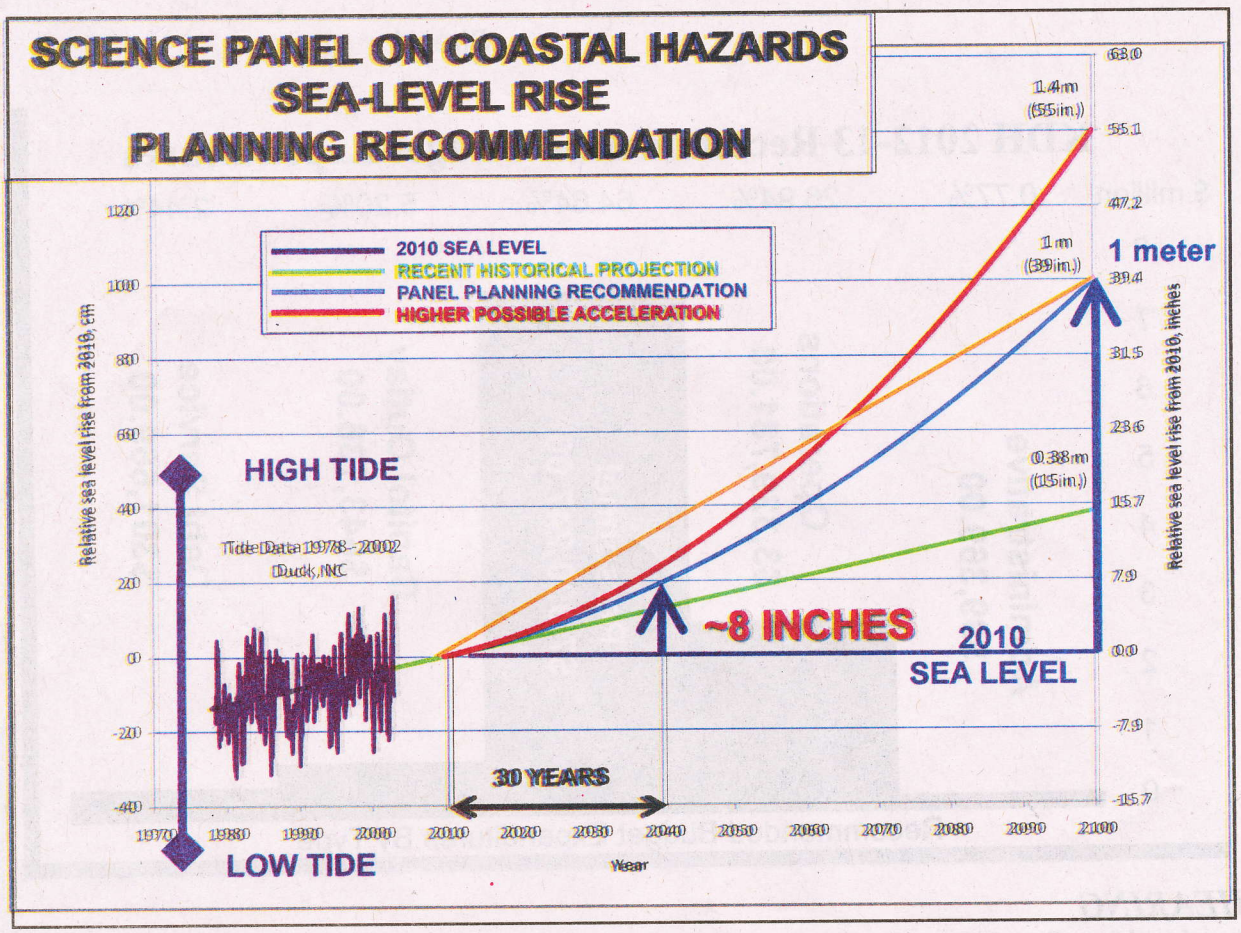
Results of study



A GRAPH from the N.C. Coastal Resources Commission's Science Panel on Coastal Hazards document, titled *North Carolina Sea Level Rise Assessment Report.*

Science panel member puts sea-level rise in layman's terms

By SPENCER ROGERS
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I am a member of the state's Science Panel on Coastal Hazards, a group of scientists and engineers that was asked by the N.C. Coastal Resources Commission to recommend a planning target for sea-level rise in North Carolina through the year 2100.

The panel's report is technical and includes a number of significant assumptions and uncertainties for the state's first planning effort. The report includes recommendations to refine the assumptions and reduce the uncertainties as the issue is updated every five years. The panel recommended using a planning target of 1 meter, or 39 inches, by 2100.

ing this today will be around in 2100. Even a 1-meter (39-inch) rise in sea level sounds scary. What should one expect next year, or over timelines that are more likely to be meaningful to the average person.

The historical rate of sea-level rise at the U.S. Army Corps of Engineers research pier in Duck has been a little more than the thickness of two nickels — stacked flat, on top of one another — per year. If you averaged the predicted accelerated rate for the next 90 years, the annual rise would be a little less than six nickels thick.

Panel on Coastal Hazards' planning recommendations for the Coastal Resources Commission over the next 30 years amounts to small change, that is just more than the thickness of three stacked nickels a year. Might this be a level for which residents, businesses and communities can begin to plan?

Rogers has been with the North Carolina Sea Grant extension program for more than 30 years. He is a long-time member of the state's Science Panel on Coastal Hazards and the N.C. Coastal Resources Advisory Council.

This number reflects a combined rise based on historical data and anticipated but not-yet-observed acceleration due to climate warming (see above graph). But sea-level rise discussions go beyond scientific issues.

Although useful for some planning purposes, almost no one plans for 90 years in the future. As a Sea Grant outreach educator, I will try to put the science of the recommendations into a human perspective and a more realistic timeline.

Changes in sea level are very small trends in a constantly changing water level. Consider that most ocean tides are driven by the gravity of the moon (80 percent) and the sun (20 percent). The average daily tidal range on the N.C. open coast varies from about 3 feet in Corolla to 5 feet in Sunset Beach.

The relative position of the earth, moon and sun vary over a 19-year period before repeating. Thus, measuring sea level requires observing a few inches of annual change in a twice-a-day cycle for at least a 20-year period.

The panel's 2100 recommendation to plan for 1 meter is similar to international studies that predict various ranges, most falling between 0.5 and 2 meters. But it is likely that no one reads

Because almost no one plans for events 90 years into the future, a more common reference might be that of a 30-year mortgage or 30-year ocean setback line. To look at shorter periods, it is important to note that most sea-level studies, like the panel's, do not observe any recent acceleration in the rate of rise.

If climate gradually warms as expected, it is unlikely that the rate of sea-level rise will instantly triple. Rather, most predict a gradually (constantly) accelerating increase in the rate of rise. The difference is not clearly described in most studies, but can be seen in most of the prediction graphs. It is the difference between the curved predictions and a straight line between the present level and the 2100 prediction.

The panel's planning recommendation to the CRC, averaged over the next 30 years, reflects an acceleration of about another nickel thickness per year to the historical rate, bringing the total to a little more than three nickels per year. Over the next 30 years, that would add up to a little less than 8 inches in rise, including less than 3 inches in acceleration above the historical projection.

Can coastal North Carolina survive such rates of sea-level rise? Well, sure. Anyone born on the Outer Banks and now aged 46 or older has already lived through the accelerated sea-level rise that the panel has recommended planning for in the next 30 years.

My conclusion: The Science