



CARTERET COUNTY

CROSSROADS

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Climate Change 101, by Ben Peierls

Sea level rise is one of the more serious outcomes of climate change, and more specifically, global warming. The thermal expansion of sea water and the addition to ocean water volume from melting land ice both contribute to global sea level increases. While climate encompasses longer time frame trends than weather, meteorologists and climate scientists have seen a measurable increase in ocean and air temperatures in the last 50-100 years. More recent trends that highlight that warming trend include: (1) July 2012 was the hottest month in US records; (2) July 2011 through June 2012 was the hottest 12 month period in US records; and (3) on September 9, 2012, the Arctic sea ice was at the lowest extent ever recorded.

The greenhouse effect is a natural process where atmospheric gases insulate the Earth's surface, trap heat, and keep temperatures at levels suitable for life. Additions of these gases (e.g., carbon dioxide) to the atmosphere from human activities have caused an enhanced greenhouse effect and produced the observed warming. A major source of excess greenhouse gas concentrations is the combustion of carbon-based fossil fuels, such as coal, oil, and natural gas. Carbon dioxide concentrations today are higher than any time in the last 800,000 years, and the consensus from climate scientists is that the warming trend will continue under the current pace of greenhouse gas emissions. The actual rate of temperature change is difficult to predict given the complexity of the global climate system. For instance, clouds, snow, and ice have high albedo (reflectivity), which can prevent the absorption of some of the sun's energy. If cloud cover increases under warmer conditions more energy would be reflected and warming would be moderated. On the other hand, higher temperatures cause more snow and ice melt, which decreases albedo and increases warming. Despite these uncertainties, it is clear that even the lowest projected temperature increases will have severe impacts on the planet, including more weather extremes, ecosystem changes, loss of sea ice and glaciers, and sea level rise.

There is an overwhelming amount of information on climate change to be found online. Amid the noise, we recommend RealClimate (www.realclimate.org) for thorough, accurate information on this complex but vitally important issue.

Sea Level Rise (SLR) and Public Policy for Carteret County, by John Merriner

Global warming portends a rise in sea level over time. To provide public guidance for coastal NC, the Coastal Resources Commission (CRC) requested that a Science Panel undertake a two year review of the SLR issue and make a recommendation to the CRC as to the Sea Level Rise that we could experience by the year 2100. That report was based upon 20+ years of peer reviewed scientific publications and U.S. and international expert panel reports on Climate Change. The report included a range of values for SLR by 2100, but the consensus value was 39 inches.

Today the economy of coastal eastern NC is strongly tourism centric with a long term expectation of continued housing development for residential/retirement communities in the remaining "rural" properties. These open properties today are largely lower lying, flood prone zones most impacted by storm surge events and SLR. Development interests view SLR policy and the 39-inch projection by 2100 as a threat to their business model.

These development interests, represented by NC-20, circulated a resolution to the coastal county commissioners and towns that called for a delay of action "until there is verifiable scientific proof of the current rate of SLR and an acceleration of this rate is observed by methods agreed upon". Carteret Co. Commissioners adopted that resolution on 19 March 2012. Morehead City, Atlantic Beach, and Pamlico County followed with similar actions over the next month. NC-20 found a sympathetic ear in Representative Pat McElraft. She introduced a bill (H819) which basically denied SLR and forbade development of governmental policy/regulation for 4 years pending further review of "the science" using agreed upon methodologies etc. The NC legislature web page has the H819 bill details and timelines of actions taken.

The outcome is that societal risk issues are up for debate: natural phenomena like climate change and SLR operate on a longer timeframe (50-100 years) while local economic development interests for new housing and an enhanced tax base operate on political election scale time frame (2-6 years). The short term political solution/response to this quandary is to mount a publicity blitz of denial, challenge, delay, and then to legislate a stalling action. That course of action was

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Our webmaster is Debra Callaway
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successful in this case: score one short term win for the “Merchants of Doubt”. But time and tide wait for no one, so we need to plan for sea level rise now.

