

## **Hurricanes, Climate Change, and the Poor**

### **Evangelical Environmental Network Briefing Paper**

Hurricane Katrina devastated the Gulf region in August 2005, shocking the country in exposing how the poor even in the United States are the most vulnerable to natural disasters. Katrina, soon followed by Rita, subsequently sparked increased interest in the relationship between hurricanes and climate change (also known as global warming).

The consequences of climate change are going to be severe, especially for the poor in poor countries. For Christians, addressing global warming is a new way to fulfill Jesus' most basic ethical teachings to love our neighbors, do unto others as we would have them do unto us, and protect and care for "the least of these" (Mt. 25) as if they were Jesus Christ himself.

### **Hurricanes and Climate Change**

One of the likely consequences of climate change is an increase in hurricane intensity, according to the 2001 report of the Intergovernmental Panel on Climate Change (IPCC), the world's most authoritative body on global warming.<sup>1</sup>

Recent studies indicate that increasing ocean temperatures may already be intensifying hurricanes. Scientists studying the issue have published results in two highly respected scientific journals, *Nature* and *Science* that suggest a correlation between global warming and hurricane intensity over the last three decades.<sup>2</sup>

During the last 30 years:

- total power released by storms in the Atlantic has more than doubled and so has the number of Category 4 and 5 hurricanes worldwide; additionally,
- sea surface temperatures in waters that spawn hurricanes have increased by 1 degree Fahrenheit.

Because the number and intensity of hurricanes shows large variability from year to year and decade to decade, more research over a longer timeframe is needed to confirm these results. The studies are suggestive, not conclusive. However, the studies add strength to the view that hurricane intensity will increase as global warming increases.

What about specific hurricanes like Katrina? Did global warming intensify Katrina from a Category 3 to a Category 4 storm, helping to exceed the ability of society to deal with the consequences? Since scientists studying the issue look at trends, not specific hurricanes, no single hurricane can be definitively linked to global warming. However, as one prominent scientist stated, "The intensity of Katrina is consistent with the type of storms we've been finding, [which are] increasing in intensity globally."<sup>3</sup>

### **Katrina as Harbinger**

Whether or not Katrina was strengthened by global warming, it can serve as a preview of the consequences of climate change as it relates to: (1) intensified hurricanes, and; (2) sea-level rise and flooding.

In each of these areas, Katrina suggests the U.S. is not ready for the consequences.

1. **Intensified Hurricanes.** Temperatures in the waters that spawn hurricanes are projected to rise by an additional 1.8° F or more by 2050. If 1° F warming has resulted in a doubling of the number of Category 4 and

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<sup>1</sup> IPCC Summary for Policymakers, Table One, *Estimates of confidence in observed and projected changes in extreme weather and climate events*, [http://www.grida.no/climate/ipcc\\_tar/wg1/008.htm#tabspm1](http://www.grida.no/climate/ipcc_tar/wg1/008.htm#tabspm1).

<sup>2</sup> See Emanuel, K. "Increasing destructiveness of tropical cyclones over the past 30 years." *Nature* 436 (Aug. 4, 2005):686-688. Abstract available at <http://dx.doi.org/10.1038/nature03906>. See also Webster, P.J., G.J. Holland, *et al.* "Changes in tropical cyclone number, duration and intensity in a warming environment." *Science* 309 (Sept. 16, 2005):1844-1846. Available at <http://www.sciencemag.org/cgi/content/abstract/309/5742/1844>. Preprint available at [http://www.eas.gatech.edu/research/links/Webster\\_weather.pdf](http://www.eas.gatech.edu/research/links/Webster_weather.pdf).

<sup>3</sup> Peter Webster, as quoted by Naila Moreira, "The Wind and the Fury," *Science News Online*, Vol. 168, No. 12, Sept. 17, 2005, <http://www.sciencenews.org/articles/20050917/bob8.asp>.

5 hurricanes, another 1.8° F warming could increase the likelihood of many more storms like Katrina hitting the shore.

2. Sea Level Rise and Flooding. Global warming has raised and will continue to raise sea level due to thermal expansion of the oceans and the melting of glaciers. The consequences of sea level rise include more frequent and more devastating flooding and loss of coastal land. According to the Environmental Protection Agency, “Along the coast of New York, which typifies the U.S. Coast, sea level is likely to rise 26cm (10 inches) by 2050 and 55cm (almost 2 feet) by 2100.”<sup>4</sup> In coastal situations, a 50cm rise normally results in a 50m (164 feet) loss of land.<sup>5</sup>

Worldwide, sea level rise and flooding is projected to create 20-50 million refugees in this century alone.<sup>6</sup> The vast majority will be the poor and vulnerable. If the U.S. was not ready for the devastation and evacuation due Katrina and Rita, poor countries are even less prepared for the impacts of global warming.

### **Our Response**

Katrina and Rita have reminded us that disasters like flooding hit the poor and forgotten the hardest. We at EEN are working with other evangelicals to help our community and our country understand that we must begin addressing climate change **now** to reduce the numbers of those in harm’s way. There are three basic reasons for urgency: (1) it’s happening now; (2) the global warming pollution we create now will continue to harm our children and grandchildren throughout this century, and; (3) we’re making long-term decisions now that will impact how much pollution we create for decades.

What happened to New Orleans was the most anticipated disaster in U.S. history, but many of the precautionary measures of experts were not implemented. We are working hard to not have the warnings of scientists regarding climate change go unheeded. Let us not forget “the least of these” – whom Jesus identifies with Himself – when it comes to addressing climate change. Please support our efforts to protect the poor through preventing the harshest predictions of global warming from coming true.

**Contact us at [een@creationcare.org](mailto:een@creationcare.org). For more information, go to [www.christiansandclimate.org](http://www.christiansandclimate.org).**

10-4-05

<sup>4</sup> <http://yosemite.epa.gov/oar/globalwarming.nsf/content/ClimateFutureClimateSeaLevel.html>.

<sup>5</sup> Arctic Climate Impact Assessment, p. 43.

<sup>6</sup> IPCC's Climate Change 2001: Impacts, Adaptation, and Vulnerability (2001): section 9.7.1.1, [http://www.grida.no/climate/ipcc\\_tar/wg2/360.htm](http://www.grida.no/climate/ipcc_tar/wg2/360.htm).