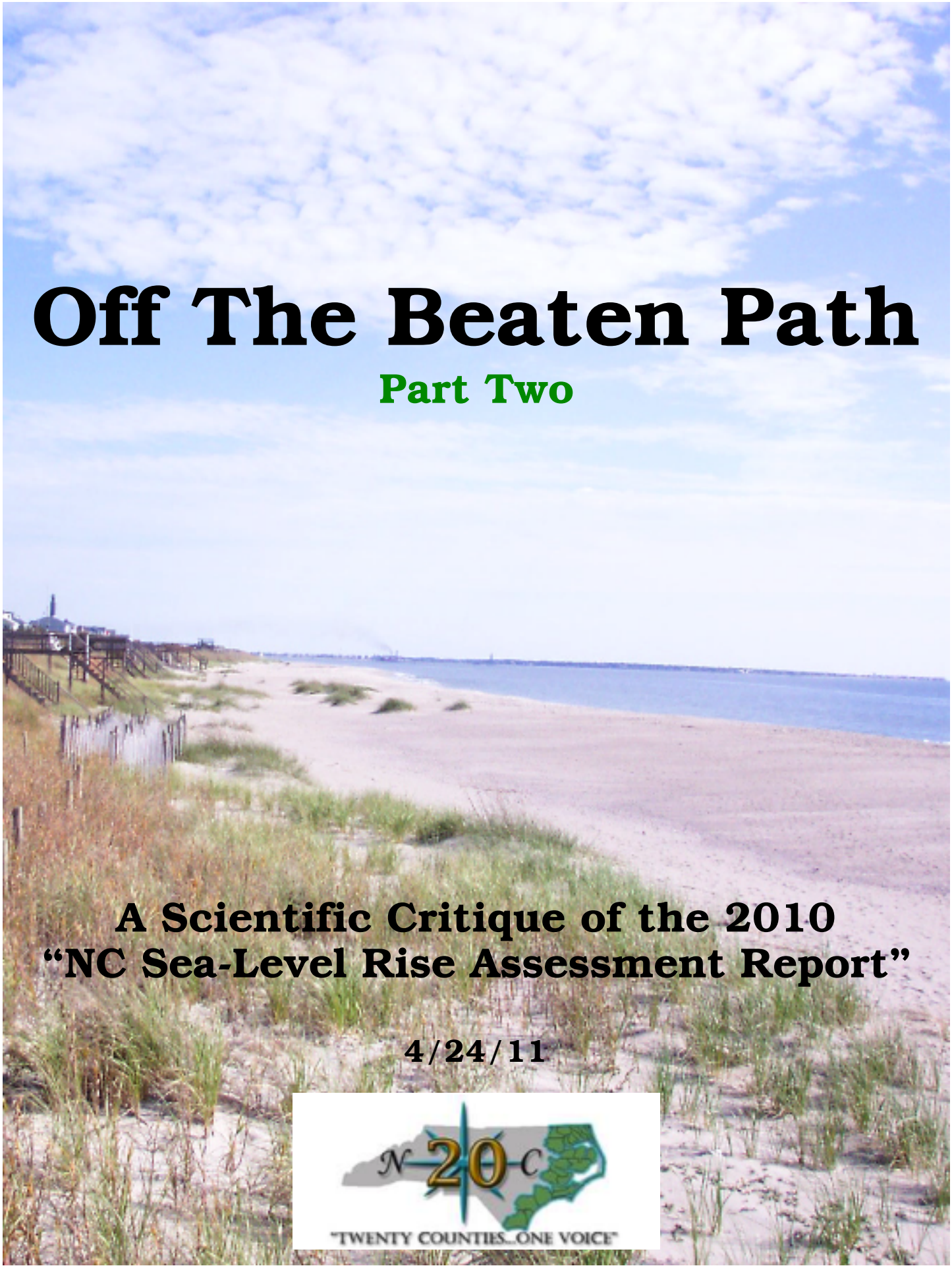


Off The Beaten Path

Part Two

A Scientific Critique of the 2010 "NC Sea-Level Rise Assessment Report"

4/24/11

"TWENTY COUNTIES..ONE VOICE"

{*Off the Beaten Path*, Part 1 (an overview) is at: <<http://tinyurl.com/4lns7wy>>. Consider the information below when deciding how genuinely scientific the 2010 *NC Sea-Level Rise Assessment Report* is, see <<http://tinyurl.com/6cqdz54>> (which has been marked up to correspond to the following comments).}

#1 - On Page #3 of the NC Sea-Level Rise Assessment Report it says:

> "The Science Panel offered to prepare a report, based on a review of the published literature, of the known state of SLR for North Carolina.

It will be very apparent from the comments below, that a considerable volume of published literature was **not** chosen to be referenced by the Science Panel. The appearance is that the Science Panel decided that they wanted a report that projected a large increase in NC sea-level rise, and that any published study that concluded otherwise was dismissed. Furthermore, why would the Science panel restrict themselves to "published" reports. Does "published" somehow imply more credibility? [No it does not.] Lastly, they should have added that they would write their report also "based on consultations with scientists representing a broad range of views." There is no evidence that happened either.

#2 - On Page #3 it says:

> "This report synthesizes the best available science on SLR as it relates specifically to North Carolina… The intent of this report is to provide North Carolina's planners and policy makers with a scientific assessment of the amount of SLR likely to occur in this century."

See Part 1 for a discussion of these "best science" claims. Additionally, the evidence contained in this Part 2 does not support these assertions.

#3 - On Page #3 it says:

> "The report does not attempt to predict a specific future rate or amount of rise because that level of accuracy is not considered to be attainable at this time. Rather, the report constrains the likely range of rise and recommends an amount of rise that should be adopted for policy development and planning purposes."

Not sure what this is saying, but it appears like the authors want to have it both ways: **1)** they rightfully acknowledge that an accurate future prediction is unattainable, yet despite that **2)** they make a future prediction that they expect NC to use for development and planning purposes.

#4 - On Page #6 it says:

> "Determining the average height of the sea involves isolating the long-term Sea Level Rise (SLR) associated with global warming from a variety of regular water level fluctuations including those driven by waves, tides, currents, storm surge, atmospheric pressure differences, and ocean surface topography resulting from large-scale ocean circulation. Such an assessment is possible given our understanding of the mechanics of these fluctuations."

Embedded in this fundamental opening position statement, are some profound assumptions:

A) That *we understand what they mean by "global warming"*. Nowhere is this term defined. Does it mean "Anthropogenic Global Warming" (AGW)? The omission of a definition of a key factor that the authors are using as a basis to justify their projection for a high sea-level rise, is mystifying and unscientific.

B) That *"global warming" is a scientifically proven matter*. Again this is hard to discuss since no definition is given. If, in fact, it IS AGW that they are referring to, then this is a scientifically unsettled matter and should be so noted. Here is one of thousands of studies that disagree <<http://tinyurl.com/4khm7vf>>.

C) That *many other factors (mostly natural) which have been proven to affect sea level measurements can simply be discarded.* These include: long term weather patterns (e.g. El Niño), Atlantic multidecadal oscillation, subsidence, plate tectonics, isostatic rebound, artificial reservoir water impoundment, etc. Even though some of these (not all) are mentioned in the next paragraph, why weren't they also in this list?

D) That *we adequately understand the mechanics of all these items*. Where is the proof for such an **enormously** significant statement? None is provided.

E) That *the "global warming" component can be separated out from all other influences.* That they can make a definitive statement that an unscientifically proven item can be accurately separated from all naturally occurring contributors, simply strains credulity. This is not a science-based position.

> What would have been more helpful would have been a table listing ALL know influences on sea level in column #1. Column #2: whether the item is manmade or natural. Column #3: RSL or MSL. In column four list the range of influence each factor is known to have. In the last column indicate the degree of confidence we have in our understanding of each factor.

The bottom line here is that until we can do **all** of the following, that coming up with a future sea level rise prediction is nothing short of reading tea leaves:

1) scientifically prove AGW, and
2) scientifically prove the exact effects of each of the numerous other factors identified to influence sea-level rise, and
3) scientifically prove the additional AGW component, if any.

