Air Aware

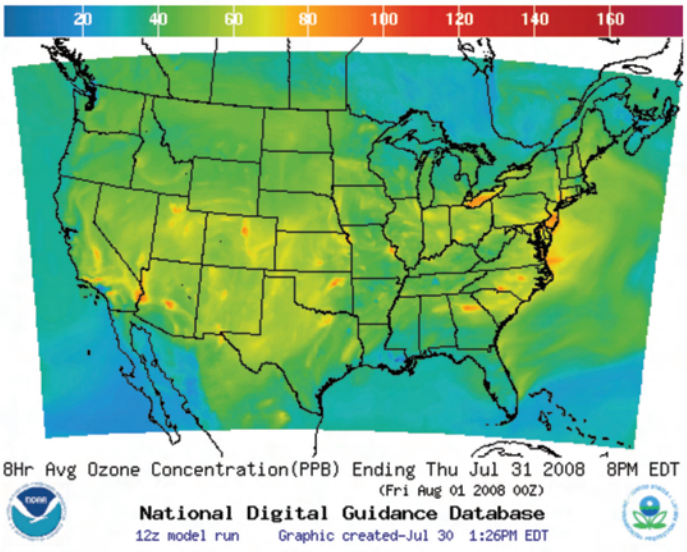
NOAA works with the Environmental Protection Agency (EPA) and state, local, and tribal governments to provide the public with accurate warnings about unhealthful levels of air pollution.

A Breath of Fresh Air: Improving Air Quality Predictions for the Nation

Whether it's ground-level ozone, fine particulate matter, or other airborne substances, all three may be carried through the air into our lungs. OAR's Air Resources Laboratory (ARL) has developed models that predict where airborne substances will go so at-risk people can be warned.

Impact

Air quality forecasts and warnings for health and safety



High ozone levels near the ground cause thousands of premature deaths annually in the U.S. The familiar "code red" ozone alerts issued by state governments warn the public when pollution levels are expected to be high. These alerts also allow people to voluntarily reduce air pollution by driving less and mowing their lawn when conditions improve. OAR's ARL developed the ozone modeling system that forecasters use to determine when alerts should be issued.

The accidental or intentional release of chemical, biological or nuclear agents can have a significant health, safety, national security, economic, and ecological implications. The Hybrid, Single Particle Lagrangian Integrated Trajectory or HySPLIT Model developed by ARL can be used to predict the path of multiple types of airborne hazards. For example, air quality forecasters rely on HySPLIT predictions to determine when their communities will be affected by forest fire smoke. Airlines rely on HySPLIT to steer aircraft around volcanic ash plumes, which can ruin plane engines. The World Meteorological Organization and the International Atomic Energy Agency rely on HySPLIT to predict and track radiation from large nuclear incidents. And local emergency managers also depend on HySPLIT to map the path of chemical plumes, so that first responders and the public can move out of harm's way.

HySPLIT predicts smoke plume locations from forest fires, and allows aircraft to avoid dangerous ash from volcanic eruptions. Understanding sources of hazardous air pollutants allows air quality managers to mitigate critical air quality problems.

Images, top to bottom: NOAA prediction of ground-level ozone; ash from volcanic eruptions is a serious aviation hazard; forest fires can significantly degrade air quality.

Learn More: www.arl.noaa.gov