

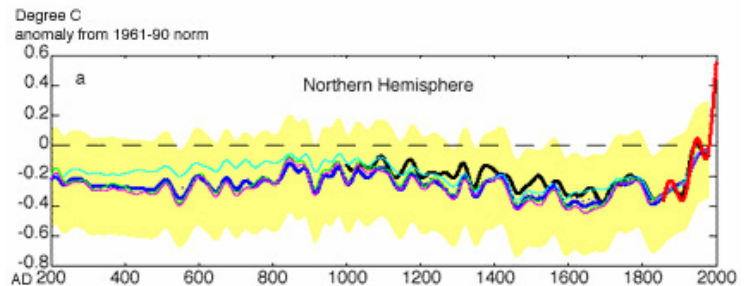
The Alarming Truth About Global Warming

(And Its Increasing Impact on North Carolina)

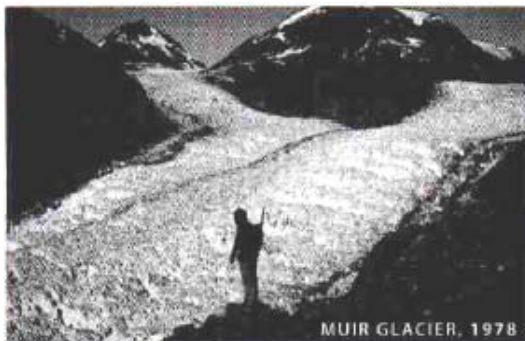
June 2004

“The debate about climate change is over. Scientists around the world have now amassed an unassailable body of evidence to support the conclusion that a warming of our planet – caused principally by greenhouse gas emissions from burning fossil fuel – is under way.” – Mark Lynas, Author of High Tide¹

- In 1896, a Swedish chemist by the name of Svante Arrhenius voiced concern that carbon dioxide emissions from the combustion of coal would lead to global warming.²
- In 2001, the Intergovernmental Panel on Climate Change (IPCC) unequivocally concluded that pollution from burning fossil fuels enhances the Earth’s natural greenhouse effect and causes climate change. Already, human-induced global warming has caused sea levels to rise, ocean heat content to increase, and snow and ice cover to decrease.³
- In less than 200 years, humans have increased atmospheric greenhouse gases by 50 percent. Levels of CO₂, the most important human-made greenhouse gas, are now the highest they have been in at least 420,000 years.⁴ (David King in Science, 2004)
- The 17 warmest years since record keeping began have occurred since 1980. August, 2003 was the warmest month on record in the Northern Hemisphere, and the heat claimed an estimated 35,000 lives in Europe alone, breaking all records for heat-induced fatalities.⁵



Temperatures have risen sharply since the Industrial Revolution, reversing a long term cooling trend. Mann & Jones, Geophys. Research Letters, 2003.



MUIR GLACIER, 1978

- Scientists have shown that natural factors could only account for, at most, 25 percent of the 1.1°F rise in the average global temperature over the last 100 years.⁶ (Thomas Crowley in Science, 2000)
- Recent improvements in the methods of analyzing satellite data have reconciled a longstanding debate between surface and satellite temperature data, and now both agree that the earth is warming at an astounding 0.3°F per decade.⁷
- The IPCC predicts the average global temperature to increase somewhere between 2.5°F and 10.4°F during this century alone.⁸ 251 million years ago, a similar temperature increase triggered the extinction of 95 percent of the species alive at the time, or “the worst crisis to ever hit life on Earth.”⁹
- Temperature increases are more pronounced around the poles, as evidenced by a 2.7°F increase in the Arctic in the last century,¹⁰ and cause glaciers and permafrost to melt and upper layers of the ocean to expand, resulting in rising sea levels.¹¹
- NASA satellites show that the polar ice cap, which reflects sunlight, is contracting at a rate of 9 percent every ten years. As the ice covering disappears, the earth absorbs more sunlight and the rate of global warming increases.¹²
- Less than 25% of the glaciers found in Montana’s Glacier Park just over a hundred years ago remain today.¹³



MUIR GLACIER, 1993

(Over)

- ✦ In Alaska, warm temperatures are leading to the thawing of permafrost and the collapse of roads and structures that were built on the “permanently” frozen soil.¹⁴
- ✦ Rapid melting of glaciers, arctic permafrost, and sea ice has the potential to cause dramatic shifts in ocean currents, such as the Gulf Stream, leading to swift and unpredictable climatic changes.¹⁵

