

ONE HUNDRED TWELFTH CONGRESS  
**Congress of the United States**  
**House of Representatives**  
COMMITTEE ON ENERGY AND COMMERCE  
2125 RAYBURN HOUSE OFFICE BUILDING  
WASHINGTON, DC 20515-6115

Majority (202) 225-2927  
Minority (202) 225-3641

**MEMORANDUM**

**March 7, 2011**

**To: Subcommittee on Energy and Power Democratic Members and Staff**  
**Fr: Committee on Energy and Commerce Democratic Staff**  
**Re: Hearing on “Climate Science and EPA’s Greenhouse Gas Regulations”**

On Tuesday, March 8, 2011, at 10:00 a.m. in Room 2123 of the Rayburn House Office Building, the Energy and Power Subcommittee will hold a hearing entitled “Climate Science and EPA’s Greenhouse Gas Regulations.” This hearing is being held at the request of the Democratic members of the subcommittee.

This memo briefly provides background on the state of understanding of climate change science because the majority hearing memo failed to do so.

**I. STATE OF THE SCIENCE**

On March 3, 2011, Chairman Fred Upton and Chairman Ed Whitfield introduced H.R. 910. One section of the bill would legislatively repeal EPA’s scientific determination commonly known as the endangerment finding. Legislatively repealing this scientific determination is inconsistent with the consensus scientific views on climate change.

There is a broad scientific consensus among the world’s preeminent scientific bodies that climate change is happening, is largely caused by human activities, and poses serious risks to human health, the environment, national security, and multiple sectors of the economy.

**A. The National Academy of Sciences.**

The National Academy of Sciences concluded in a recent report: “Climate change is occurring, is caused largely by human activities, and poses significant risks for—and in many

cases is already affecting—a broad range of human and natural systems.”<sup>1</sup> The report also concludes that human-induced climate change will “pose risks for a wide range of human and environmental systems, including freshwater resources, the coastal environment, ecosystems, agriculture, fisheries, human health, and national security, among others.” The Academy report emphasized that “[t]he ultimate magnitude of climate change and the severity of its impacts depend strongly on the actions that human societies take to respond to these risks.”

### **B. Leading Scientific Organizations.**

Eighteen leading scientific organizations, including the American Association for the Advancement of Science, the American Geophysical Union, and the American Meteorological Society, have stated the consensus scientific view.<sup>2</sup> They state:

Observations throughout the world make it clear that climate change is occurring, and rigorous scientific research demonstrates that the greenhouse gases emitted by human activities are the primary driver. ... If we are to avoid the most severe impacts of climate change, emissions of greenhouse gases must be dramatically reduced.<sup>3</sup>

### **C. The U.S. Global Change Research Program.**

The U.S. Global Change Research Program (USGCRP) coordinates and integrates federal research on changes in the global environment and their implications for society. Thirteen federal departments and agencies, including NASA, the National Science Foundation, and the Department of Defense, participate in the program. In 2009, the USGCRP issued a report on the science of climate change and its impacts upon the United States.<sup>4</sup> The USGCRP found that global warming is “unequivocal and primarily human-induced” and that “widespread climate-related impacts are occurring now and are expected to increase.”<sup>5</sup>

---

<sup>1</sup> National Research Council, *Advancing the Science of Climate Change* (2010)(online at [http://www.nap.edu/catalog.php?record\\_id=12782](http://www.nap.edu/catalog.php?record_id=12782)).

<sup>2</sup> Letter to the U.S. Senate from the Presidents and Executive Directors of American Association for the Advancement of Science, American Chemical Society, American Geophysical Union, American Institute of Biological Sciences, American Meteorological Society, American Society of Agronomy, American Society of Plant Biologists, American Statistical Association, Association of Ecosystem Research Centers, Botanical Society of America, Crop Science Society of America, Ecological Society of America, Natural Science Collections, Alliance Organization of Biological Field Stations, Society for Industrial and Applied Mathematics, Society of Systematic Biologists, Soil Science Society of America, University Corporation for Atmospheric Research (Oct. 21, 2009)(online at [http://www.aaas.org/news/releases/2009/media/1021climate\\_letter.pdf](http://www.aaas.org/news/releases/2009/media/1021climate_letter.pdf)).

<sup>3</sup> *Id.*

<sup>4</sup> *Global Climate Change Impacts in the United States*, U.S. Global Change Research Program (2009)(online at <http://globalchange.gov/publications/reports/scientific-assessments/us-impacts>).

<sup>5</sup> *Id.*

#### **D. Leading Scientific Academies Throughout the World.**

The national academies of all of the world's major economies (including China) have warned us that "The need for urgent action to address climate change is now indisputable."<sup>6</sup>

#### **E. Intergovernmental Panel on Climate Change.**

The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change. It was established in 1988 by the World Meteorological Organization (WMO) and the United Nations Environment Programme (UNEP) to assess the "risk of human-induced climate change." The Panel is open to all members of the WMO and UNEP, and it includes more than 2,500 scientists from around the world. The IPCC concluded in 2007:

Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice and rising global average sea level.<sup>7</sup>

The IPCC has projected a range of impacts depending on the rate of temperature change and other factors, including hundreds of millions of people being exposed to increased water stress, coastal flooding, and increased morbidity and mortality.<sup>8</sup>

## **II. RECENT STUDIES ON SEVERE WEATHER**

During the last month, scientists published two major studies linking severe weather events to man-made global warming. These peer-reviewed studies were published in *Nature*, one of the world's premier scientific journals.