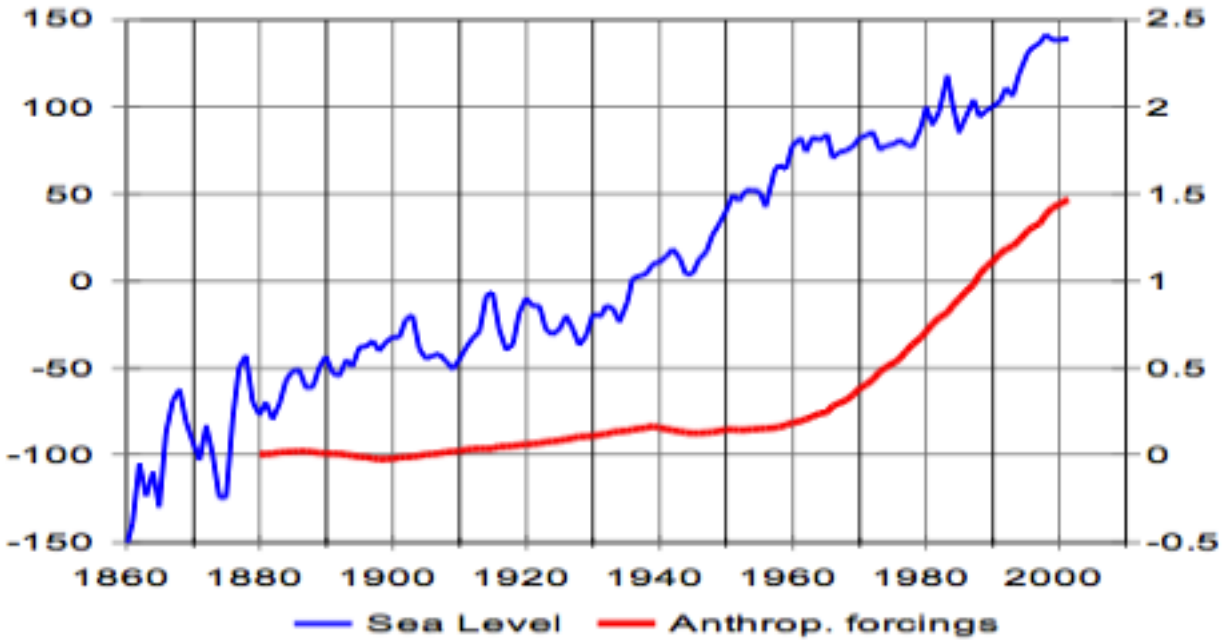
#5 - On Page #6 it says:

"Currently, MSL (global Mean Sea Level) is rising at a rate of approximately 2mm per year (0.08 inches/yr) if averaged over the last hundred years, and around 3mm per year (0.12 inches/yr) over the last fifteen years. The rate of MSL rise has increased in response to global warming."

This talk of MSL is confusing as the report says "it is RSL that is more relevant for coastal management." (P7) and "RSL change will, for most coastal locations, be different from globally predicted MSL changes" (P8). So what's the point of this MSL information — which is questionable besides??

There are multiple embedded disputable assertions in these two sentences, which are based on selectively chosen studies. For instance the authors *assume* that **rising global CO2 will result in rising global temperatures**. There is considerable evidence to dispute this belief, but supplying hundreds of studies that show otherwise is beyond the scope of this critique. For a simple example see <<http://tinyurl.com/3l2gc6>>.

Another assumption of the authors is that the **rising CO2 will result in higher sea levels** (again assuming that by "global warming" they mean AGW). An expert wrote me: "I attach a simple graphic (see below) that you might find informative. It shows that sea levels have been rising at a fairly constant rate since at least 1860 but that greenhouse gases didn't begin to have a significant impact on climate until at least 1960, which makes it difficult to attribute sea level rise over the last 150 years to anthropogenic global warming. The links to the data sources are there, so you can reconstruct the graph if you want to."



Blue line, left scale, mm: Jeverejeva et al. sea level rise reconstruction (select annual data at http://climexp.knmi.nl/getindices.cgi?PSMSLData/gsl+global_sea_level+i+someone@somewhere)

Red line: NASA-GISS total anthropogenic forcings at the top of the atmosphere, right scale, watts/sq m. These provide a direct measure of the total human impact on climate. (add columns 1, 2, 3, 8, 9 and 10 on the table at http://data.giss.nasa.gov/modelforce/RadF.txt to get total anthropogenic forcings.)

Still another questionable part of this statement is when they say "Currently, MSL is rising at a rate of approximately 2mm per year if averaged over the last hundred years." The reader should be aware that *conclusions can easily be manipulated just by carefully picking the beginning and end points of the period examined.* A report based on "best science" would be extremely careful about this, and show how such arbitrary period selections can skew the results.

For example the University of Colorado researched eight different long range studies, each with many stations. They show a mean increase of **1.65mm/yr** since 1860 <<http://sealevel.colorado.edu/tidegauges.php>>. To scientists, this is statistically quite a bit less than "approximately 2mm".

There is nothing the matter with the authors expressing their considered opinions. However, in a "best science" report, opinions should be identified as such *and* carefully segregated from empirically proved facts. One way of doing that is for the authors to acknowledge that there are other studies from qualified experts that disagree with their opinions. For example, regarding their very significant assertion that **there is recently an accelerated sea level rise**, see:

A) As far as recent (satellite) measurements, a researcher plotted a few NC coastal points (e.g. Pamlico Sound) using the Topex Poseidon satellite data, and the results ranged from -1.5 mm/yr to +1.1 mm/yr. (See <<http://tinyurl.com/yzrauxe>>.)

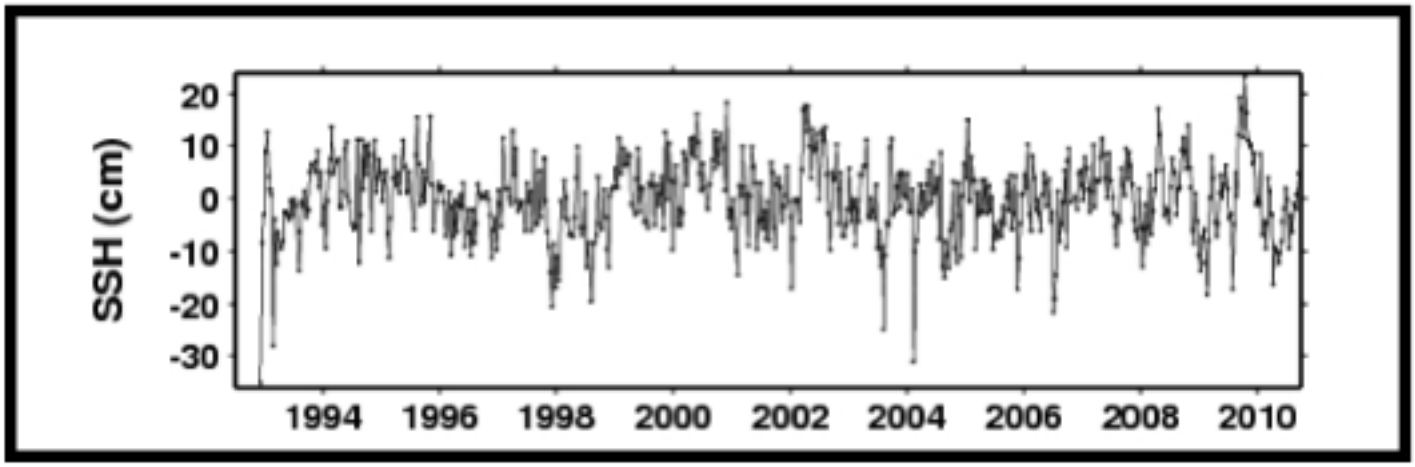
B) Regarding accelerated sea level rising, Dr. Willem de Lange (Coastal Oceanographer, and IPCC expert reviewer) wrote: "The IPCC Assessment Report 4 report emphasizes a single paper (which was not available when I conducted my review), which spliced the satellite data onto the tide gauge data to 'find' acceleration in sea level rise over the period of satellite measurement. This is being used to imply that global sea level rise is accelerating due to global warming (now renamed Climate Change). The satellite data only covered the period of increasing sea level associated with decadal cycles, and the known discrepancy between satellite trends and tide gauge trends was not corrected for. This is poor science comparable to the splicing of proxy and instrument data in the infamous Hockey Stick graph, and the splicing of ice core and instrumental CO2 measurements to exaggerate the changes." (See <<http://tinyurl.com/pmk98g>>)

C) "Linear Rate of Sea Level Rise is Detected, with No Acceleration" is the conclusion of this 2010 *Journal of Geophysical Research* paper <<http://www.nipccreport.org/articles/2010/sep/03sep2010a7.html>>

D) A PhD with experience in this area wrote: "The satellite sea level measurements and tide gage sea level measurements are almost incompatible for comparison, and until there is at least 50 years of satellite data, the satellite data can't be used for any meaningful analysis of the long term

changes. And from what I have read about the vertical accuracy of satellite measurements, (on the order of plus or minus 6 cm), the data is essentially useless for looking at changes of a few mm per year."

E) Putting in the Latitude (36.169608) and Longitude (-75.7551854) of Duck NC into the University of Colorado's Interactive sea level map (<<http://tinyurl.com/4f49mo6>>) results in the following graph — which does **not** evidence any consequential acceleration.



F) In the article "Rise of Sea Levels is 'the Greatest Lie Ever Told'" (<<http://tinyurl.com/d4zayx>>) it says:

"There is one scientist who knows more about sea levels than anyone else in the world it is the Swedish geologist and physicist Nils-Axel Mörner, formerly chairman of the INQUA International Commission on Sea Level Change. And the uncompromising verdict of Dr Mörner, who for 35 years has been using every known scientific method to study sea levels all over the globe, is that all this talk about the sea rising is nothing but a colossal scare story.

"Despite fluctuations down as well as up, 'the sea is not rising,' he says. "'t hasn't risen in 50 years.' If there is any rise this century it will 'not be more than 10cm (four inches), with an uncertainty of plus or minus 10cm'. And quite apart from examining the hard evidence, he says, the elementary laws of physics (latent heat needed to melt ice) tell us that the apocalypse conjured up by Al Gore and Co could not possibly come about.

"The reason why Dr. Mörner, formerly a Stockholm professor, is so certain that these claims about sea level rise are 100 per cent wrong is that they are all based on computer model predictions, whereas his findings are based on 'going into the field to observe what is actually happening in the real world'."

G) "Sea Level Rise: An Update Shows a Slowdown". This points out **scientific evidence that sea level changes are cyclical, not just increasing.** (See <<http://tinyurl.com/ydy5bo4>>.)