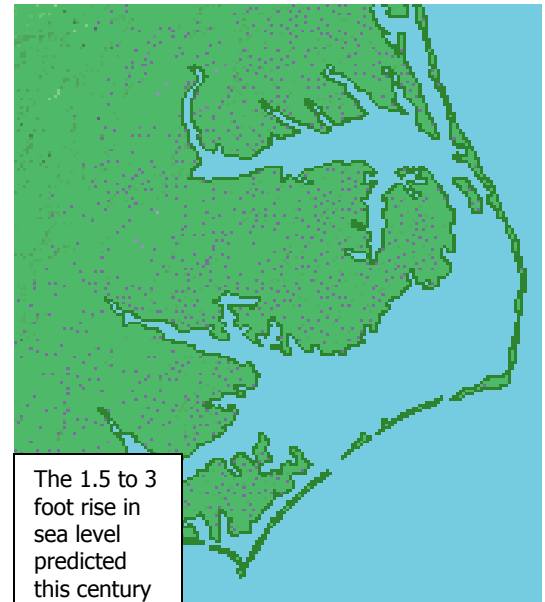
Specific Impacts on North Carolina

“We see evidence of global warming right here in North Carolina. From the loss of coastal property to increased health risks, climate change creates problems for North Carolina that we can no longer afford to ignore.”
 – Dr. William H. Schlesinger, Dean of the Duke University Nicholas School of the Environment and Earth Sciences¹⁶

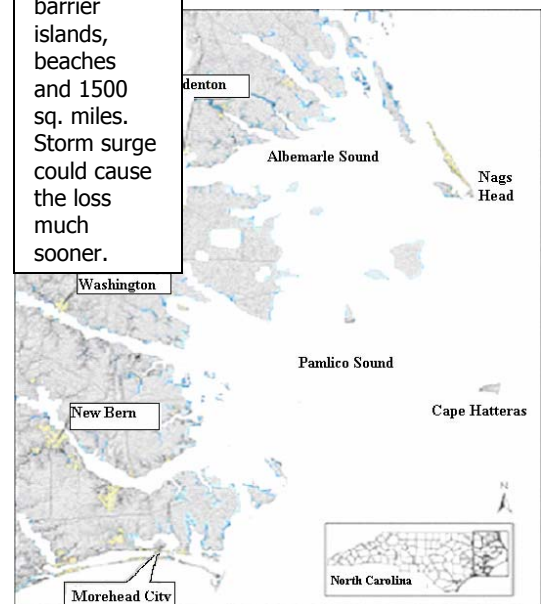
- ✦ North Carolina’s leading climate change experts believe the state will experience a 4° rise in average temperature this century, meaning the climate will soon be similar to that of central Florida.¹⁷
- ✦ Scientists predict a sea level rise of 3 feet within the next 100 years, which would inundate 22,400 square miles of land along the Atlantic and Gulf coasts – primarily in North Carolina, Louisiana, Florida, and Texas.¹⁸ The EPA and others have estimated that a sea level rise of an entire foot is possible within 20 years.¹⁹
- ✦ Climatologists warn that global warming will lead to increased frequency and intensity of extreme climatic events such as heat waves, droughts, floods, and storms.²⁰ In fact, in 1996, the National Climatic Data Center discovered a dramatic surge in weather extremes since the late 1970s that is almost certainly not due to natural fluctuations.²¹

“Imagine, more storms such as Hurricanes Andrew, Fran, Hugo, or Opal, all of which occurred in the last 10 years.” – Former EPA Deputy Regional Administrator Stanley Melburg. (Speaking in 1997, before Hurricanes Floyd and Isabel)²²

- ✦ Scientists at UNC have shown that the seasonality of rainfall in North Carolina has changed dramatically over the last century, and now 20% less rain falls during the summer. Increasing amounts of rainfall in autumn fail to help crops lost during the growing season.²³
- ✦ The drought from 1999-2002 was one of the most intense in 100 years²⁴, and in 4 years, North Carolina received only 3 years’ worth of rainfall.²⁵ Experts predict that drought associated with climate change will lead to the failure of many urban water systems in coming years.
- ✦ The growing frequency of drought/flood cycles within the U.S. creates favorable conditions for mosquitoes and has led to an increase in mosquito borne diseases such as West Nile Virus, encephalitis, and dengue fever.²⁶

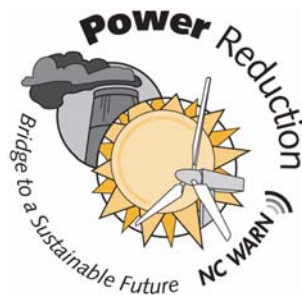


The 1.5 to 3 foot rise in sea level predicted this century will destroy barrier islands, beaches and 1500 sq. miles. Storm surge could cause the loss much sooner.



