

SMOS

HELPING CREATE MODELS FOR EARTH'S FUTURE

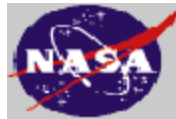
Paula Newkirk, Clark Atlanta University

WHAT IS SMOS ?

The Surface Meteorological Observation System is an *in situ* system of six sensors to measure atmospheric changes by recording measurements on a data logger.

The meteorological data recorded are:

- * wind speed & direction
- * temperature
- * relative humidity
- * barometric pressure
- * precipitation gauge
- * snow depth



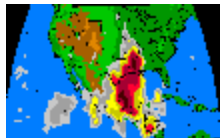
THE DATA SHOWS...

The data reveals change in atmospheric state as aerosols from the Mexico fires move into the ARM site. A comparison of wind direction data to satellite images of smoke and dust from the fire allows one to see when aerosols move in and out of the area.

Plots of meteorological data for the 12-18 May 1998 period are presented below. These plots have been used to gain insight into the daily changes observed during the same time period by the Raman Lidar, the Multi-filter Rotating Shadowband Radiometer, and the Integrating Nephelometer operated at the ARM site.

OVERVIEW

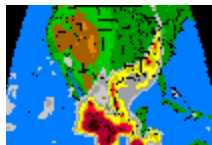
The SMOS system is part of the Department of Energy (DOE) Southern Great Plains (SGP) Atmospheric Radiation Measurement (ARM) Cloud and Radiation Testbed (CART) site in Oklahoma. During the week of May 12 - 18, 1998, the aerosol and radiation instruments detected increases in aerosol concentration which was suspected to be smoke particles from fires burning in Mexico. Satellite observations also showed large amounts of smoke from the Mexican fires. Whether or not the environment is impacted by the fires in Mexico is not in question. However, to what extent the biomass affects the Earth's atmosphere still needs more research. Meteorological data from SMOS was analyzed to help researchers at the ARM/CART site assess short-term and long-term impacts of the 1998 fires.



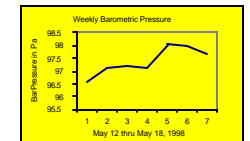
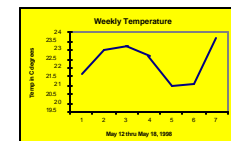
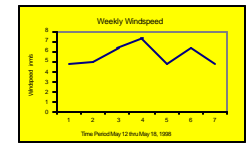
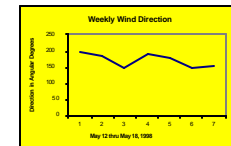
Winds carry aerosols into Oklahoma on May 14



Fires (shown in red) burn in Mexico



Change in winds on May 16 moves aerosols out of area



SURFACE METEOROLOGICAL OBSERVATION SYSTEM