"So rather than evidence of accelerating sea level rise in recent years, what we have is nothing more than the same type of variation that has been going on for at least 100 years. It was merely a coincidence that the satellites began observing the sea level rise during a natural upswing in the rate of sea level rise, that has now turned into a downswing — a behavior that has repeated itself a good half-dozen times during the past century."

H) George H. Taylor is a Certified Consulting Meteorologist and was Director of the Oregon Climate Service, Oregon State University. One pertinent paper he wrote is "Holocene Temperatures and Sea Level Changes" <<http://tinyurl.com/6cbbm5y>>. Among other things he concludes:

"Sea level rise does not show the same type of behavior as the air and sea temperatures. Rather, there has been a continuous rise in sea level since the last glacial maximum ended. However, the rate of rise had dropped steadily over the last several thousand years, and shows signs of continued decline over the last hundred."

I) "2010 Sea Level: Largest Drop Ever Recorded?" is an interesting commentary: <<http://tinyurl.com/63ujvsr>>. Again this shows the speculativeness of computer projections based on numerous unknown assumptions.

#6 - On Page #6 it says:

"Sea Level Rise can be directly measured in a straightforward way.... A tide gauge can be as simple as a long ruler nailed to a post on a dock. .. Tide gauges were not built with the intention of measuring changes in sea level."

This seems to say that NC future coastal policies will be based on measurements that are scientifically crude — i.e. that they are not all that accurate, are not all that well controlled, and that there are many influencing factors (mostly natural, but some manmade) that we do not really know the exact consequences of.

#7 - On Page #6 it says:

"When looking at a tide gauge record, the data is representative only of RSL (as discussed above), **so areas that are experiencing tectonic or sediment compaction change will bias any attempt to determine the global, MSL signal**. However, it is RSL that is more relevant for coastal management."

The bold part is confusing. Although it is correct, the question is "So what? We are not trying to determine MSL. It is unclear how this part adds any value to the report and probably should be deleted.

#8 - On Page #6 it says:

> "A drawback to tide gauges in North Carolina, in addition to their small number, is that most of them don't extend back in time more than 50 years, making it difficult to resolve changes in the rate of rise over the decades. The RSL rise record for northern NC was recently extended back in time to AD 1500 using organisms, which are sensitive to the level of the sea and preserved in thick peat deposits, as a proxy for sea level (Kemp et al., 2009). This record resolves an increase in the rate of SLR from 0.8 mm per year to 3.8 mm per year that occurred AD 1879-1915, which corresponds well with nearby tide gauges."

This seems to say that NC future coastal policies will be based on empirical measurements which cover a miniscule amount of geological time (the DUCK data used here only goes back about 25 years). This is "augmented" by a single study using organisms to purportedly determine Relative Sea Level Rise. How *peat* data from **1879-1915** can "correspond well" with *tide* data from **1985-2010** is not explained.

For some reason the report authors (who, by all indications, seem to subscribe to the theory that "global warming" is the main driver here — i.e. that CO2 increases will increase temperature, and thus the sea level) failed to discuss how a pre 1915 sea level rise was caused by CO2. It would appear obvious that there are other mechanisms (both plus and minus) at work, but these do not get any meaningful consideration in this report.

#9 - On Page #7 it says:

That "more accurate" (Jason-1) satellite measurements have only been available since 2001, and that these measure MSL.

Accurate measurements for ten years is clearly insufficient in determining things like hundred year trends. Additionally the report repeatedly states that RSL is the important factor, yet satellites do not measure RSL.

#10 - On Page #7 it says:

> "The IPCC Fourth Assessment Report (IPCC, 2007) contains forecasts for global average SLR ranging from 0.18 meters to 0.59 meters (7 to 23 inches) by the year 2100 AD."

The IPCC is notoriously aggressive in their climate related predictions. This is because they are basing their projections on: **a)** a scientifically unproven AGW hypothesis, and **b)** computer models that are skewed to show a problem.

#11 - On Page #7 it says:

"IPCC estimates are conservative because contributions to SLR from melting Greenland and Antarctic ice sheets are uncertain and this uncertainty was not included when calculating estimates".

These ice sheet projections were excluded for good reason: they are entirely speculative. (Note above where we identified a study that indicated that Ice Sheet losses were enormously over-estimated. The authors here evidently believe otherwise, but offer no scientific proof to support their opinion.)

More importantly, the implication here is that the IPCC's figures (which project a mean of 15" by 2100: see 2007 Fourth Assessment Report [AR4]) are at the low end. The reality is that there is evidence that they are actually high. For instance:

A) Carefully note here that the authors of this NC Report are saying that **they do not accept the conclusions by the consensus of IPCC science experts**... These are the same people that are telling us that AGW is a resolved matter due to "**the consensus of IPCC science experts"**. What this seems to say is that when you agree with the IPCC that "consensus of the experts" is the main justification — but when you don't agree with the IPCC that "consensus of the experts" is not that important. Hmmm.

B) One expert wrote me: "The fact that they are uncertain doesn't necessarily mean that they are conservative. And the fact that the IPCC predicts that the Antarctic Ice sheet is going to grow, not shrink, isn't even mentioned. (See: <<http://tinyurl.com/4bq93q5>> and <<http://tinyurl.com/47npcnm>>.)

C) "The Greenland Ice Cap did not melt during the postglacial hypsithermal (some 5000 to 8000 years ago), when temperature was about 2.5 degrees C higher than today. Nor did it melt during the last Interglacial when temperature was about 4 degrees C higher than today. As to time, it would take more than a millennium (with full thermal forcing) to melt the ice masses stored there." <<http://tinyurl.com/62bczgj>> (Dr. Nils-Axel Mörner: Swedish Sea level expert; Paleogeophysics & Geodynamics)

D) A geophysicist wrote me: "Estimates of ice loss from Greenland and Antarctica have now been shown to be inaccurate due to incorrectly determining the glacial isostatic adjustment. The isostatic adjustment is made by estimating the rate of rebound of the rock beneath the ice. Only recently have enough GPS data points been available to accurately map the adjustments, and to many scientists' surprise it turns out that the basin below the Greenland ice sheet is actually sinking rather than rising. Estimates of ice loss for Greenland have been reduced by 1/3 and I think when more points are obtained the rate will even be lowered more." (See "Ice Sheet Loss Cut in Half" <<http://tinyurl.com/6feo7ku>>.)

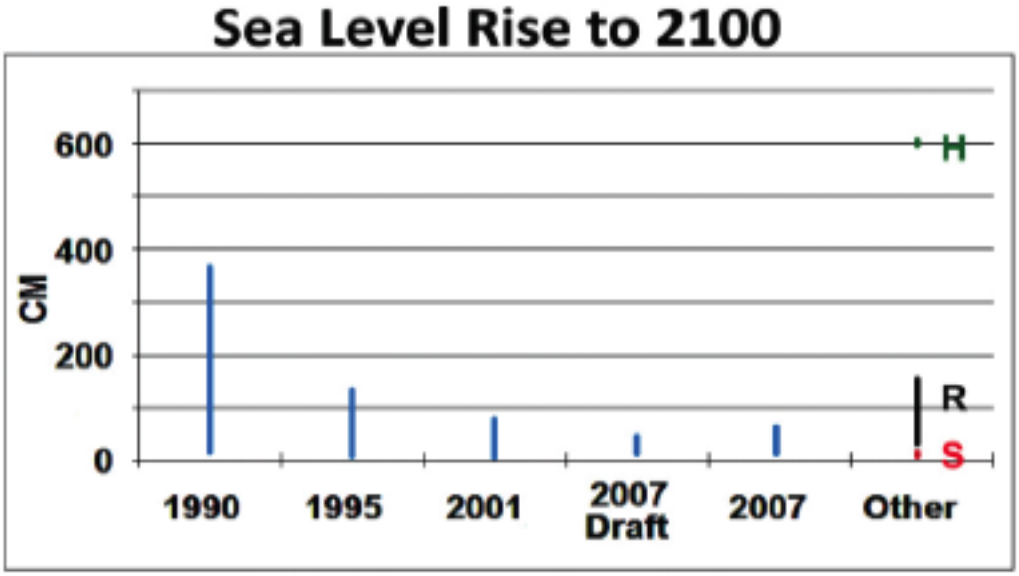
E) Another expert commented on the Pfeffer paper cited in the NC Report: “Pfeffer calculated a range of possible sea level rises, from 0.8 meters to 2 meters for the 21st century. But even his lower limit requires the velocity of Greenland glaciers to increase to ridiculously high levels. They would have to have average velocities about 9 times their current velocities. Assuming a linear increase in velocity, then they would be moving along at about 20 times their current velocity by the end of the 21st century. These great velocity leaps rely on the lubricating effect of surface melt water making its way to the bottom of the glacier. Since the 2008 Pfeffer paper the theory of this lubricating effect has been discredited. (For example, see: <<http://tinyurl.com/4slysu4>>, which says "...channelization and glacier deceleration rather than acceleration occur above a critical rate of water flow. Higher rates of steady water supply can therefore suppress rather than enhance dynamic thinning."

F) “The **science** of climate change must provide testable, that is *falsifiable*, propositions to be science. Those propositions are found in the projections of the IPCC models of temperature trends after 2000. Now Lucia Liljegren has succeeded in showing that those projections are *wrong* for the period 2001-2008, denting the credibility of the IPCC models and, *a fortiori*, the Rahmstorf conclusion (adopted by the Garnaut Interim Report) that observed temperatures are "at the upper end" of the A1F1 projected range.”

