report indicates that Wilmington will experience little or no sea level rise, yet a report on this site talks of floods of 4 to 7 feet over the next century. Maybe so, but they needlessly combine SLR with storms.

Page 26: On Page 9 the report references a "Houston &Dean 2013 Report" — yet it is not listed in the references.