



Field Notes: **Extreme Weather and Community Resilience**

Climate Disruption is Erratically Degrading Our Existing Weather

[An Overview of Extreme Weather in 2012](#)

2012 Officially Hottest Year in U.S. History

The National Oceanic and Atmospheric Administration (NOAA) has crowned 2012 with the dubious distinction as the hottest year in the 118 years of recorded U.S. weather history. In its [annual report](#) released Jan. 8, 2013, NOAA documented that the national average temperature soared a full 3.3^o Fahrenheit above the 20th Century average. This average is an astonishing 1.2^o degrees above even the hottest year (1934) during the devastating U.S. drought and Dust Bowl.

What if the Air is Hotter?

We usually focus on “extreme” weather as a transient event that warrants media coverage due to damage, disruption, injury and loss of life. Even extreme drought years that bring economic ruin due to crop loss or destructive wildfires have usually been accepted as part of the weather “cycle” with an expected return to normal and predictable rainfall.

However air that is hotter than we, as Americans, have ever experienced is redefining “extreme” weather, and the soaring temperatures present a direct threat to our livelihoods, our families and our communities. The [draft Third U.S. National Climate Assessment](#) is very clear that this heated atmosphere will only get hotter, with more extreme weather every year. That should cause each one of us to think about outcomes.

Think Damage

A hotter atmosphere **increases the energy of weather extremes**. It makes storms more severe, as when two massive Atlantic storms collided in October of 2012 to produce [Super Storm Sandy](#) with storm surges that flooded lower Manhattan and halted the New York Stock Exchange for two days.

Hotter air also **holds more water vapor**. Much like a sopping giant sponge, the abundance of absorbed moisture will eventually be squeezed out like the torrents Sandy dumped to flood states from North Carolina, to Ohio, to New Hampshire.

The capacity of hotter air to hold more water also allows it to suck the moisture out of soils and forests. The higher energy of hot air can **drive winds and wildfires** such as those that consumed 9.1 million acres of western forests last year, best illustrated by Colorado’s [Waldo Canyon](#) wildfire.

Similarly, hotter air pulls moisture from soils and plants in **devastating droughts**. In 2012, [65.6%](#) of the U.S. withered in the most extensive drought since the 1930s. Corn, the nation’s single largest cash crop and the foundation of our food supply, was severely damaged across the country. Besides the farming losses and impact on the cost of federal crop insurance, U.S. consumers will pay higher food prices in 2013.

Think Cost

NOAA's preliminary data on [2012 Billion-Dollar Extreme Weather Events](#) lists 11 disasters, some discussed above, each exceeding a billion dollars in damages during 2012. The total bill for 2012 extreme weather damage will not be known for months, but NOAA projects that it will far exceed \$60 billion. Of the 144 weather disasters exceeding \$1 billion since 1980, 70 -- nearly 49% -- have occurred within the past 10 years. Compare these 70 in 10 years to the 74 such events in the 22 years preceding this past decade (CPI-adjusted). Clearly the pace is picking up.

Think Communities Across the Country

Super Storm Sandy's core winds, storm surge, torrential rains and flooding directly damaged homes, businesses and public infrastructure of communities in 7 Northeast states. Energy and transportation facilities in New Jersey and New York City were particularly hard hit. The periphery of Sandy brought high winds and flooding rains to damage communities in 6 more states.

Eight western states were scarred by wildfires that consumed homes, businesses and forests. Communities in 22 states stretching east from Nevada to Georgia and from Idaho south to Texas baked in unrelenting heat, crackling dryness and silence.

The 2012 drought not only ravaged crops, it immediately jeopardized the livelihoods of thousands of farmers and the economies of hundreds of communities that depend on successful harvests. The dual burden of economic recession overlaid by national drought in 2012 was a particular challenge in the agricultural core of the nation.

Types of Weather Are Not New—They are Just Worse

The types of extreme weather are familiar. None of us are strangers to heat waves, droughts, wildfires, tornadoes and storms with high winds, severe rain or flooding. What is different, and unnerving, is that all these familiars are taking on an erratic and ominous intensity, frequency and duration. The atmosphere is already hot enough to make extreme weather erratically more likely in any location, while over the same day or season elsewhere it is a day like any day.