In the first study, scientists from Canada and the United Kingdom examined the increase in severe rainstorms, snowfall, and other weather events in the Northern Hemisphere. Using detailed computer models, the scientists concluded that these increases are the result of rising

---

<sup>6</sup> G8+5 Academies' joint statement: Climate change and the transformation of energy technologies for a low carbon future, Academia Brasileira de Ciências, Brazil, Indian National Science Academy, India, Academy of Science of South Africa, South Africa, Royal Society of Canada, Canada, Accademia Nazionale dei Lincei, Italy, Royal Society, United Kingdom, Chinese Academy of Sciences, China, Science Council of Japan, Japan, National Academy of Sciences, United States of America, Académie des Sciences, France, Academia Mexicana de Ciencias, Mexico, Deutsche Akademie der Naturforscher Leopoldina, Germany, Russian Academy of Sciences, Russia (online at <http://www.nationalacademies.org/includes/G8+5energy-climate09.pdf>).

<sup>7</sup> Climate Change 2007: Synthesis Report, Intergovernmental Panel on Climate Change (2007)(online at [http://www.ipcc.ch/publications\\_and\\_data/ar4/syr/en/spm.html](http://www.ipcc.ch/publications_and_data/ar4/syr/en/spm.html)).

<sup>8</sup> *Id.*

greenhouse gas emissions, not natural variability in the atmosphere. They also found that the likelihood of extreme precipitation on any given day rose by 7% over the last half of the 20th century.<sup>9</sup> In a companion study, scientists at the University of Oxford examined the severe rains and floods that afflicted England and Wales in 2000. They found that rising greenhouse gas emissions “substantially increased” the risk of these floods occurring by up to 90%.<sup>10</sup>

The potential implications of these results are illustrated by multiple recent weather disasters. In the United States, severe flooding in Arkansas, Kentucky, Mississippi, and Tennessee killed dozens and caused widespread property damage last year. Some scientists see evidence that the bitterly cold storms that gripped our nation this winter could be tied to climate change.<sup>11</sup> Internationally, unprecedented floods in Pakistan last year submerged one-fifth of the country, killing thousands and devastating livelihoods.<sup>12</sup> Similarly, floods following heavy rains displaced hundreds of thousands of people in northeastern Australia and damaged the agricultural and mining sectors.<sup>13</sup> In Russia, yields of wheat and barley in 2010 fell by 30% following a summer of record-breaking heat and drought.<sup>14</sup> This month, the United Nations warned that the worst drought in decades threatens the wheat crop in China.<sup>15</sup>

### III. WITNESSES

The following witnesses have been invited to testify:

**Dr. Chris Field** (invited at the request of the minority)  
Director of the Carnegie Institution's Department of Global Ecology  
Stanford University

**Dr. Knute Nadelhoffer** (invited at the request of the minority)  
Department of Ecology and Evolutionary Biology, Director of the Biological Station  
University of Michigan

**Dr. Richard Somerville** (invited at the request of the minority)  
Distinguished Professor Emeritus and Research Professor  
Scripps Institution of Oceanography  
University of California, San Diego

---

<sup>9</sup> Seung-Ki Min *et al.*, *Human contribution to more-intense precipitation extremes*, *Nature* (Feb. 17, 2011).

<sup>10</sup> Pardeep Pall *et al.*, *Anthropogenic greenhouse gas contribution to flood risk in England and Wales in autumn 2000*, *Nature* (Feb. 17, 2011).

<sup>11</sup> *Cold Jumps Arctic 'Fence,' Stoking Winter's Fury*, *New York Times* (Jan. 24, 2011).

<sup>12</sup> *Pakistan Flood Sets Back Infrastructure by Years*, *New York Times* (Aug. 26, 2010).

<sup>13</sup> *Floods Take Toll on Australia Economy*, *New York Times* (Jan. 4, 2011).

<sup>14</sup> *Drought in Russia Ripples Beyond the Wheat Fields*, *New York Times* (Aug. 27, 2010).

<sup>15</sup> *U.N. Food Agency Issues Warning on China Drought*, *New York Times* (Feb. 8, 2011).

**Dr. Francis Zwiers** (invited at the request of the minority)  
Director of the Pacific Climate Impacts Consortium  
University of Victoria

**Dr. John Christy**  
Distinguished Professor of Atmospheric Science, Earth System Science Center Director  
University of Alabama in Huntsville

**Dr. Roger Pielke, Sr.**  
Senior Research Scientist, Cooperative Institute for Research in Environmental Sciences  
University of Colorado in Boulder

**Dr. Donald Roberts**  
Professor Emeritus  
Uniformed Services University of the Health Sciences  
Bethesda, MD