



Reducing Extreme Weather Impacts: Building a Weather-Ready Nation

For more than 140 years, the National Weather Service (NWS) has provided weather, water, and climate information to protect lives and livelihoods. Over the years, NWS has made the changes necessary to support this mission. The ability to adapt to new challenges has become an especially critical skill as America becomes increasingly vulnerable to high-impact events.

Increased Impacts on Lives and Livelihoods

There was a record-breaking amount of natural disasters in the United States in 2010, according to the Natural Catastrophe Service. 2011 has also been a year of extreme weather events. The impact of these events, both on lives and the economy, is staggering.

More than 540 people have been killed by tornadoes this year, making it the fourth deadliest year on record. In April alone, there were 875 tornadoes that resulted in 361 fatalities. On May 22, a violent tornado tore through Joplin, Missouri. With more than 150 fatalities, it was the deadliest single tornado since modern record keeping began in 1950. It is not just tornadoes that are having an impact either. At the beginning of the year, a large winter storm impacting 100 million people in central, eastern and northeastern states resulted in \$1.6 billion of insured losses, and 36 lives lost.

In addition to loss of life, weather's effects are felt in the economic sector. For example, air traffic delays cost more than \$40 billion per year. Costs of this year's drought in Arizona, New Mexico, and western Oklahoma are estimated at \$1 million per day with total losses to agriculture and cattle between \$1.5 to 3 billion. The Mississippi River flooding this Spring and Summer have resulted in economic loss in the range of \$2 to 4 billion. According to the Congressional Research Service, tornadoes, severe thunderstorms, and related weather events have caused an average of nearly 57 percent of all insured catastrophe losses in the United States in any given year since 1953.

Societal Context of Increased Impacts

These extreme impacts are not anomalies. The continued increase in the severity of impacts is attributable to societal changes represented in demographic trends, growing infrastructure threats, and an increased reliance on technology. Risk modeling companies such as EQECAT emphasize the effect of population growth on the increase of weather-related damages as U.S. population has almost doubled since 1954. This increase corresponds with higher property and infrastructure values. In addition, trends such as urban sprawl and conversion of rural land to suburban landscapes increase the likelihood a tornado will impact densely populated areas.

The increased dependence on technology by both forecasters and the general public requires investments for regular updates, replacements and repairs. According to the Office of Science and Technology Policy's Subcommittee on Disaster Reduction, "high-priority science and technology investments, coupled with sound decision-making at all levels, will dramatically enhance community resilience and thus reduce vulnerability."

Additionally, more overlap in the U.S. economy means that a single weather event can have a significant effect on several industries. In fact, according to a study by the National Center for Atmospheric Research, weather can vary the economic output in the U.S. by \$485 billion of the country's GDP annually. The study goes on to say that weather events affect "economic activity in every state and every sector." However, much of the risk can be mitigated through weather awareness.

NWS Response

Taking all these new realities into consideration, NWS is working to build a Weather-Ready Nation, in which communities are prepared for and respond to weather-dependent events. A Strategic Plan, published online July 1, lays out the anticipated future service needs and developments in science and technology, and establishes meaningful goals and objectives that define a Weather-Ready Nation.

This plan paves the way for a new model of doing business that emphasizes the role of communities to better prepare the American public for environmental events. NWS is exploring new ways to serve community emergency responders through increased community presence because accurate, early and trusted warnings are just the initial requirement for saving lives. A community-based public preparedness program led by NWS experts will generate a more effective response.

NWS launching several pilot projects to meet the evolving needs of the country. These projects are designed to enhance the agency's community presence in targeted hotspot locations by embedding mobile ready emergency response forecast teams that can deploy with short notice. The teams can remain in the field during and after events to continue to protect lives of first responders and others dealing with the aftermath of a major disaster.

Weather-Ready Nation Partnerships

The NWS vision of a Weather-Ready Nation requires the support and participation of the whole country. In addition to improved precision of forecasts and effective communication of risk to local authorities, NWS will work with partners across NOAA and beyond to effectively manage environmental resources, and enhance economic output.

As the Congressional Research Service reports, government policies could reduce the nation's vulnerability by making "improvements in the capability to accurately detect storms and to effectively warn those in harm's way." Effective communication of hazards combined with measurable government, public, and business preparedness programs by local Weather Forecast Offices play an increasingly important role in reducing impacts and building a Weather-Ready Nation.