



Highlights of [GAO-06-792](#), a report to the Subcommittee on Environment, Technology, and Standards, Committee on Science, House of Representatives

## Why GAO Did This Study

To provide accurate and timely weather forecasts, the National Weather Service (NWS) uses systems, technologies, and manual processes to collect, process, and disseminate weather data to its nationwide network of field offices and centers. After completing a major modernization program in the 1990s, NWS is seeking to upgrade its systems with the goal of improving its forecasting abilities, and it is considering changing how its nationwide office structure operates in order to enhance efficiency. GAO was asked to (1) evaluate NWS's efforts to achieve improvements in the delivery of its services through system and technology upgrades, (2) assess agency plans to achieve service improvements through training its employees, and (3) evaluate agency plans to revise its nationwide office configuration and the implications of these plans on local forecasting services, staffing, and budgets.

## What GAO Recommends

GAO is making recommendations to the Secretary of Commerce to direct NWS to strengthen its training selection process, and to establish key activities, timelines, and measures for evaluating the prototype of a new concept of operations before beginning the prototype. In written comments, the Department of Commerce agreed with the recommendations and identified plans for implementing them.

[www.gao.gov/cgi-bin/getrpt?GAO-06-792](http://www.gao.gov/cgi-bin/getrpt?GAO-06-792).

To view the full product, including the scope and methodology, click on the link above. For more information, contact David Powner at (202) 512-9286 or [pownerd@gao.gov](mailto:pownerd@gao.gov).

# WEATHER FORECASTING

## National Weather Service Is Planning to Improve Service and Gain Efficiency, but Impacts of Potential Changes Are Not Yet Known

### What GAO Found

NWS is positioning itself to provide better service through over \$315 million in planned upgrades to its systems and technologies. In annual plans, the agency links expected improvements in its service performance measures with the technologies and systems expected to improve them. For example, NWS expects to reduce the average error in its forecasts of hurricane paths by approximately 20 nautical miles between 2005 and 2011 through a combination of upgrades to observation systems, better hurricane forecast models, enhancements to the computer infrastructure, and research that will be transferred to forecast operations. Also, NWS expects to increase tornado warning lead times from 13 to 15 minutes by the end of fiscal year 2008 after the agency completes an upgrade to its radar system and realizes benefits from software improvements to its forecaster workstations.

NWS also provides training courses for its employees to help improve its forecasting services, but the agency's process for selecting training lacks sufficient oversight. Program officials propose and justify training needs on the basis of up to eight different criteria—including whether a course is expected to improve NWS forecasting performance measures, support customer outreach, or increase scientific awareness. Many of these course justifications appropriately demonstrate support for improved forecasting performance. For example, training on how to more effectively use forecaster workstations is expected to help improve tornado and hurricane warnings. However, in justifying training courses, program officials routinely link courses to NWS forecasting performance measures. For example, in 2006, almost all training needs were linked to expectations for improved performance—including training on cardiopulmonary resuscitation, spill prevention, and systems security. The training selection process did not validate or question how these courses could help improve weather forecasts. Overuse of this justification undermines the distinctions among different training courses and the credibility of the course selection process. Additionally, because the training selection process does not clearly distinguish among courses, it is difficult to determine whether sufficient funds are dedicated to the courses that are expected to improve performance.

To improve its efficiency, NWS plans to develop a prototype of a new concept of operations, an effort that could affect its national office configuration, including the location and functions of its offices nationwide. However, many details about the impact of any proposed changes on NWS forecast services, staffing, and budget have yet to be determined. Further, the agency has not yet determined key activities, timelines, or measures for evaluating the prototype of the new office operational structure. As a result, it is not evident that NWS will collect the information it needs on the impact and benefits of any office restructuring in order to make sound and cost-effective decisions.