



Public Health Applications in Remote Sensing

Satellite Imagery Aids Public Health Alerts

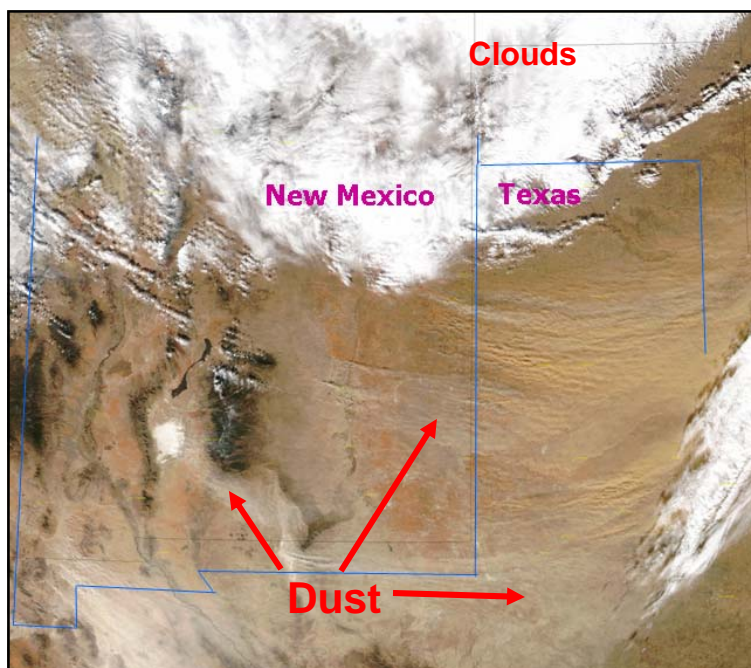
NASA satellites are being used to develop a dust forecasting tool that alerts public health officials to environmental events affecting patients with high risk respiratory conditions.

Dust Chokes Region — Powerful winds swept across the South Plains and Panhandle on Monday, causing air travel delays, scattered power outages and property damage as the sky turned brown with gritty dust.

P. Christine Smith
Avalanche-Journal



This December 2003 dust storm occurred over New Mexico and west Texas as a strong Pacific cold front brought gale force winds through the region. Combined with existing dry conditions, this system caused one of the worst dust storms in the area in recent years.



MODIS satellite image over New Mexico and west Texas.

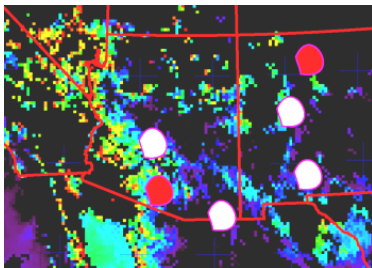
Dust events such as this can adversely affect patients with known respiratory conditions. Early warning of these events would better prepare clinics, hospitals, and health care officials in responding to the needs of these patients.

Current dust forecasting models could be enhanced using improved data and technologies. And, the information produced by these models could be delivered to public health officials via better tools.

NASA's partners at the University of New Mexico, University of Arizona, Texas Tech University, and Sandia National Laboratories are using satellite data to develop a dust forecasting tool that alerts public health officials to environmental events affecting patients with high risk respiratory conditions.

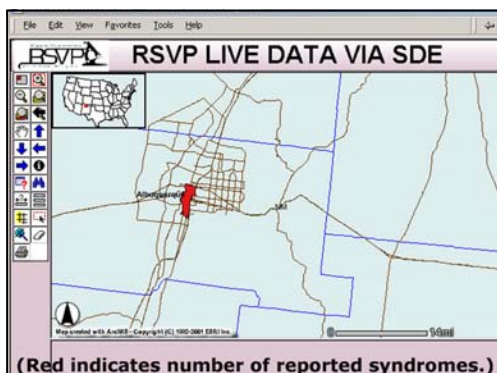
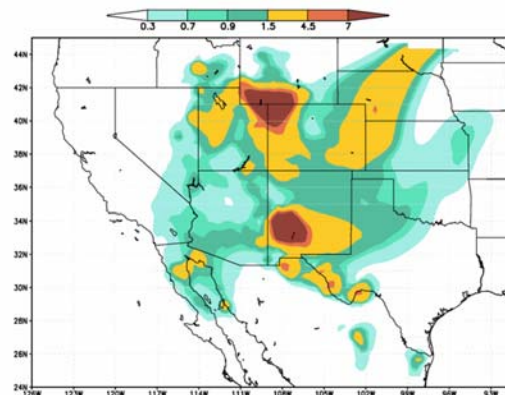
Project Details....

The project.... This project aims to improve decision support tools used by public health authorities for forecasting adverse outdoor environmental conditions that impact patients with respiratory illnesses. Dust storms and smoke from forest fires can extend for hundreds of miles over a region, as seen in the satellite image on the front page. Data collected by a host of satellites and *in-situ* ground stations, coupled with climatic models used by the National Weather Service and visualization technologies, offer a new dimension of information for providing health risk alerts. Working closely with the public health community, the project team aims to provide a module that can be used within desk-top decision support tools.



The data.... Data for this project vary widely from those collected by satellites to ground-based sensors. These include values for aerosols, vegetation, soil moisture, surface roughness, dust particle measurements, and others that are crucial for refining the dust forecast model. Public health data are being analyzed for correlation to known dust events.

The model.... The Dust Regional Atmospheric Model (DREAM) is a validated dust forecasting model based on the National Centers for Environmental Prediction (NCEP) Eta model. DREAM was developed at the University of Malta and is being adapted to the Southwest United States for application in this project.



The tool.... The Rapid Syndrome Validation Project (RSVP) is an Internet-based population health surveillance tool that facilitates communications between epidemiologists and health care providers. Developed by Sandia National Laboratories, it provides information on timely analysis of symptoms as well as alerts regarding serious disease outbreaks.

For more information contact Dr. Stanley Morain, Earth Data Analysis Center, University of New Mexico (email: smorain@edac.unm.edu) or see the Website at <http://phairs.unm.edu>.