



Report in Brief

January 6, 2025

Background

The National Oceanic and Atmospheric Administration's (NOAA's) National Weather Service (NWS) provides weather forecasts, warnings, and impact-based decision support services for the protection of life and property and enhancement of the national economy. Within NWS, the mission of the National Hurricane Center (NHC) is to save lives, mitigate property loss, and improve economic efficiency through the issuance of its watches, warnings, and forecasts.

The Weather Research and Forecasting Innovation Act of 2017 (Weather Act) directed the development and extension of accurate hurricane forecasts and warnings with a goal of reducing loss of life, injury, and economic damage.

The Weather Act mandated a focus on improving hurricane forecasts in terms of track (the path that a storm follows) and intensity (determined by a storm's maximum wind speed), forecasting and communication of storm surge, and creating more effective products (including watches and warnings) by incorporating risk communication research in operations. It also required NOAA to develop a collaborative project plan to achieve the goal and focus areas.

Why We Did This Review

Our audit objective was to assess NWS progress toward improving hurricane forecasts and warnings.

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NOAA Should Assess Opportunities to Improve Hurricane Forecasts and Warnings

OIG-25-007-A

WHAT WE FOUND

NWS has made progress improving tropical cyclone track and intensity forecasts since the Weather Act became law in 2017. However, NWS is only partially meeting the Weather Act's requirements for a hurricane forecast improvement program (HFIP). We found that (1) NHC has not extended tropical cyclone warnings and excludes performance measures that could help it better focus improvements on high-impact storms; (2) NHC has not ensured optimal usage of hurricane hunter aircraft; and (3) NOAA's HFIP is insufficient to meet the Weather Act's hurricane forecast and warning goal.

WHAT WE RECOMMEND

We recommend that the NOAA Administrator ensure that the National Weather Service:

1. Assesses the extent to which tropical cyclone watches and warnings provide adequate advance notice to the public commensurate with NHC capabilities and emergency manager requirements and revises those products as warranted.
2. Assesses its tropical cyclone forecast verification process to (a) determine how best to measure performance excluded by current methodology, (b) determine how best to verify tropical cyclone watches and/or warnings to better understand their effectiveness at protecting life and property, and (c) implement process improvements as warranted.
3. Develops and implements an oversight plan to monitor aircraft scheduling effectiveness, using the initial daily reconnaissance request sent to the Chief, Aerial Reconnaissance Coordination, All Hurricanes as the baseline.
4. Specifies aircraft collection times critical to the forecast and warning production cycle in the National Hurricane Operations Plan.
5. Establishes a process with NOAA/Office of Marine and Aviation Operations and the Air Force Reserve Command to resolve observed aircraft scheduling deficiencies with an emphasis on meeting NHC requirements and documents the outcomes of these engagements.

We recommend that the Under Secretary of Commerce for Oceans and Atmosphere ensures the Deputy Under Secretary for Operations:

6. Implements and maintains an HFIP executive governance agreement to formalize organizational roles, responsibilities, and goals for hurricane forecasting and warning improvement.
7. Establishes clear goals, desired outcomes, and reporting mechanisms for SBES initiatives intended to elicit action to reduce the loss of life and damage to property.
8. Evaluates how to integrate collection of socioeconomic data to align with NOAA's institutional observations requirements process.