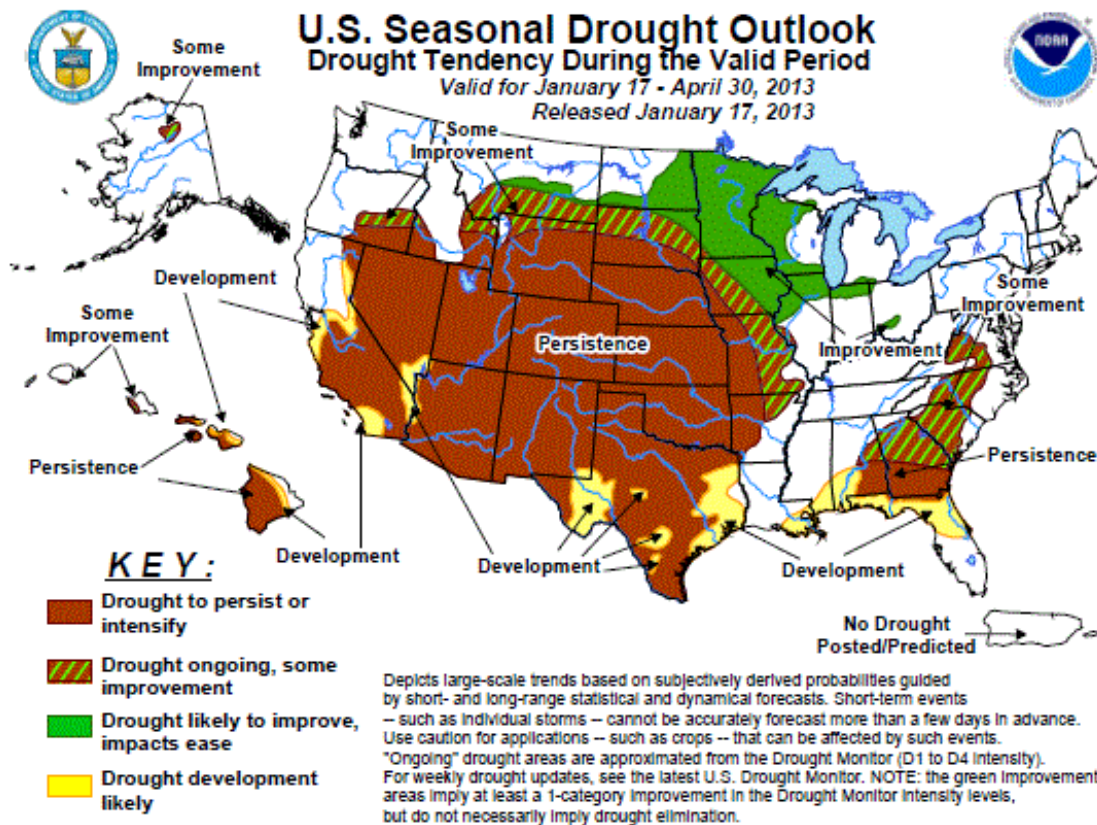
Tornadoes swoop over cities never hit before. Multi-state flooding and drought follow in successive years, ravaging agriculture and communities, and halting commerce-carrying barges in new shallows on the Mississippi River. We thought we would never see a dustbowl again, but in 2012 over [24% of the nation](#) suffered the worst categories of both dustbowl heat and drought.

If You Find Yourself In A Hole, Stop Digging

States and communities alike are challenged by increasingly extreme weather hazards that will be unique to their locales. **Adaptation** means learning to live with change. No single adaptation will work everywhere. Ultimately, we cannot adapt ourselves out of climate disruption. But, up to the limits of our ability to adapt, we must use all our skills to defend people, communities and economies from the even hotter atmosphere that has emerged from the last 50 years or more of greenhouse gases. Those atmospheric horses are out of the barn. We are already committed to a minimum century or two of hotter air and more extreme weather.

As a nation, the only way we can avoid such extremes of weather that can exceed our ability to adapt is to halt the human disruption of our climate. **Mitigation**—reducing emissions of greenhouse gases, principally carbon dioxide—is the only way to stop making extreme weather worse than it already will be in the years to come.

If We Think Last Year Was A Fluke, Look Ahead: U.S. Seasonal Drought Outlook—January 17, 2013 To April 30, 2013



How to Get Involved

RRI would like to hear from you. If you have questions, comments, or concerns, please contact us at:

Resource Renewal Institute
187 East Blithedale Avenue
Mill Valley, CA 94941
415.928.3774
info@RRI.org

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