“Using statistical methods that ensure robust regression analysis of the temperature data time-series, Liljegren has shown that trends in the *observed temperature data from 2001 to 2008 diverge significantly* from the IPCC projected trends, revealing a **decline** in temperatures at a rate of ~1.1C/century (as opposed to the IPCC's 'mid-range' projections of more than 2.0C/century). Her careful analysis does not, as Liljegren observes, show that the global warming has gone away (she is convinced that anthropogenic warming is happening). Rather, they show that the IPCC projections don't come even close to projecting the temperature trends for the last seven years: that is for the period since 2001 when IPCC projections began. If there is another upturn in temperature trends following this recent period of shallow decline, then concerns about warming trends will look more credible again. But the IPCC projections won't be *repaired* by an upturn in temperature. *Whatever* happens next, the IPCC's projections — and hence, their models — seem to need revision.” (See <<http://tinyurl.com/4j8uj5f>>.)

G) There are many other experts who dispute the IPCC’s sea level conclusions, saying that it is too high. Here is just one more example, where the conclusion is that the **high end** by 2100 would be more like 9 inches. The author is Madhav Khandekar who was an expert reviewer for the IPCC 2007 Climate Change documents. (See <<http://tinyurl.com/6gggdu3>>.)

H) "Successive IPCC reports have reduced their estimates of projected sea-level rise, as shown in the figure below, and are coming closer to a value of 18 cm (7") per century. Since this is also close to the ongoing rate of rise, this is equivalent to saying there will be no acceleration by AGW, i.e., no additional sea-level rise due to warming." (See <<http://tinyurl.com/4cqnjlr>>.)



	IPCC 1990	IPCC 1995	IPCC 2001	2007 Draft	IPCC 2007	Hansen (H)	Rahmst. (R)	Singer (S)
Max	367	124	77	43	59	600	140	20
Min	10	3	11	14	18	600	50	18

Figure 19: Estimates of sea-level rise to Year 2100 from IPCC reports of 1990, 1995, 2001, and 2007. Note the strong reduction in estimated maximum rise, presumably based on better data and understanding. Also shown are the published seal level rise values of Hansen (H) [2006], Rahmstorf (R) [2007], and Singer (S) [1997]. Both H and R are well outside of the maximum IPCC values. The ongoing rate of rise in recent centuries has been 18 cm per century; therefore, the incremental rate of rise for IPCC 2007 would be 0 to 41 cm, and about 0 to 2 cm for Singer.

#12 - On Page #7 it says:

"Several studies that use semi-empirical relationships between sea level and climate have predicted up to 1.4 meters (55 inches) of sea-level rise by AD 2100 when ice sheet contributions are included."

The term “semi-empirical” can mean a lot of things, but usually it is code for “selected real world data was massaged by a computer program and plugged into a model that the author made up because it produced results that he had hoped to show.”

A careful reader of the *NC Sea Level Assessment Report* will come to the inescapable conclusion that Rahmstorf’s 2007 paper is the key pillar supporting the authors’ opinion that the IPCC’s sea-level projections are too conservative. Rahmstorf 2007 is referred to some nine times in this report, using such terms as “robust” and that “Rahmstorf’s ‘method’ for projecting future SLR has been adopted by several states and municipalities. The method has produced highly accurate hindcast results …”.

Since this report relies so heavily on Rahmstorf’s 2007 paper (see <<http://tinyurl.com/3bhuzd>> and <<http://tinyurl.com/456arxg>>) it is appropriate to investigate the credibility of his methodology and conclusions:

A) One expert wrote: “Stefan Rahmstorf is regarded as being outside the mainstream of current thinking, to put it charitably. Here is a rebuttal to his sea level rise estimates written by four prominent oceanographers: <<http://tinyurl.com/67qbv2y>.” Their conclusion is that Rahmstorf’s work is “simplistic". In an interview with London’s *Sunday Times*, one of the authors, Dr Simon Holgate, said: “Rahmstorf's real skill seems to be in publishing extreme papers just before big conferences like Copenhagen, when they are guaranteed attention.”

B) There is a very detailed critique of Rahmstorf’s 2007 paper at this website: <<http://tinyurl.com/4z3wxjo>>. This analysis concludes that:
   1) Sea level rise rate *vs*. temperature is displayed in a way that erroneously implies that it is well fit to a line, as expressed in his equation.
   2) The assumption that the time required to arrive at the new equilibrium is "on the order or millennia" is not borne out by the data.
   3) Rahmstorf extrapolates out more than five times the measured temperature domain.

C) In a highly unusual move, Dr. Eduardo Zorita publicly called for Rahmstorf to be barred from the IPCC process <<http://tinyurl.com/4w382sn>>. Dr. Zorita is a leading Paleoclimatologist (headed the Department of Paleoclimate at the GKSS Research Center) and physicist who has written numerous scientific papers on climate related matters (<<http://tinyurl.com/48f5l87>>).

D) Dr. Roger Pielke, Sr. (<<http://tinyurl.com/6cbj26>>: a well respected meteorologist) wrote that there was “Blatant Cherry Picking By Stefan Rahmstorf And Colleagues In Science Magazine”. This article is very similar to the 2007 Rahmstorf report cited by the NC Sea Level Assessment, so the criticism is pertinent here. (See <<http://tinyurl.com/5stq9ap>>.)

E) “The studies (2007, etc.), led by Stefan Rahmstorf, … have caused growing concern among other experts. They say his methods are flawed and that the real increase in sea levels by 2100 is likely to be far lower than he predicts. Jason Lowe, a leading Met Office climate researcher, said: ‘We think such a big rise by 2100 is actually incredibly unlikely. The mathematical approach used to calculate the rise is completely unsatisfactory.’” (See <<http://tinyurl.com/y9hh6lv>>.)

F) Since the 2007 Rahmstorf paper is rather technical, here is a technical expert analyzing it, and concluding that some of its key technical claims aren’t what they are asserted to be:
“At the end of the day, the secret of Rahm-smoothing is that it’s a triangular filter with linear padding. All the high-falutin’ talk about ‘embedding dimension” and “nonlinear … lines’ is simply fluff. All the claims about doing something ‘new’ are untrue, as are Rahmstorf’s claims that he did not use ‘padding’. Rahmstorf’s shift from M=11 to M=15 is merely a shift from one triangular filter to a wider triangular filter – it is not unreasonable to speculate on the motive for the shift, given that there was a material change in the rhetorical appearance of the smoothed series.” (See <<http://tinyurl.com/34qa2zf>>.)

G) **Rahmstorf subsequently publicly acknowledged a significant error in his 2007 paper.** [Note that it had been signed off by his “peers,” and none were the wiser.] “In hindsight, the averaging period of 11 years that we used in the 2007 Science paper was too short to determine a robust climate trend. The 2-sigma error of an 11-year trend is about +/- 0.2 ºC, i.e. as large as the trend itself. Therefore, an 11-year trend is still strongly affected by interannual variability (i.e. weather)” (<<http://tinyurl.com/6z5nmpy>>). This shows how the curves change when he makes new assumptions <<http://tinyurl.com/nz26s9>>.

H) Dr. David Stockwell has a lengthy critique of Rahmstorf 2007 and concludes: “It is apparent from these discussions that Prof. Rahmstorf had little understanding of the methodology he employed, and that the view expressed in Rahmstorf et al. (2007) that: ‘The data available for the period since 1990 raise concerns that the climate system, in particular sea level, may be responding more quickly to climate change than our current generation of models indicates.’ is based in flawed and biased research.” <<http://tinyurl.com/4662alj>>. And more from Stockwell is here <<http://tinyurl.com/485yuaa>>.

I) Another analyst weighs in “The non-linear trend in Rahmstorf et al. [2007] is updated with recent global temperature data. The evidence does not support the basis for their claim that the sensitivity of the climate system has been underestimated.”<<http://tinyurl.com/4cyjmvb>>.

J) World famous meteorologist, Dr. William Gray, (Emeritus Professor of Atmospheric Science, Head of the Tropical Meteorology Project, etc.) wrote me saying: "I have interacted with Stefan Rahmstorf a little bit over the last decade. I've been to a few meetings with him and he has visited and given talks at our ATS Department in Fort Collins. He is a 'far-out' global warming modeler... I do not judge Rahmstorf's model assessments of 2100 sea levels as being objective or reliable. He is very biased in his AGW views and has grossly exaggerated the warming threat to his own betterment, in my view. I've seen his 2007 Science paper. His Figure 4 graph indicating a 60-140 cm rise in sea levels by 2100 is not at all credible. North Carolina should not use this long period forecast. It is grossly exaggerated. I would anticipate a value more like 20-30 cm (8"-12")."

K) Experts subjected Rahmstorf's theories to testing, and they came up short <<http://www.nipccreport.org/articles/2010/dec/1dec2010a1.html>>.

L) I received this commentary from a closely involved scientist "The question of future sea-level rise is a complex one, and one where the uncertainties are very deep indeed. Let me try to summarize the problem. Within the mainstream IPCC interpretation sea level rise would be affected by different contributions: the expansion of the water column due to rising water temperatures, melting of land ice (glaciers and polar ice sheets), the gravitational effect of the disappearance of the latter, changes in ocean circulation that do not affect global mean but would do so at regional scales."

