

Protecting the Homeland

The Rising Costs of Inaction on Climate Change

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Introduction

Climate change is real and is occurring today; societies around the world are feeling the effects.

To avoid the worst effects of climate change, global greenhouse gas emissions must be significantly cut in the coming years.

Even if all carbon emissions could be eliminated immediately, we would continue to experience changes in the Earth's climate over the next several decades. This is due to a lag effect – the climate will continue to change in the coming years because of emissions over previous decades.

The United States is already experiencing the damaging effects of climate change.

Floods, droughts, hurricanes, and wildfires have grown more frequent and powerful in recent years. The alarming rate of natural disasters poses risks to infrastructure, military preparedness, and human life.

The destruction of these events have also directly led to steadily increasing costs to U.S. taxpayers, as the federal government pays out record levels in disaster relief each year.

This fact sheet lays out some of the trends in climate events over the last ten to fifteen years, demonstrating rising threats within the United States.

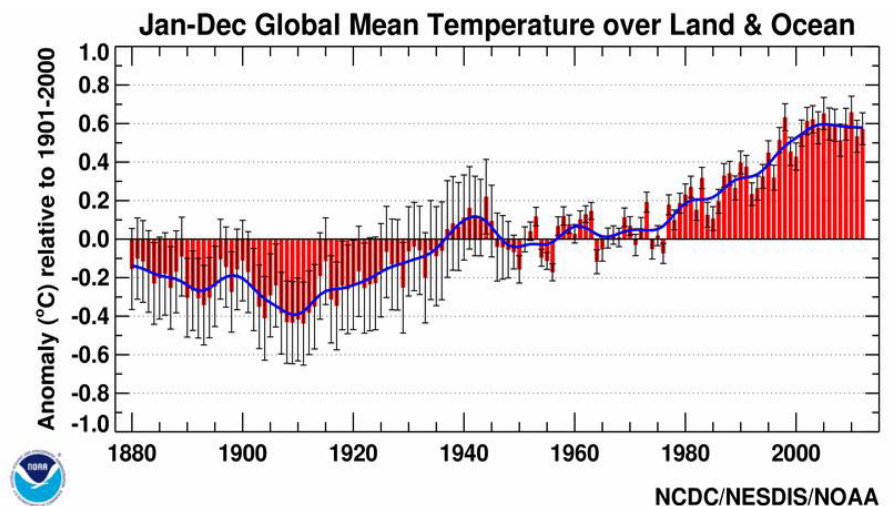
Becoming resilient to these irreversible effects is therefore a national security imperative.



Rising Temperatures

The surge in greenhouse gas emissions since the dawn of the industrial revolution has led to a rise in global temperatures.

- Average global temperatures have increased 1.33°F over the past century.¹ This is happening in the U.S. as well, at alarming rates. Since 1901, global temperatures have been rising at .13°F per decade. However, since 1970 temperatures have been rising between .31°F and .45°F per decade.²
- The top ten hottest years on record, dating back to 1880, have all occurred since 1998.³
- While surface temperature rise has slowed in the past 15 years, the evidence shows that this is not representative of global temperature rise – which include ocean temperatures. Oceans are warming at a much faster pace, and taken together, global average temperatures continue on an upward trend.⁴
- By 2100, average global temperatures are projected to rise by 4°F to 11.5°F.⁵



Extremes: The Effects of Climate Change

Climate change is expected to produce more extreme weather of all sorts.

- Climate change will affect different places in different ways. While certain areas of the United States will become drier – such as the Southwest – other regions will suffer from more severe rain storms.
- This is due to rising average global temperatures. As temperatures rise, more water evaporates. More moisture in the atmosphere increases the likelihood of intense storms.⁶
- With more intense precipitation expected from climate change, scientists project a corresponding increase in the severity and frequency of flooding events.⁷

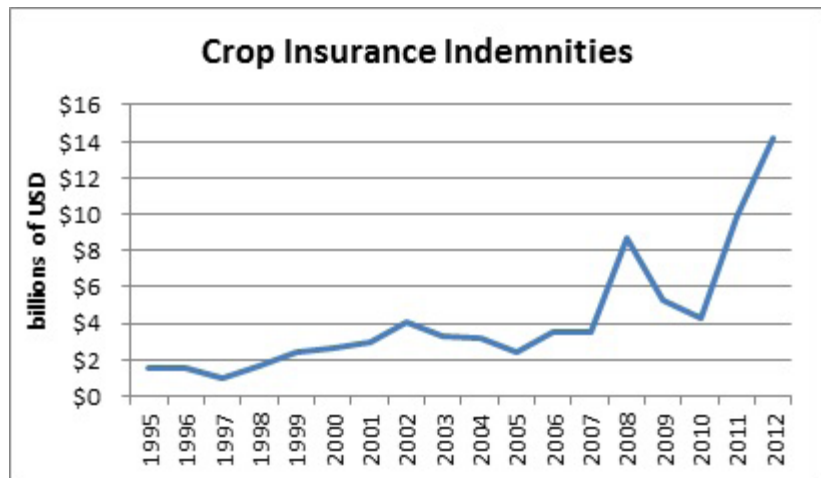


- Climate change also leads to sea level rise. Some estimates expect sea levels to rise between 20 and 39 inches by the end of the century.⁸
- Higher sea levels will contribute to greater storm surges, which magnify the flooding effects of severe storms on coastal communities.
- These effects on extreme weather are already underway. From 1958-2010 the Northeast experienced a 74% increase in the amount of precipitation that has fallen in heavy rainfall events.⁹
- From 2000-2009, the United States experienced 19 hurricanes, compared to only 14 hurricanes in the 1990's.¹⁰
- Extreme precipitation levels have been linked with an increase in cases of waterborne diseases.¹¹