Source data: Environmental Defense

See www.ncwarn.org for footnotes.



The U.S. has the power to begin changing the global warming trend as we contain only around 4% of the world’s population and yet emit around 20% of the total global greenhouse gases.²⁷ Because the production of electricity is responsible for 42% of greenhouse gas emissions, we have the ability, and responsibility, to minimize the effects of climate change – through feasible, cost-effective power reduction measures.

- ¹ Lynas, Mark. "It's Later Than You Think." New Statesman. 30 June (2003): 16-17.
- ² "Global Warming: The history of an international scientific consensus." Jan 2003. Environmental Defense. <http://www.environmentaldefense.org/documents/381_FactSheet_globalwarming_timeline.pdf>
- ³ Climate Change 2001: The Scientific Basis. Jan 2001. Intergovernmental Panel on Climate Change. <http://www.grida.no/climate/ipcc_tar/wg1/index.htm>
- ⁴ King, David. "Climate Change Science: Adapt, Mitigate, or Ignore?" Science. 303 (2004): 176-177.
- ⁵ Larson, Janet. "Record Heat Wave in Europe Takes 35,000 Lives". Earth Polity Institute. <www.earth-policy.org/Updates/Update29.htm>
- ⁶ Crowley, Thomas J. "Cause of climate change over the past 1,000 years." Science. 289 (2000): 270-277.
- ⁷ Kerr, Richard. "Getting Hotter, However You Measure It." Science. 304 (2004): 805-807.
- ⁸ "Myth vs. Fact." 2004. Environmental Defense. <http://www.undoit.org/what_is_gb_myth_2.cfm>
- ⁹ Lynas, Mark. "It's Later Than You Think." New Statesman. 30 June (2003): 16-17.
- ¹⁰ Mazza, Patrick and Rhys Roth. "Global Warming is Here: The Scientific Evidence." Climate Solutions. Feb. 2000. <<http://www.climatesolutions.org/pubs/pdfs/gwih.pdf>>
- ¹¹ "Sea level rise." March 2004. Climate.org. <<http://climate.org/topics/sealevel/index.shtml>>
- ¹² "Global Warming puts the arctic on thin ice." 11 Feb 2004. Natural Resource Defense Council. <<http://www.nrdc.org/globalwarming/qthinice.asp>>
- ¹³ Rauber, Paul. "The Melting Point." Sierra. Aug (2003): 28.
- ¹⁴ Mazza, Patrick and Rhys Roth. "Global Warming is Here: The Scientific Evidence." Climate Solutions. Feb. 2000. <<http://www.climatesolutions.org/pubs/pdfs/gwih.pdf>>
- ¹⁵ "Climate." 2004. The Rocky Mountain Institute. <<http://www.rmi.org/sitepages/pid124.php>>
- ¹⁶ Schlesinger, William. "Global Climate Change and North Carolina: A Panel Discussion with Our State's Scientists." North Carolina Museum of Natural Sciences. Raleigh. 26 May 2004.
- ¹⁷ Schlesinger, William. "Global Climate Change and North Carolina: A Panel Discussion with Our State's Scientists." North Carolina Museum of Natural Sciences. Raleigh. 26 May 2004.
- ¹⁸ "Global Warming puts the arctic on thin ice." 11 Feb 2004. Natural Resource Defense Council. <<http://www.nrdc.org/globalwarming/qthinice.asp>>
- ¹⁹ EPA Global Warming Site. 2 Oct 2002. U.S. Environmental Protection Agency. <<http://yosemite.epa.gov/oar/globalwarming.nsf/content/index.html>>
- ²⁰ Patz, Jonathan. "Global warming." BMJ. 328 (2004): 1269.
- ²¹ Mazza, Patrick and Rhys Roth. "Global Warming is Here: The Scientific Evidence." Climate Solutions. Feb. 2000. <<http://www.climatesolutions.org/pubs/pdfs/gwih.pdf>> Patz, Jonathan. "Global warming." BMJ. 328 (2004): 1269.
- ²² "Global Climate Change: Impacts for the Southeast." 16 Sept. 1997. U.S. Environmental Protection Agency. <[http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/SHSU5BNJK2/\\$File/atlanta.pdf](http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/SHSU5BNJK2/$File/atlanta.pdf)>
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- ²⁴ Robinson, Peter. "Global Climate Change and North Carolina: A Panel Discussion with Our State's Scientists." North Carolina Museum of Natural Sciences. Raleigh. 26 May 2004.
- ²⁵ Jehl, Douglas. "Development and a Drought Cut Carolinas' Water Supply." New York Times. New York. 29 Aug. 2002.
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