



# NOAA's Office of Weather and Air Quality



Coordinating research for improved forecasts

## What Does NOAA's Office of Weather and Air Quality Do for the Nation?



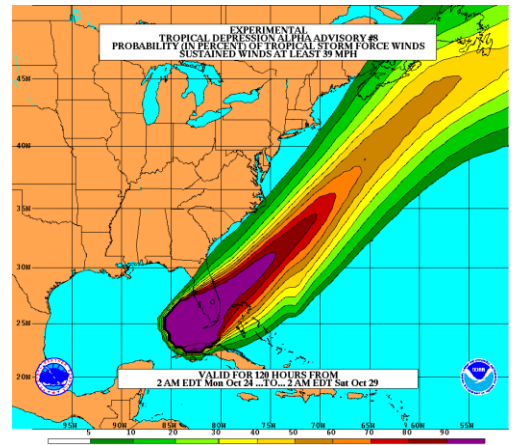
NOAA provides tools to warn the public of heavy rain events that might produce flooding. *Photo credit: NOAA*

NOAA's Office of Weather and Air Quality (OWAQ) improves high-impact weather and air chemistry forecast information and products by funding, facilitating, and coordinating research, and working with the National Weather Service (NWS) to transition this research into useful weather applications, watches, and warnings. OWAQ funds research through the U.S. Weather Research Program (USWRP) and the Tornado and Severe Storm Research project providing outreach, linkages, and coordination between NOAA, other government agencies, and the academic and private sectors, both in the U.S. and abroad. OWAQ works to help NOAA develop, and get access to, the weather and air quality research capabilities it needs.

## Research Highlights

### Researching Hurricanes: NOAA's Joint Hurricane Testbed helped create new tools for National Hurricane Center forecasters.

Over the last 10 years, the Joint Hurricane Testbed has competitively funded NOAA laboratories and academic partners to provide the additional research needed to allow new data and improved models to transition to hurricane forecast operations. This research has led to improvements in NOAA's hurricane forecasts, including surface winds and storm tracks, which are crucial for helping emergency managers and citizens plan for destructive wind and storm surge impacts when a hurricane hits the coast.



The Joint Hurricane Testbed has led to improved tropical cyclone wind probability forecasts. *Image credit: NOAA*

### Understanding Extreme Precipitation: NOAA provides more effective tools to manage local water resources, prepare for extreme precipitation events, and warn the public of heavy rain events that may produce flooding.

OWAQ supports applied extreme precipitation research conducted by OAR's laboratories and its partners that focus on understanding the physical processes associated with extreme precipitation and developing new decision support tools to help forecast these events at NWS forecast offices and national centers. This research also benefits state water resource managers who rely on accurate precipitation forecasts.

### Making Weather Information More Useful: NOAA investments lead to improved understanding of how the public responds to weather warnings, which leads to more effective warnings.

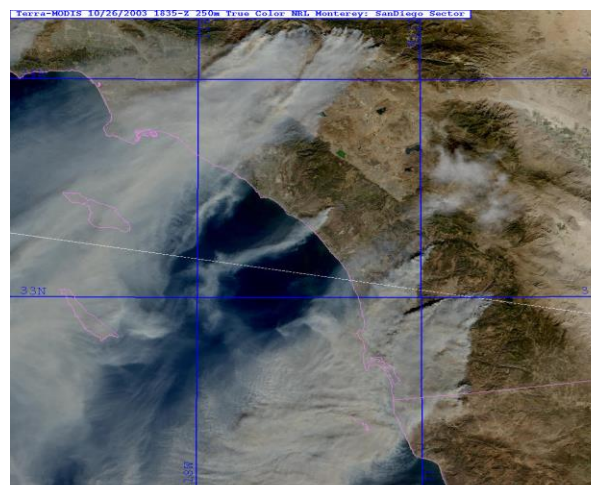
OWAQ supports social science research that enables NOAA to test research results that improve communication during dangerous weather situations. For example, researchers from University of Oklahoma are using social media data to develop indicators of real time public attention to severe weather events to understand the relationship between communication, attention, and public responsiveness to severe weather.



## More Research Highlights

**Understanding Air Chemistry: OWAQ supports air chemistry research that contributes to improved understanding of atmospheric aerosols and better forecasts of weather, visibility, smoke, and volcanic ash.**

OWAQ supports research on key atmospheric processes contributing to the creation and transport of atmospheric aerosols that can affect human health and transportation. OWAQ-supported research at OAR laboratories and with their partners has led to advancements in modeling the creation and movement of these particles throughout the atmosphere. This research also contributes to improving National Weather Service smoke, dust, and volcanic ash predictions so people can act to limit the adverse effects on humans, surface transportation and aviation.



Satellite image of the November 2003 wildfires in Southern California, which killed 22 people and caused \$2 billion in property damage. Improved extended range forecasting of meteorological conditions favorable for destructive fire weather events will save lives and property. *Image credit: NOAA*

## What's Next for OWAQ?

- Continuing transition of new academic and federal weather research findings into operations, particularly at NOAA's testbeds.
- Better communication, understanding, and use of severe weather forecast and warning information by the public will continue to be the focus of ongoing social science research with academic partners.
- Improving NOAA's global modeling system from days to months through the Earth System Prediction Capability (ESPC) project.

## Research Partnerships

- OWAQ is part of a number of U.S. and international research partnerships through the USWRP and the ESPC project. These partnerships involve federal agencies involved in weather research and modeling (e.g., NASA, National Science Foundation, Department of Energy, Department of Defense) as well as universities.
- OWAQ supports strong academic and non-profit research partnerships, particularly with NOAA's Cooperative Institutes and Cooperative Science Centers.
- Information from OWAQ has been used by the President's Office of Science and Technology Policy, the Office of the Federal Coordinator for Meteorology, and the American Meteorological Society Policy Office.

## Budget Information

The Fiscal Year (FY) 2015 President's budget request for OWAQ through NOAA's Office of Oceanic and Atmospheric Research (OAR) is \$10.2M. The FY 2014 Omnibus funding for OWAQ is \$7.1M and the FY 2013 actual budget was \$3.9M. The Office of Weather and Air Quality is headquartered in Silver Spring, Maryland.

**Did You Know?**



A super cell thunderstorm.  
*Photo credit: NOAA*

The Office of Weather and Air Quality forms a critical link to other NOAA divisions and to our external partners in socially relevant weather research, taking full advantage of opportunities to leverage research and accelerate advancements.

<http://www.research.noaa.gov>

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