Droughts

Climate change is expected to cause a greater frequency of droughts

- Since 2000, the United States experienced 9 droughts that caused over \$1 billion in damage. Conversely, there were only 8 in the previous two decades combined.¹² (All dollar values are adjusted for inflation).
- The federal government pays out indemnities to farmers with crop insurance. The cost of indemnities has surged in the past decade. More severe drought, particularly in 2012, has steadily increased government expenditures.¹³
- Climate scientists project that higher global temperatures and altered precipitation will lead to an increase in frequency and duration of severe droughts in the future, particularly in the Great Plains and Southwest regions of the United States.¹⁴



Wildfires

Rising temperatures, more severe droughts, and less precipitation will increase the risk of wildfires, making them more frequent and more intense.

- Prolonged seasons of drought and higher temperatures leave forests more prone to wildfires.¹⁵
- Higher temperatures and reduced precipitation will threaten forests across the country.¹⁶

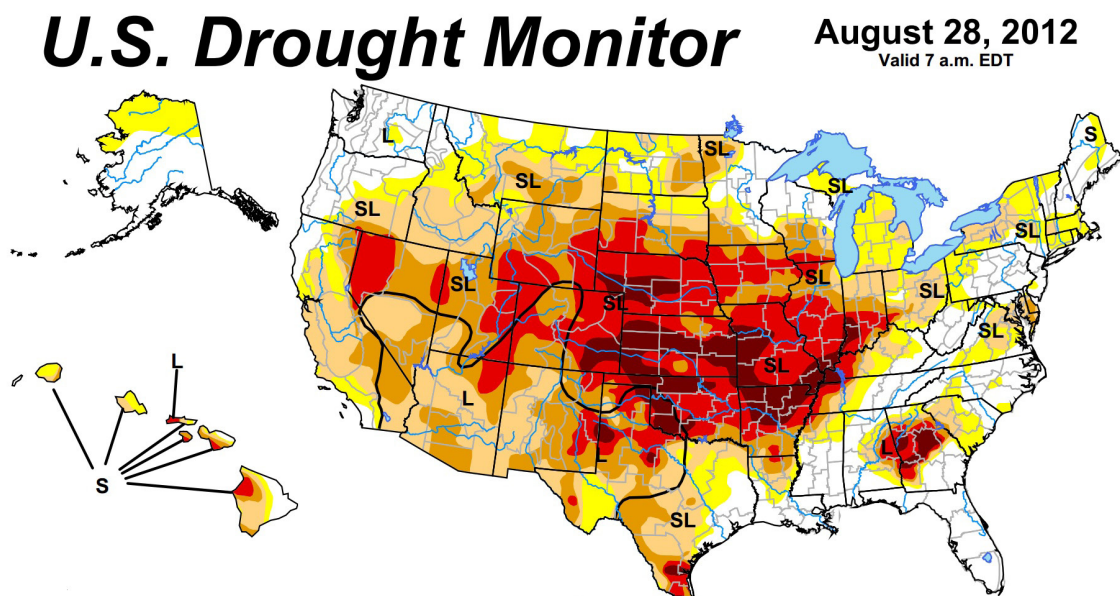
- Compounding the problem, higher temperatures are allowing certain insects to survive through winter seasons, leading to insect outbreaks in trees. Greater tree mortality will increase the risk of wildfires, in a vicious cycle.¹⁷
- Wildfire frequency has increased significantly in recent years. In the 1990's there were 3 major wildfires that led to 29 fatalities and caused \$7.4 billion in damage.¹⁸ From 2000-2009 there have been 7 major wildfire events with damages costing up to \$14 billion and causing 109 deaths.



2012 – A Year of Record Breaking Events

The extreme weather of 2012 is an example of what Americans should expect as climate change becomes more severe.

- Nearly half of the U.S. population experienced some form of weather extremes in 2012.¹⁹
- The United States experienced the warmest year to date in 2012 with the average temperature settling in at 55.3°F. That is 3.2°F higher than the average temperature of the 20th century. The winter of 2012 was also recorded to be the 4th warmest winter on record.²⁰
- Precipitation levels were low in 2012, with precipitation levels averaging 26.57 inches. Average precipitation was 2.57 inches below 20th century averages.²¹



- The worst drought in decades also occurred during the summer of 2012. Current costs of the 2012 drought are estimated between \$50-80 billion.²² Roughly 80% of America's farmland suffered from extreme drought, affecting 67% of cattle production and 70-75% of corn and soybean productions.²³
- The drought led to significant herd culling which could put upward pressure on food prices in 2013.
- Wildfires burned 9.2 million acres in 2012, an amount 50% higher than the 10-year average from 2001-2010.²⁴ An estimated 1.5 million acres burned in Idaho alone, the most out of any other state.