The CRC and the Science Panel have been legislatively “put on hold” for 4 years (until 2016) pending more scientific review, further study and new developments in the scientific field of climate change and SLR. In the debate at the CRC level NC-20 lobbied so effectively that a draft SLR policy statement in June 2012, prior to the passage of HB 819, contained no reference to a numerical projection of future SLR.

Crossroads SLR Policy Plan Proposal, by Mark Hooper: On April 19, 2012, Crossroads presented to the CRC a Sea Level Rise policy plan. *The proposed plan takes a generational approach to adapting/preparing for rising average sea levels.* Instead of trying to determine and plan for the sea level in the distant year of 2100—nearly three generations in the future—we propose an incremental approach that might be more palatable to development interests. The proposal suggests that we begin by **planning for a one foot rise in average sea level over the next 33 year period (one generation)**. The plan has three components:

- **Measurement:** Build confidence in the instruments and methodology (record keeping and reporting) used to record sea water levels. It is imperative to continue historical data sets; additional new sampling stations would also be beneficial.
- **Mapping:** Take full advantage of the state of the art mapping tools available, and map 1-ft, 2-ft, and 3-ft water level heights above current mean sea level. The 1-ft water level line (Zone 1) will identify the most vulnerable/lowest points in our current infrastructure system.
- **Metrics:** Develop and implement a methodology to record high water level events at a number of critical points identified through the mapping process. If critical point A is flooded 5 times in 2012, one would expect that the number of times point A is flooded on an annual basis would increase over the next 33 years.

With this plan there would be a review of the data and findings every 5 years to assess SLR and the incidences of critical point flooding in Zone 1. This incremental approach would assist coastal counties with longer term planning and allow policymakers to assess the effectiveness of the plan before establishing Zone 2 and 3 policies. Meanwhile economic activity in Zones 2 and 3 could continue unhindered, with the knowledge that it might be of a more temporary nature.

Mark Hooper presented the plan to the CRC and spoke, in the words of John Merriner, of “generations of NC citizens living in flood prone, storm surge impacted areas who have been adapting to rising sea level and storm related threats to their property, livelihoods and lives. Residents of these areas have repeatedly adjusted to protect their interests and cope with changes Mother Nature has wrought.” Mark and his family live on Core Sound and currently must prepare for a 2-ft rise in sea level during strong NE winds, and for more than a 5-ft rise in sea level during hurricane storm surges (Isabel and Irene). Planning for and adapting to these events equates to planning for a future rise in sea level.

Crossroads' main concern with HB 819 is that it took an effective democratic public process and shut it down. There was healthy debate at the CRC level, the development community was well represented on the CRC, and they had time to read and discuss a great deal of information on SLR. What was missing was an organized response from the coastal region's environmental community who could counter claims by NC-20.

Crossroads news: We are pleased to welcome a new Board member, Ben Peierls, a researcher at UNC Institute of Marine Science. We also sincerely thank everyone for the generous donations in memory of Nicki Hooper, wife of founding member, Irv Hooper for 68 years and mother to our current President, Mark Hooper.

A message from Mark: Nicki always encouraged us to “stay the course” as a local environmental organization. We have been involved in important work as we strive to build strong grassroots support for sound environmental policy in this county. I feel there is a healthy environmental ethic here in Carteret County. This is the Crystal Coast, home to one of the few National Seashores in the nation; residents and tourists alike cherish our natural environment and attractions. We are home to Marine Science centers for three major universities as well as federal and state programs. Yet in public debate on environmental issues such as SLR planning or stormwater runoff controls the natural science community is often surprisingly silent, while the pro-development community has a robust, unified voice—and therefore greater influence. Crossroads has been an all-volunteer environmental organization for more than 30 years and we will continue to speak out for the environment. Please join us in speaking out.

We are honored to have a membership roster filled with the names of thoughtful, informed local residents who share our passion for environmental stewardship. We'd love to hear from you. Please think about a way that you can be more involved. We have an active Facebook page; our website needs work if anyone is good at that. Our webmaster does a wonderful job posting all the material we give her, but we need more links and content. Let's recharge this organization.

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