



FRONT

Front Range
Observational Network Testbed



CSU-CHILL and S-Pol form the anchor for FRONT

Vision Statement

FRONT: A testbed for innovative weather and climate technology development; leading, promoting and enabling geoscience research and education.

Mission Statement

FRONT provides the atmospheric science community with a cost-efficient observational infrastructure for the collection of comprehensive mesoscale data sets that include the unique dual-polarization and multi-wavelength remote sensing capabilities of the NCAR S-Pol and CSU-CHILL radars.

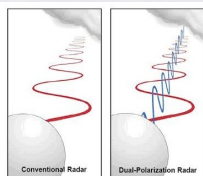
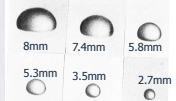
KEY FEATURES

- Easy access to high quality polarimetric radar data and other atmospheric measurements
- S-band plus X-band (CSU-CHILL) and S-band plus Ka-band (S-Pol)
- Operate S-Pol from a new site east of I-25 to create a world class dual-Doppler, dual dual-pol. network
- Lightning Mapping Array (LMA) will be permanent feature of FRONT
- Remote control with unattended operations for both radars: Increased scientific user access
- Efficient operations, maintenance and system development
- FRONT will enhance radar services to the user community
- Testbed facility for validating new instruments and measurement technologies
- FUTURE:
 - Create a multi-instrument Colorado Front Range Observational Network
 - FRONT is scheduled to be available to the scientific community Fall of 2012
 - There are deployment pool funds specially set aside for education projects

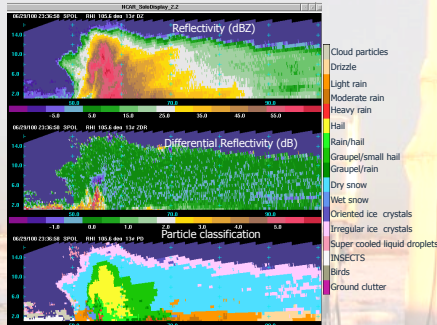
CHILL

S-POL

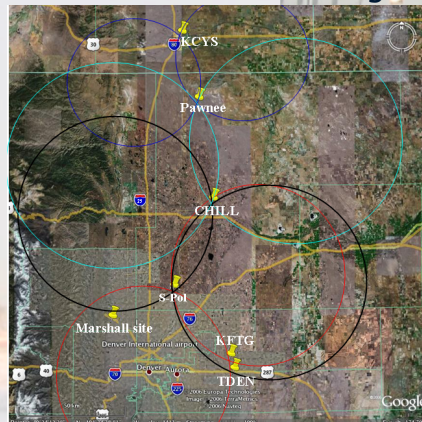
Rain Drops



Particle ID example: tornadic hail storm from Western KS 29 June 2000



FRONT Radar Coverage



FRONT Enabling Science

- High resolution 3D wind and dual-polarization observations available on the mesoscale, over varying terrain
 - Diagnoses of airflow and hydrometeor fields in convective storms (especially those producing hail, locally heavy rainfall, etc.)
 - Validation of kinematic and microphysical fields in numerical models
- Investigations into real-time applications of network data
 - Algorithm improvements (hydrometeor ID, etc.)
 - Assimilation of radar data fields into NWP models
- Integrate observations from multiple instruments
 - Improve QPE and stream-flow forecasting
 - Create high-resolution 3D moisture fields
 - Monitor climate variations of aerosols, water vapor, clouds and precipitation