Hurricane Sandy

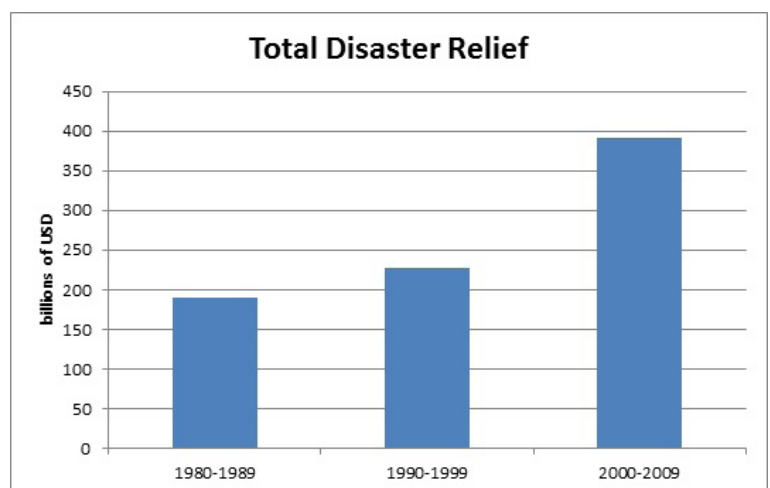
For many, the most memorable disaster in 2012 was Hurricane Sandy, which made landfall in New Jersey and New York in late October 2012.

- Storm surges surpassed 13 feet and some states like West Virginia and Tennessee even received snow.²⁵
- Hurricane Sandy caused an estimated \$70 billion in economic losses,²⁶ and claimed the lives of 131 people.²⁷
- An estimated 7.5 million people lost power during the storm, some losing power for weeks after the storm had already passed.²⁸
- Tens of thousands of people remained homeless six months after the storm.²⁹

Rising Cost

With the increasing frequencies of natural disasters, the federal government is forced to spend more on disaster relief and cleanup efforts.

- From 2000-2009, the federal government has spent \$288.9 billion on hurricane relief alone.³⁰ In the 1990's, major hurricanes only cost the federal government \$84.4 billion.³¹
- Eight of the top 10 costliest hurricanes have occurred since 2000.³²
- Since 1980, hurricanes have caused 3,131 fatalities and \$417 billion in damages.³³ An estimated 2,642 of those casualties – or nearly 85% – occurred since 2000.³⁴



- From 2000-2009 the federal government spent a total \$392 billion responding to big disasters. In the 1990's federal expenditures for disasters only reached \$227.8 billion, up from \$189.9 billion in the 1980's.³⁵
- Human population and development in coastal areas continues to expand. This will put more people in harm's way. It will also leave critical infrastructure, buildings, and other economic assets vulnerable to more powerful climate events.³⁶
- As a result, without adequate planning, federal expenditures for disaster relief will continue to rise as climate change becomes more severe.

Adaptation and Prevention

The frequency of natural disasters is expected to rise and the United States must take preventive measures to adapt to a world of severe weather.

- It is extremely costly to spend money on relief and cleanup efforts, as 2012's events showed. It would be more cost-effective to prepare for natural disasters.
- A Stanford Business School study found that every \$1 spent on disaster preparedness is worth \$15 in relief efforts.³⁷
- Carbon dioxide stays in the atmosphere for 100 years or more, meaning the world is committed to a certain amount of climate change. Mitigating greenhouse gases is imperative, but adaptation is also necessary.³⁸
- Pro-active adaptation measures to prepare for extreme weather will reduce government expenditures in the long-run by minimizing high disaster tolls.

In the age of climate change, there are only three options: mitigation, adaptation, or suffering.



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Endnotes

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Building a New American Arsenal

The American Security Project (ASP) is a nonpartisan initiative to educate the American public about the changing nature of national security in the 21st century.

Gone are the days when a nation's strength could be measured by bombers and battleships. Security in this new era requires a New American Arsenal harnessing all of America's strengths: the force of our diplomacy; the might of our military; the vigor of our economy; and the power of our ideals.

We believe that America must lead other nations in the pursuit of our common goals and shared security. We must confront international challenges with all the tools at our disposal. We must address emerging problems before they become security crises. And to do this, we must forge a new bipartisan consensus at home.

ASP brings together prominent American leaders, current and former members of Congress, retired military officers, and former government officials. Staff direct research on a broad range of issues and engages and empowers the American public by taking its findings directly to them.

We live in a time when the threats to our security are as complex and diverse as terrorism, the spread of weapons of mass destruction, climate change, failed and failing states, disease, and pandemics. The same-old solutions and partisan bickering won't do. America needs an honest dialogue about security that is as robust as it is realistic.

ASP exists to promote that dialogue, to forge consensus, and to spur constructive action so that America meets the challenges to its security while seizing the opportunities the new century offers.



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