"The IPCC climate models cannot represent all these processes, which means that there are processes that are not included at all in the climate models. One is the dynamics of polar ice sheets, the other is the gravitational effects of these ice sheets. The dynamics of polar ice sheets under rising temperatures is largely unknown. This is why the last IPCC report bolted an 'overhead' of roughly 20 cm to the contribution of the expansion of the water column simulated by climate models. This amount is however just a guess-estimate. Some researchers, like Rahmstorf have been trying to implement ad-hoc semi-empirical methods to estimate the contribution of the polar ice sheets to future sea-level rise. Basically he set up a statistical model linking the rate of sea level rise and global temperatures. The model would be calibrated with observations and then applied to the simulated global temperature rise from climate model simulations. This type of study, though much touted in certain circles, is **not part of any consensus among scientist close to the IPCC, and I would even say that Rahmstorf represents a minority view here**."

For those in the know, Rahmstorf did come out with a 2009 paper that changed some things from his 2007 version. *Why didn't the 2010 NC report use the later 2009 paper?* Probably because it was even more unsupportable. See this twelve (!) part critique: "Rahmstorf (2009): Off the Mark Again (Part 12) — A Mathematical Comedy" <<http://tinyurl.com/4vyuk3b>>... And here is criticism from a scientist with statistical modeling expertise who found Rahmstorf's "method to be unreliable." (See: <<http://tinyurl.com/4mfhgoz>>.)

In summary, for those who still advocate Rahmstorf's approach, I put forward this observation sent to me: "I read that there is a possibility that a tremor could knock one of the cliffs off a Canary Island, which in turn could create a tsunami that would sweep across the Atlantic and inundate the entire east coast of the United States. The plausibility of this is unknown, just like the 1 meter projection of NC sea level rise by 2100. Accordingly I would argue that North Carolinians should built a gigantic sea wall to prevent being swamped by such an event. Hey, you can't be too careful, right?"

Both Rahmstorf 2007 and the NC sea-level report reference the Church & White 2006 study (<<http://tinyurl.com/4uuoxdv>>) to support their high sea-level rise contentions. The obvious questions is: how reliable is *that* report?

A) A top sea level researcher wrote me in a personal correspondence: "C&W 2006 used a different technique to effectively scale the tide gauge record by the satellite altimeter data. See the CSIRO_GMSL_figure which shows the good agreement between tide gauge and satellite data. C&W is the ONLY study to achieve this agreement, and as they acknowledge in the paper, their findings are **not consistent** with all the other studies. This should raise red flags."

B) Another sea level expert wrote me: "In reading and re-reading the C&W 2006 abstract and introduction, I come away with a sense that the authors approached the subject with the intent of discovering an acceleration in the rate of sea level rise. In the 1990s, global warming aficionados paid great attention to tide gauge-based sea level data as a proxy for measuring climate. However, mathematical calculations of that data could not produce a rate of rise as significant as the computer modeled scenarios featured in the early IPCC reports. The IPCC wanted/needed confirmation of the models from various approaches to measuring climate. For the tide-gauge data to produce results similar to the IPCC models a century out (and thus confirm the models), it would be necessary to find late-period acceleration in the most recent data. The C&W 2006 paper apparently intended to produce that acceleration and confirm the works cited in the IPCC's first three assessments. The C&W paper completely falls apart on the logical fallacy contained in their conclusion and is simply not *"an important confirmation of climate simulations."* I can say with confidence that the Church/White paper is corrupt and deserving of ridicule. Such patently bad science disappoints me. **No public policy decision should be based on that paper.**"

C) A recent paper (Wada, et. al. [2010]) estimates that up to .8 mm a year of sea level rise may be attributed to pumping ground water. Church et al. have not accounted for this. (See <<http://tinyurl.com/4azbchs>>.)

D) Church & White speculate on a mathematical model — which is not accurate. The point is that minor changes in curve-fitting methods can cause large changes in projected sea-level rise. (See <<http://tinyurl.com/4sr79mj>>.)

E) Church & White's conclusions depend a lot on satellite data. This 2010 study shows that that there are potentially many very large "errors and biases" of such information. (See <<http://tinyurl.com/4nv75m8>>.)

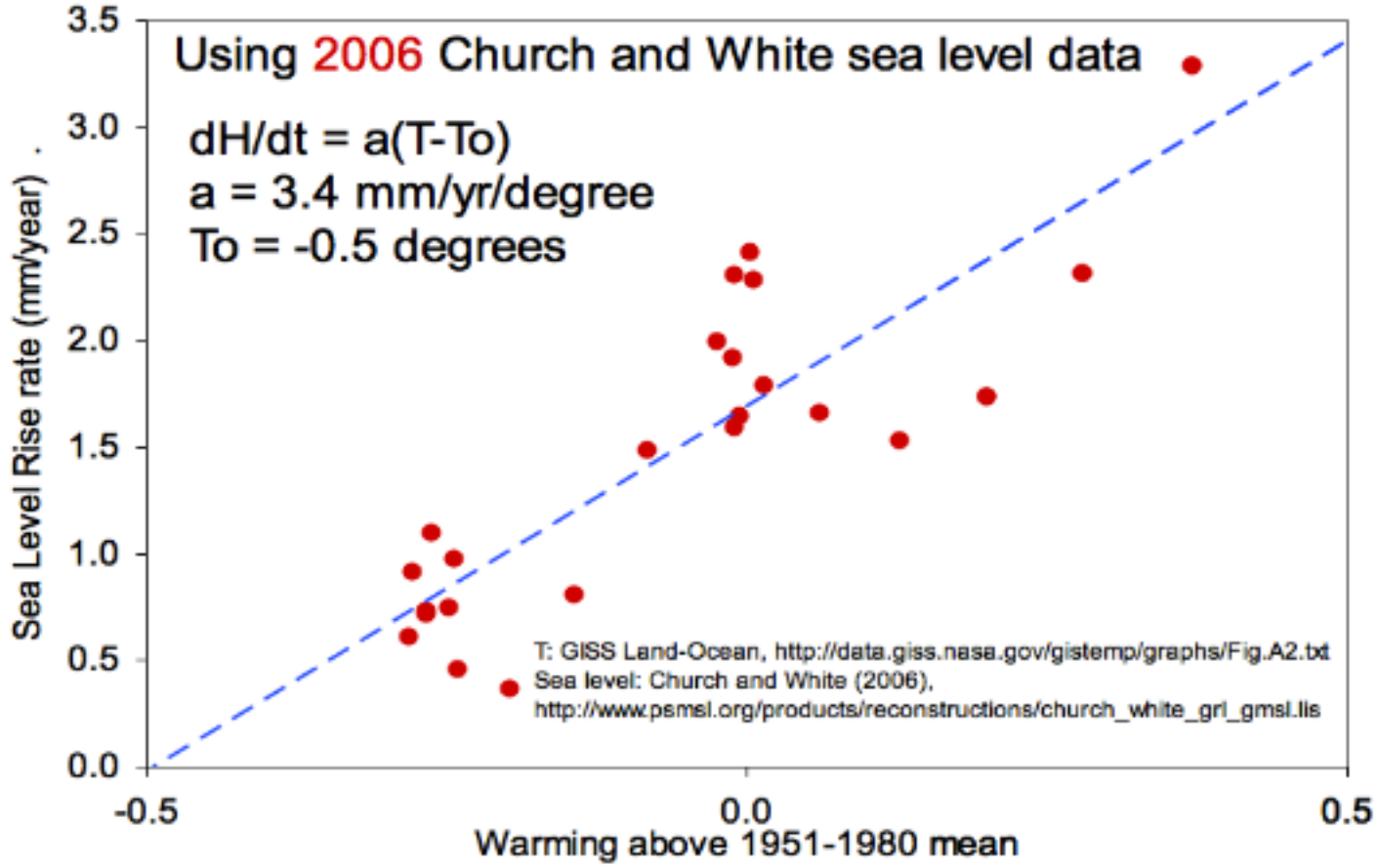
F) Maybe the most convincing evidence that Church & White 2006 is seriously flawed, comes from Church and White. Well aware of the criticisms to its methodology, Church & White issued corrected data in 2009. **The sea level rise projections using the 2009 data are about 50% of what results from using their 2006 data.**

An expert in these matters kindly plugged in the C&W 2006 data into the Rahmstorf 2007 report. He then plugged in the C&W 2009 data into the Rahmstorf 2007 report. **See the next page for these two graphs.** It should be abundantly clear that the projected sea level rise is considerably less in using the 2009 data. A good question would be: *why didn't the 2010 NC Sea Level Assessment Report reference and use the later 2009 C&W data?*

This same expert commented: "Another important point that is revealed when the 2009 Church and White data is used is that the baseline or equilibrium temperature 'To' drops from -0.5 degrees to -1.0 degrees. The baseline or equilibrium temperature is the temperature, presumably in the 19th century, when the sea level was unchanging. This implies that for the Rahmstorf's model to be correct and for Church's and White's sea level data to be correct, then the equilibrium temperature must be half a degree lower than Rahmstorf calculated. This is huge."

