



# Regional Air Quality Assessment

## NOAA Mission Goal

To serve society's needs for weather and water information

### What is requested?

NOAA requests an increase of \$1.7M to enhance its capability to conduct regional air quality assessments, particularly in terms of producing key information needed to address and, ultimately to forecast particulate matter pollution. The initial focus for this new capability will be an air quality regional assessment to characterize key atmospheric processes that drive air pollution problems in east Texas through a comprehensive, month-long field experiment.

This work is part of a series of regional assessments: Houston – preliminary study (FY 2000), New England – preliminary study (FY 2002), New England – comprehensive study (FY 2004), Houston – comprehensive study (FY 2006), and others planned in yet-to-be-determined regions of the U.S. that are routinely not meeting Environmental Protection Agency (EPA) health-based standards. By using this regional approach, NOAA will provide local decision-makers with air quality information they need to protect public health while improving our understanding of air quality dynamics nationwide. NOAA's assessments also provide essential information for improving air pollution models used to predict unhealthy conditions. The regional assessment in Texas will be a collaborative effort among multiple institutions, including NOAA Laboratories (coordinated by the Aeronomy Laboratory), NOAA Marine and Aircraft Operations, NOAA Cooperative Institutes, the EPA, the State of Texas, and university grantees.

### Why do we need it?

More than a third of the U.S. population lives in areas where air pollution levels frequently exceed EPA's health-based standards. Air pollution, such as ozone and particulate matter (including dust, soot, and sulfates) can cause respiratory problems and also can trigger cardiac problems. According to the EPA, air pollution controls might prevent 15,000 deaths while costing \$20B annually in the U.S. NOAA's research will improve the effectiveness of air pollution policies by gathering and analyzing data on the complex relationships among weather, atmospheric chemistry, and surface exchange that lead to unhealthy air quality and by presenting that information to decision-makers in a clear and relevant manner. Such data are crucial in working towards a reduction in air quality-related health problems.

NOAA and EPA have signed a Memorandum of Agreement to implement an air quality forecasting program that will help communities take measures to protect public health when high pollution levels are expected. The National Weather Service (NWS) is planning to initiate air quality forecasts in phases by expanding geographic coverage, number of pollutants predicted, and length of forecast. NOAA Research is working closely with NWS to ensure that reliable air quality forecast models are available to support these new capabilities.

## Regional Air Quality Assessment At-a-Glance

What: \$6.7 M Total  
Why: To provide policy-makers with air quality information and improve NOAA's air quality forecasts.



## What will we do?

In FY 2006, NOAA Research will:

- Build on the results of the previously conducted Texas 2000 regional assessment to provide a comprehensive characterization of the key processes that drive air pollution in that region.
- Include a comprehensive study of the factors responsible for the atmospheric formation, growth, and transport of particulate matter.
- Include detailed measurements of weather and air quality at the surface and in the atmosphere.
- Include air quality measurements on the concentrations and composition of particulate matter and the particles and gasses that lead to particulate matter.
- Support development and field testing of improved observing techniques for particulate matter and initial evaluation of the results.

In following years, NOAA will:

- Perform additional regional studies.
- Continue to evaluate the results and communicate them to stakeholders.
- Jointly conduct these assessments between NOAA's air quality and climate programs in response to a growing understanding of the relationships between air quality and climate (e.g., particulate matter in the air affects the amount of radiation that reaches and heats the ground). This allows the information needs of both programs to be cost-effectively satisfied from one field experiment and provides a common dataset for evaluating air quality-climate relationships.

## What are the benefits?

This research will provide policy-makers with the air quality information they need to make decisions that protect public health while still ensuring economic vitality. Prior studies have generated significant economic and health benefits for the Nation. Discoveries NOAA made in 2000 allowed the State of Texas to develop a pollution control strategy that will protect public health while also saving the state more than \$9B and 64,000 jobs by 2010 by identifying the most critical sources of pollutants. Earlier NOAA air quality assessments contributed to a National Research Council determination that a large portion of the funding the Nation was spending to reduce tropospheric ozone levels was ineffectual because regulations were targeting the wrong precursor chemical. Those results changed the Nation's entire approach to reducing ground-level ozone levels.

The 2006 regional assessment in Texas will also provide crucial information about atmospheric processes for evaluating and improving NOAA's air quality forecasting capability. The Texas regional assessment will be especially important for understanding processes that control particulate matter formation, transport, and fate, which is essential for creating accurate particulate matter forecast models. Findings from this and future regional assessments are critical in building a foundation of knowledge and better understand these processes, thus allowing researchers to expand NOAA's forecasting capability.

For more  
information:

NOAA Research  
External Affairs Team  
301.713.1671

## Air Quality

### Regional Air Quality Assessment in Texas



NOAA's WP-3D aircraft is used to collect data in regional air quality assessments.



Office of Oceanic and Atmospheric Research  
Weather and Air Quality Research  
Regional Air Quality Assessment

NOAA Budget  
FY 2006  
Request

Regional Air Quality  
Assessment  
\$6.7M Total