Atmospheric Radiation Measurement
Climate Research Facility
U.S. Department of Energy

The U.S. Department of Energy Atmospheric Radiation Measurement Climate Research Facility

Office of Science
U.S. Department of Energy

Through the ARM Program, the U.S. Department of Energy has funded the development of several highly instrumented ground stations for studying cloud formation processes and their influence on radiative transfer, and for measuring other parameters that determine the radiative properties of the atmosphere.

ARM Instruments

- Millimeter cloud radar
- Cloud/aerosol lidar
- Ceilometer
- Radiosonde station
- Microwave radiometer
- Total sky imager
- Solar and terrestrial infrared radiometers
- Surface meteorology sensors

The total sky imager measures the spatial distribution of clouds.

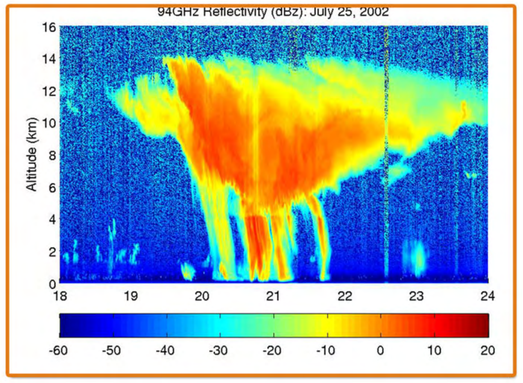
Solar and terrestrial infrared radiometers measure the surface radiation energy budget.

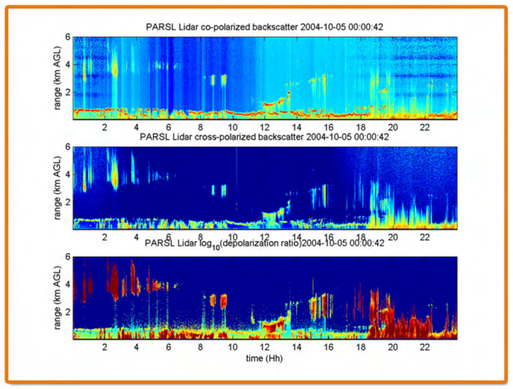
The millimeter cloud radar provides cloud and precipitation profiles.

Powerful Remote Sensing Capabilities

The **94-GHz Millimeter Cloud Radar** measures profiles of reflected power and vertical velocity.

Liquid and ice water content are key parameters derived from radar observations. These quantities are obtained most simply through parameterizations depending only on radar reflected power.





The **532-nm Dual Polarization Cloud/Aerosol Lidar** measures the elastic co-polarized backscatter profiles from cloud and aerosol particles.

When combined with infrared radiances, the lidar measures particle size and optical depth. The dual polarization capability provides a means of determining particle phase.

Contact Information
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ACRF Sites

ARM Mobile Facility

Southern Great Plains

Tropical Western Pacific

North Slope of Alaska