This is a private correspondence that I received from a qualified sea level person: "C&W 2009 extended the data set out five more years (end of 2001 to mid 2007), and also corrected data for the previous 100 years. **If Rahmstorf used C&W 2009 instead of C&W 2006, the results would have been predictions of sea level rise half as great.** The C&W 2009 'improved' their earlier paper and came close to removing any apparent acceleration in rate of rise. But they did something Dr. Hansen is famous for: *correcting the older historical data downward to make the modern observations appear more severe.*"

This is a private email that I received from a different top sea level expert: "The difference between C&W 2006 and C&W 2009 was the addition of extra data. The bizarre aspect is that it results in the lowering of tide gauge values before 1930, *and* the straightening of the sea level curve. This indicates a problem with their methodology, because I have been working on the key long term tide gauge records for that period, and they do not behave that way. A consequence of the adjustment for the C&W 2009 data, is that the **Rahmstorf methods now predict much lower values (the same as IPCC) because the acceleration is gone."**


Using 2006 Church and White sea level data
dH/dt = a(T-To)
a = 3.4 mm/yr/degree
To = -0.5 degrees
T: GISS Land-Ocean, http://data.giss.nasa.gov/gistemp/graphs/Fig.A2.txt
Sea level: Church and White (2006),
http://www.psmsl.org/products/reconstructions/church_white_grl_gmsl.lis
Sea Level Rise rate (mm/year)
Warming above 1951-1980 mean
3.5
3.0
2.5
2.0
1.5
1.0
0.5
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-0.5
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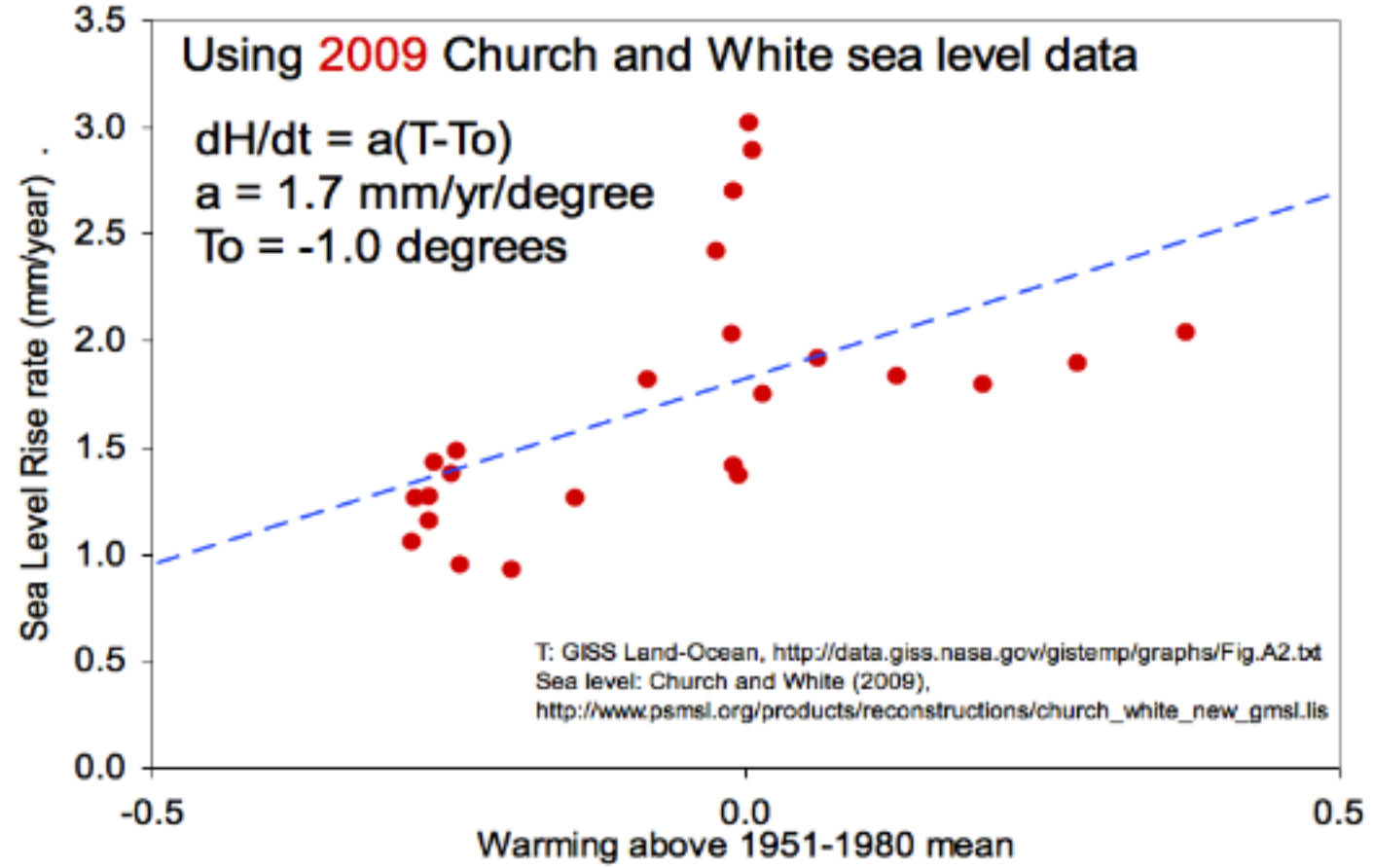

Using 2009 Church and White sea level data
dH/dt = a(T-To)
a = 1.7 mm/yr/degree
To = -1.0 degrees
T: GISS Land-Ocean, http://data.giss.nasa.gov/gistemp/graphs/Fig.A2.txt
Sea level: Church and White (2009),
http://www.psmsl.org/products/reconstructions/church_white_new_gmsl.lis
Sea Level Rise rate (mm/year)
Warming above 1951-1980 mean
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
-0.5
0.0
0.5

#13 - On Page #7 it says:

> "In summary, there is consensus that the rate of SLR will increase during the 21st century and beyond."

The references just listed here should make it very clear that there is no "consensus that the rate of SLR will increase during the 21st century and beyond." Even if there was, Science is **never** about "consensus." As was spelled out in Part 1, "best science" is rather about comprehensive, objective, transparent and empirical assessments. This study is not burdened with these scientific obligations. Nowhere is this document is the gold standard of science, the Scientific Method, even mentioned in passing.

#14 - On Page #10 it says:

> "It is clear that the SLR rates have varied in the past (the rate of rise appears to have doubled at c. AD 1900) and will likely change again in the future (Fig. 2)."

It is indisputable that SLR rates have changed in the past. It is also certain that there will be sea-level changes in the future. However, the two critical questions: **1)** exactly which influences caused how much NC sea-level change in the past, and **2)** which influences will cause how much NC sea-level change in the future, are entirely unanswered by this report.

#15 - On Page #10 it says:

> "Over the course of 90 years (to 2100 A.D.), the differences in RSL rise are not substantial enough to warrant detailed determinations of RSL curves for all areas, as these local differences are likely to be overwhelmed by the global effects of accelerating ice melting and thermal expansion."

This is another major built-in assumption: that there will be **consequential** "global effects of accelerating ice melting and thermal expansion." This assumption is not scientifically proven. An additional unproven assumption is that these speculated "global warming" affects will "overwhelm" all other influences. Where is the scientific proof of that assertion? None is given.

#16 - On Page #10 it says:

> "The sea-level curves should utilize maximum modern relative sea level rise rates and best estimates from the scientific literature"

This statement is used to try to justify the panel's conclusions about NC sea level rise, graphically shown on Page 11, Figure 2. There are two assertions here that need to be examined. The first is: what does "maximum modern" SLR rates mean? For instance, does "modern" mean satellite data only? Is this an admission that the three studies on Page 8 are of little pertinence? Not clear.

The second assertion is that what they have presented are the "best estimates from the scientific literature". This statement is a close relative to their frequently utilized "best science" claim, and has the same genetic deficiencies. There is no evidence in this report that they relied on "best estimates from the scientific literature," as they repeatedly only selected studies that supported their opinions about AGW and a supposed acceleration of sea-level rise. Real science is **objective** about assessing a situation, which is not the case here.

#17 - On Page #10 it says:

"For the purposes of this report, the Science Panel feels most confident in the data retrieved from the Duck gauge, given its installation, continuous length of service and lack of influence by maritime navigation projects."

So how appropriate is the selection of the Duck, NC station as the sole data source? Consider the following:

A) NOAA lists four sea level stations for NC — and Duck is not one of them. (See <<http://tinyurl.com/66bbn9z>>.) The NC report even acknowledges that NOAA "uses more sophisticated instruments" to measure sea level. The NC report is silent about why it ignored the NOAA sites, but says that one of the main reasons the Duck location was chosen was due to the "continuous length of service" of its measurement station. Note that the NOAA NC mid-coastal Beaufort station data starts in 1952 and has **30 years** more data than the Duck site.

B) So what does the data from Beaufort say? The NOAA Beaufort graph says: "The mean sea level trend is 2.57 millimeters/year with a 95% confidence interval of ± 0.44 mm/yr based on monthly mean sea level data from 1953 to 2006 which is equivalent to a change of 10 inches in 100 years." In other words, the sea level rise there is only **60%** of the Duck site.

C) "Subsidence is a lowering of the land level. In North Carolina subsidence occurs naturally along the coastal plain because the soft rocks there are compressing under their own weight. It can also occur in areas around water wells, because removing water from the ground also causes the rock to compress. Where the coast is subsiding sea levels will seem to be rising faster than they really are." Although Subsidence was mentioned in passing in the NC Report, there is no evidence that any adjustments to the Duck readings were made to account for it. For more information about subsidence, see: <<http://tinyurl.com/6hqmjk6>>.

