

Self-Evaluations Help Nation's Weather Agency Improve Public Service

Each year, NOAA's National Weather Service issues approximately 734,000 weather forecasts, 850,000 flood forecasts, and 50,000 potentially life-saving, hazardous weather-related warnings in communities throughout the country from 122 local forecast offices and additional national and regional centers. As an agency of the United States Government, the National Weather Service mission is to provide forecasts and warnings for the protection of life and property and the enhancement of the national economy.

While people can't control dangerous weather, they can control how they prepare for it and the personal decisions they make before, during and after it strikes. The National Weather Service engages in community outreach and education to train people on how to receive weather forecasts and warnings, how to prepare for severe weather, and what actions to take to protect themselves before and during severe weather.

Yet each week we hear about weather-related tragedies on the news—a woman struck and killed by lightning while on a mountain hike; dozens of campers drowned in a flash flood overnight; or a mobile home community demolished by a tornado. Given all the time, effort and funding spent on the country's state-of-the-art forecast and warning systems, these sad events leave us all questioning, is there anything more we could have done?

Learning, Growing, Improving


When major weather events cause multiple fatalities, numerous injuries, significant impact to the economy or extensive public and media interest, the National Weather Service turns tragedy into a learning opportunity. Within days of such an event, the agency mobilizes a team of experts, mainly from outside the affected area, to study what happened. The study is called a "service assessment," an independent evaluation of the

Service Assessments

NWS conducts Service Assessments to evaluate its performance after significant hydrometeorological, oceanographic, or geological events resulting in warning or other operational activities. Assessments may be initiated when one or more of the following criteria are met:

- Major economic impact on a large area or population
- Multiple fatalities or numerous serious injuries
- Extensive national public interest or media coverage
- Unusual level of attention to NWS performance

Assessment teams, composed of experts from within and outside the NWS, evaluate activities before, during, and after events to determine the usefulness of NWS products and services. Finally, the team generates a report, which serves as an evaluative tool to identify and share best practices in operations and procedures, and identify and address service deficiencies. The goal of the activity is for the NWS to continuously improve its services to the nation.



South Pacific Basin Tsunami, September 29-30, 2009. Photographs of the damage incurred on the island of American Samoa as a result of the September 29 tsunami. Photos courtesy of the Associated Press (top left) and Gordon Yamasaki, NOAA National Marine Fisheries Service, Pago Pago.

agency's performance. This evaluation helps identify and share best practices in operations and procedures, and identify and address any service deficiencies. The National Weather Service is in a constant state of evolution and improvement.

Figure 1. NWS Office of Climate, Water, and Weather Service's Web page containing assessment reports since 1987

The Service Assessment Team

A service assessment team consists of approximately 6-12 people, including a team leader who has demonstrated leadership and project management skills. The team leader sets the schedule for team activities, assigns tasks, keeps the team focused,

adheres to the team charter, and briefs National Weather Service leadership on the team's progress and its findings. The team leader's role is to remain objective and maintain the independence of the team.

Other team members include at least one subject matter expert for the type of event in question; at least one person with experience in field operations; and a public affairs officer. The National Weather Service also recruits experts from outside the agency with experience related to the event, a behavioral science expert, and others as needed.

The Service Assessment Process

The service assessment process begins when local recovery efforts are sufficiently advanced to allow team members access to the affected area, and when emergency management, local officials, National Weather Service personnel, and the media have time to interact with team members. The team generally remains in the field for five to seven days.

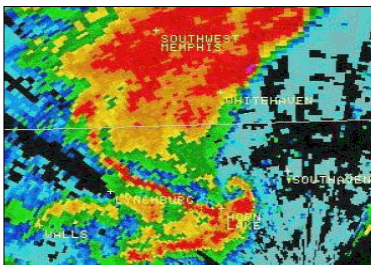
While in the field, the team interviews a number of people involved with the weather event, including emergency managers, citizens, friends and neighbors of victims, local officials, police and fire rescue workers and the news media. The team reviews a number of things while in the field, including: did the local weather forecast office issue warnings for the event? What was the lead time? Did the community receive the warning and, if so, how was it received? Was forecast and warning preparation and dissemination equipment working properly during the event? If not, why not? Did people respond to the warning by taking action to protect life and property? If not, why not? Other things the team reviews are the use of NOAA Weather Radio in the community, the media's coverage of the event, and emergency management/local rescue's response in the aftermath.

The team spends a significant amount of time with the local National Weather Service office, looking at things like staffing levels, operational procedures, and equipment maintenance. As soon as the team completes field interviews, they return to their offices and begin to draft and compile a report. The final report is completed within 180 days.



Service Assessment

Super Tuesday Tornado Outbreak of February 5-6, 2008



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Weather Service
Silver Spring, Maryland

The Service Assessment Final Report

The final report contains a summary and timeline of the event, a recap of the team's efforts in the field, the forecast process during the event, including forecast tools and data, and a series of best practices, facts, findings, and recommendations offered by the team. Reports often include copies of forecast and warning products, maps, radar imagery, and damage photos. Agency leaders place high value on the work of service assessment teams. Once the final report is completed, implementing necessary improvements becomes one of the agency's highest priorities

Tracking Improvement

Once finalized, recommendations in a service

Figure 2. Cover of Super Tuesday Tornado Outbreak Service Assessment assessment report are tracked until they are fully implemented, or otherwise closed for valid reasons. In some cases, improvements get underway before the final report is completed. In other cases, recommended changes take time to work through the budget and software development processes.

Interesting Findings

Social science is a growing area of interest among meteorologists, and an area of study that is now folded into all major service assessments. The National Weather Service has found that severe weather forecasts and warnings are usually widely communicated in communities through a variety of ways - television and radio, word of mouth, sirens and NOAA Weather Radio All Hazards. Weather alerts over the Internet, through mobile devices and social media are a growing trend. However, receiving the alert doesn't always result in people taking appropriate action to stay safe during severe weather, which is why the National Weather Service studies the human side of the equation in addition to the mechanics of its own performance.

Human behavior is driven by multiple factors, including perceptions of personal risk. People don't often believe they are at risk until they can see it for themselves and by that time it's usually too late to act. Social science research has led the National Weather Service to incorporate a number of changes in products and services, including moving risk and recommended action to the top of warning products.

Since the agency began evaluating performance in 1957, it has conducted nearly 140 service assessments. Through the years, these studies have helped the National Weather Service vastly improve forecasting and public warning capabilities, strengthen public-private partnerships, and better meet the weather information needs of local communities, businesses and private citizens. To view and download full version service assessment reports from 1989 to present, please visit the following URL on the Office of Climate, Water, and Weather Service's Web page:
<http://www.weather.gov/os/assessments/index.shtml>.

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