D) The Duck proximity to the Chesapeake Bay region would likely result in distorted readings. Dr. John Boon, a professor emeritus with the Virginia Institute of Marine Science, says that subsidence is a particularly significant factor throughout this region, and that some parts have it quite bad. "We have relative sea-level rise rates that are the highest on the US East Coast." (See <<http://tinyurl.com/4nrdrt9>>.)

E) The effects of hurricanes may have skewed the Duck results. Look at the Duck monthly data <<http://tinyurl.com/46kmyo7>>. For example, Hurricane Fran struck in September of 1996. That monthly reading (7232) is among the highest recorded over the 25 years of data they have. Clearly this is a temporary aberration, and is not indicative of a general "sea level rise. " Yet it appears that such readings are used in calculating the average sea level, which would appear to make the result artificially higher. Add to this the unknown effects of some of the previously mentioned influencing factors (Gulf Stream, Jet Stream, El Niño, tidal variations, plate tectonics, isostatic rebound, Atlantic multidecadal oscillation, subsidence, artificial reservoir water impoundment, etc.). The position of the report authors appears to be that the effects of these numerous items (for the most part) can be ignored as they all balance out. Again, there is little real science to support such significant assumptions, so that the net result is that we have a questionably unreliable set of numbers.

F) According to the Report's own research (Page 9: Table 1) the Duck data showed the highest sea level rise of all the NC station points. What this says is that the Duck results are **not** representative of the NC coast, so should not be used as such. What this also says is that the Duck results may not be an accurate indicator of actual seal level rise, as their higher readings may well be caused by some other local phenomena (e.g. Chesapeake subsidence).

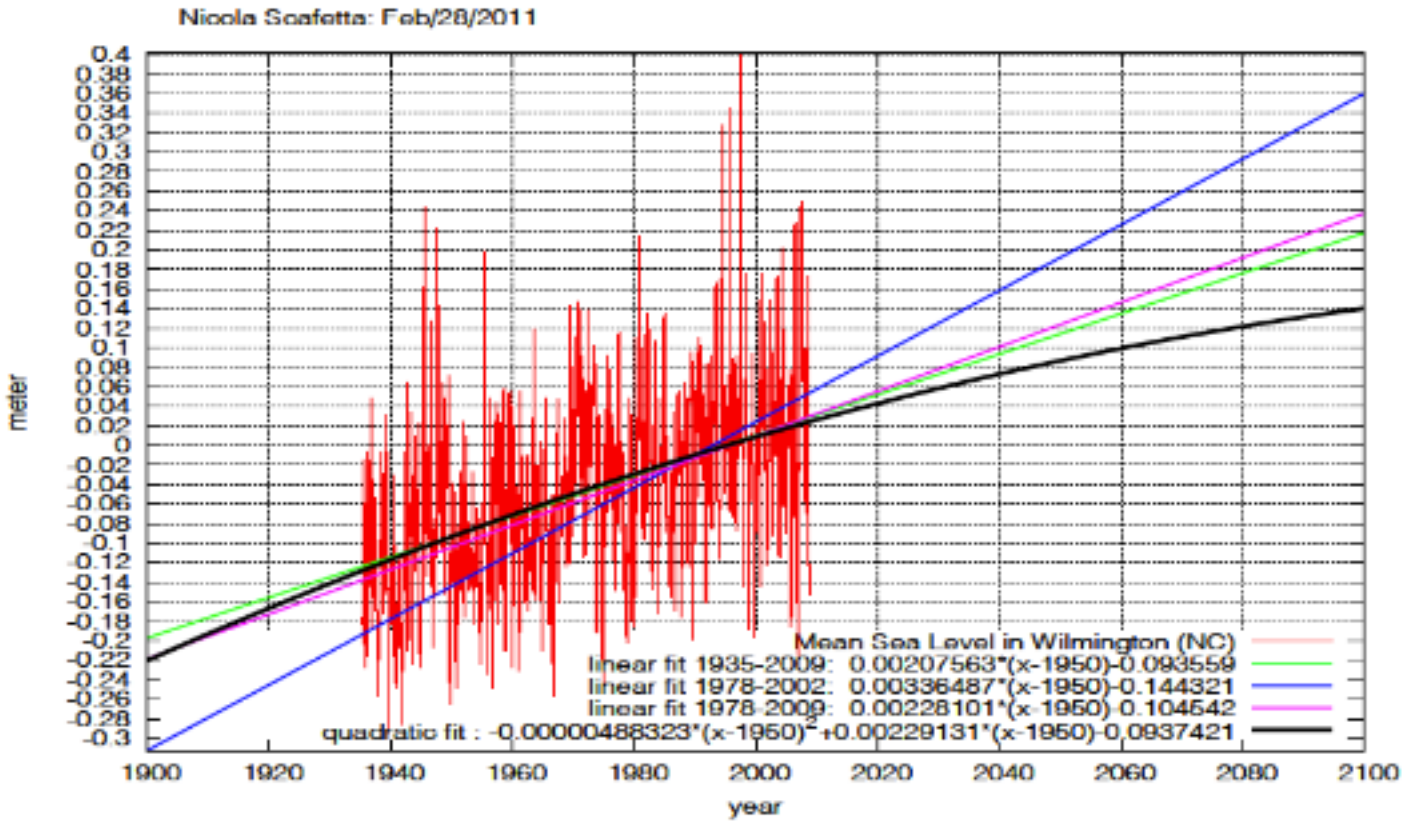
G) There are two unexplained matters that arise from looking at the graph [Figure 2] on Page 11, which shows it using Duck data from "1978 - 2002": **1)** Why would a 2010 report have only 2002 data? and **2)** where does the 1978 to 1985 data come from (as the PSMSL site for Duck says their data begins in 1985 <<http://tinyurl.com/69dfqno>>)?

#18 - On Page #10 it says:

"A rise of 0.4 meter (15 inches) is considered a minimum, since this is the amount of rise that will occur given a linear projection with zero acceleration."

This line they chose as a "minimum" is the **midpoint** of the IPCC projection range. A linear increase is not necessarily the minimum, as sea level rises can also be cyclical. Furthermore, the linear rate of rise (i.e. the slope of the line), is speculative as well. See the above comments about the IPCC's figures being high that are part of the critique of Page 7 of the report.

Dr. Nicola Scafetta (Duke physicist <<http://tinyurl.com/4v3wt6b>>) was kind enough to do a plot of some NC tide data for us (**see next page**). What it shows is the the slope of the line going forward is extremely dependent on: **1)** the duration of time considered [the more the better], and **2)** the dataset chosen [he picked Wilmington due to its lesser subsidence, etc.]. The net result is that doing this results in a projected rise that is LESS than the report's stated "minimum."



Mean Sea Level record in Wilmington (red) that has data from 1935 to 2009 and are plotted in the above figure. The data are fit in 4 different ways and indicate the forecast based on the fit functions:

1) linear trend from 1935 to 2009: 20 cm rise by 2100 relative to the 2009 value
2) linear trend from 1978 to 2002: 34 cm rise by 2100 relative to the 2009 value
3) linear trend from 1978 to 2009: 22 cm rise by 2100 relative to the 2009 value
4) quadratic trend from 1935 to 2009: 12 cm rise by 2100 relative to the 2009 value

Now note that Figure 2 in the NC Sea-Level Rise Assessment Report fit the data from 1978 to 2002 and claim a linear increase of the sea-level of about 38 cm in 2100 relative to the 2010 value. That linear forecast is compatible with the linear forecast #2 (blue line) made in the above figure.

However, the linear fit from 1935 to 2009 (fit #1, green line) gives a significant lower increasing rate by 40%. The claim made in the report is that the sea-level rise is accelerating. However, if the fit is repeated from 1978 to 2009 (fit #3, purple line) I get again a significant lower rate.

Thus, the linear value fit in Figure 2 in the report is misleading. The data clearly present a multidecadal cycle, and from 1978 to 2002 this cycle was in its increasing phase. By fitting only the period 1978-2002 it is given the impression of a very fast linear increase, while fitting the period 1978-2009 the increasing rate is significantly lower by 40%.

Indeed, the existence of a multidecadal cycle in the sea-level rise that was in its rising trend from 1970 to 2000 is well known in the literature. For example, in this paper
Jevrejeva, S., Moore, J. C., Grinsted, A., and Woodworth, P. L.: Recent global sea level acceleration started over 200 years ago?, Geophys. Res. Lett., 35, L08715, 2008.
<<http://www.psmsl.org/products/reconstructions/2008GL033611.pdf>>.

#19 - On Page #10 it says:

"Various models and observations indicate that accelerated rates of SLR in the future are likely"

The fact is that there are also various models and observations that indicate **no** accelerated rates of SLR in the future are likely (some cited above). The authors chose to ignore all of those. The main studies that this report relies on (IPCC, Rahmstorf 2007, and Church & White 2006) have been shown (above) to be speculative and certainly not "best science."

#20 - On Page #11 it shows Figure 2 as the authors' projected scenarios

The takeaway from this critique is that (based on what we know now) the bottom line is more likely to be the **high end** result by 2100, than is the authors' projected "mid-range" line of 39". See comments from some experts at the end of this critique, which all support this position.

#21 - On Page #12 it says:

"A one meter (39 inch rise) is considered likely in that it only requires that the linear relationship between temperature and sea level that was noted in the 20th century remains valid for the 21st century (Rahmstorf, 2007). This level of rise is consistently encapsulated within all of the projections reviewed, and is not located at the upper or lower extremes of the projections."

Again the authors of this report rest their case on Rahmstorf 2007. We have clearly shown that Rahmstorf 2007, plus the data he used (Church & White 2006) do **not** hold up under scientific scrutiny. The revealing fact is that both Rahmstorf AND Church & White have abandoned their own reports. Even more interesting is the fact that these abdications were done PRIOR to this 2010 NC Report. *By what stretch of the imagination does this NC Sea-Level Assessment Report then represent "best science"?*

#22 - On Page #12 it says:

"Given the range of possible rise scenarios and their associated levels of plausibility, the Science Panel recommends that a rise of 1 meter (39 inches) be adopted as the amount of anticipated rise by 2100, for policy development and planning purposes."

Since the foundation of their 1 meter claim (R2007/C&W2006) has been proven to be wrong, the Science Panel's conclusion is likewise. As some ocean-ographers wrote me: "garbage in, garbage out." This is exactly the type of problem that occurs when policy-makers start with a belief and then focus on finding other like-minded parties to support it. With the debunking of R2007/C&W2006, the entire NC Report collapses like a house of cards. The fact that this NC Report is being marketed to the public as "best science" is not only a serious misrepresentation, but an affront to true scientists everywhere.

#23 - On Page #12 it says:

> "The Science Panel does not believe, based on the data available at this time, that it is appropriate to attempt to quantify confidence intervals or margins of error beyond those inherent in the chosen scenarios, as informed by the published literature. Nevertheless, the Science Panel is confident that the curves presented constrain the plausible range of sea level by 2100 as accurately as is possible at this time."

This seems like still another contradiction. How does the science panel say: **1)** we cannot assess a quantifiable confidence level (e.g. 90% certainty) of our speculations, but **2)** we are confident that this range is as accurate as possible? Again, since the projections of R2007/C&W2006 had already been substantially reduced by their own authors *prior* to 2010, how does this jibe with "as accurate as possible"? This marketing phrase is intended to be a synonym for "best science" which we already know (for this NC Report) is simply not true.

#24 - On Page #12 it says:

> "...and based on multiple indicators **suggesting** that global climate is warming, the Panel **believes** that an acceleration in the rate of SLR **is likely**."

Note the three qualifiers: "suggesting", "believes" and "is likely." The cumulative effect of these hedges (plus the prior mentioned nonscientific methodology used in this report) is that **the conclusions of this report are wildly speculative**.

As such it is entirely inappropriate to be using any such material as a basis for the coastal policies of the North Carolina government. This report should be retired, and a new science-based assessment undertaken.

Here is a very small **sample** of some other quotes received from experts:

A) Dr. Willem de Lange (Department of Earth and Ocean Sciences, School of Science and Engineering, The University of Waikato): "The appropriate assumption for the expected NC sea level increase, would be to use the IPCC's figures as a guideline, remembering that they are projections based on scenarios that do not correspond to the actual economic activity since 1990 (and over-estimate the concentrations of greenhouse gases)."

B) Dr. Nils-Axel Mörner (former head of the Paleogeophysics and Geodynamics department at Stockholm University <<http://en.wikipedia.org/wiki/Nils-Axel_Mörner>>) looked at the NC report and wrote about their 1 m projection: "Sorry, simply physically impossible. It is, for sure, not rising by 1 m by year 2100. Our best estimate (for 2100) is +5 cm ±15 cm, and that is nothing to worry about."

C) Dr. Vincent Gray (a climate expert and an Expert Reviewer for the IPCC since 1992): "The 2010 NC Sea Level Assessment Report is all about models and is entirely theoretical. It does not seem to be interested in actual measurements." Here is an example of the sea level research done by Dr. Gray <<http://nzclimatescience.net/images/PDFs/spsl3.pdf>>.

D) Dr. Bob Carter (paleontologist, marine geologist <<http://members.iinet.net.au/~glrmc/>>) wrote: "What this data says is: planning should proceed on the basis of the continuation of the long-term average rate of local rise of about 30 cm (12"±) in 90 years..." Here is a sample paper he has written on Sea Level rise <<http://tinyurl.com/4clhmm2>>.

E) Dr. Pieter Folkens (marine expert, with paleontology background <<http://www.alaskawhalefoundation.org/volunteers/volunteerPage>>) "There is a strong tendency to exaggerate evidence of global warming... Every effort is made, no stone unturned, in a quest to wring out as much sea level rise as the most gullible audience will believe. There is quite a bit of bias in these studies, most designed to confirm the IPCC's scenarios/predictions or lead to what has become a cliché of ridicule — 'It's worse than we thought.' Even still, the bottom line for me is that when all this is put into the context of the historical Late Holocene climate variation, the worst case scenarios — whether they be from Church, Rahmstorf, (etc.) or the IPCC — fall within normal climate variation and are not that remarkable in the big picture."

F) Dr. Nicola Scafetta (Duke physicist <<http://tinyurl.com/4v3wt6b>>) said: "I do not believe that the *North Carolina Sea-Level Rise Assessment Report* is accurate or credible. The data present clear geometrical patterns that contradict the data modeling presented in the report to reach its conclusions. By 2100 only a reasonable MSL rise of no more than 10-20 cm (8"-12") may be expected in NC, which is 5-10 times lower than what the report claims."

[Note: after writing this critique, I sent it to over thirty people with expertise in the sea-level rise issue (including those quoted herein). Corrections were made (and will continue to be if necessary) based on their inputs.]

Respectfully Submitted by:

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PS — See next page for an important Postscript.
PPS — See Addendum for additions after initial release.
PPPS — for an unmarked up version of the 2010 "North Carolina Sea Level Rise Assessment Report" see <<http://tinyurl.com/4a24my9>>.

— POSTSCRIPT —

At the time of this critique, the state agency behind the "NC Sea-Level Rise Assessment Report" has (due to a backlash) backed off somewhat. It's to their credit that they are listening. What citizens and coastal communities should be aware of is that another similar, but larger effort is already in the pipeline and is scheduled to be released in June of 2011. It is called the "North Carolina Sea Level Rise Risk Management Study" (see <<http://www.ncsealevelrise.com/>>).

What is of concern is that this Study is being overseen by a NC agency (Emergency Management, NC Office of Geospatial and Technology Management) that appears to have the same philosophy as the agency that oversaw the 2010 *NC Sea-Level Rise Assessment Report*.

Their web page again tries to assure NC citizens that the "Sea Level Rise Risk Management Study" is being done scientifically, i.e. by:

> "An advisory committee, **representing a broad range of viewpoints**, is overseeing the study efforts helping build consensus, and ensuring that the quality of the study meets community standards and fulfills stakeholder needs."

This is a variation of the "best science" theme, so we've heard this before. The questions are:

1) does this "broad range of viewpoints" include several scientists skeptical of the IPCC's findings?
2) is the committee primarily made up of scientists who advocate the **Scientific Method** being used to solve our technical problems?

I was going to ask the "Executive Study Director" those questions, and left a phone message for him on February 22, 2011. I am awaiting his callback.

Note that the "Study Manager" (the person running things) is employed by a company named Dewberry. It is interesting to see that Dewberry proudly identifies themselves as being a leader in providing solutions for global warming related matters (<<http://www.dewberry.com/climatechange.asp>>).

Once you understand this basis for Dewberry's business, what criteria would you expect these people to use in selecting scientists to participate in this Study? How likely is it that these people will seriously entertain inputs from scientists who dispute the validity of AGW?

This Study has indications that it is another example of "best science" simply being a stick-on smiley-face label.

If for nothing other than variety, the citizens of NC would be most pleased to see a real science product come from a NC agency. Hopefully the failings of the "NC Sea-Level Rise Assessment Report" will not be repeated in the "NC Sea Level Rise Risk Management Study".

— ADDENDUM —

[Below is information that I became aware of too late to incorporate into the above critique. Since they are relevant, I am adding them here.]

Add this to the comments regarding #5:
This is a **very** important new paper, which is a critical evaluation of the claim *that there will be an accelerating sea level rise between now and 2100:*
<<http://tinyurl.com/496kxps>>.

It is published in an independent journal (<<http://tinyurl.com/4r6glyh>>) and the credentials of the authors are top notch (e.g. both are PhD's and Emeritus Professors).

What is also of interest is that I subsequently heard from one of the authors the following:

"I personally believe the earth is warming primarily due to the actions of man, but **we should be using science properly to determine what is happening**."

This is a refreshing perspective from an AGW proponent, and I couldn't agree more!

These two experts also have a worthwhile Powerpoint presentation that goes along with their study. Download this here: <<http://tinyurl.com/4d96g48>>.

Add this to the comments regarding #10:
This is an exceptionally well-documented critique about the IPCC's claims — with the focus on how well the IPCC has followed scientific standards <<http://tinyurl.com/3co8jbl>>. "Research to date on Forecasting for the Manmade Global Warming Alarm. Testimony to Subcommittee on Energy and Environment Committee on Science, Space and Technology – March 31, 2011" -

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Add this to the comments regarding #11:
Since some of the projected acceleration is based on the theory of melting glaciers, here is an article which further disputes the Greenland concerns: <<http://tinyurl.com/4lzcaut>>. Dr. Cliff Ollier (Emeritus Professor) is a geologist and geomorphologists. He is the author of ten books and over 300 scientific papers.

Add this to the comments regarding #12:
"A look back at 'A Semi-Empirical Approach to Sea-Level Rise'" is a further analysis of the changes between Rahmstorf 2007 and 2009: <<http://tinyurl.com/44uhgkf>>