RACORO Campaign Journal- January 2009

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- Cloud
  - CAS - Cloud drop size distribution 0.5-50 microns
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20090124

Flight Summary

Depart	Return	Hours	Synopsis	Google Earth
19:38 UTC	21:08 UTC	1.5	Test flight for aerosol instrument characterization (Encountered tire fire and biomass burning)	KML
Flight hours to date		1.5		

First portion of the flight flew around 1500 ft MSL. They intercepted a tire fire and some biomass burning. The Twin Otter then spiraled up to attempt a calibration of the radiometers. The pilots determined it was too cloudy for a successful cal and therefore returned to Guthrie.

Weather Summary

Mostly clear except for scattered cirrus clouds.

Aircraft Instrumentation Status

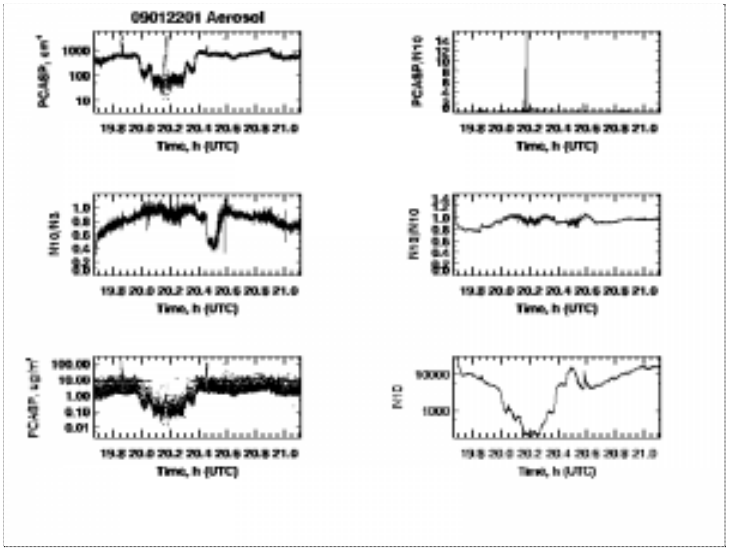
CMIGETS-III did not initialize properly. Aircraft nav and attitude data from other sources (see cabin readme).
Radiometer data OK, but not in archive because of CMIGETS problem.
Hydrorad took only 3 spectra.
CIN grounding issue.
DLH was not on.
Handheld and DAQ pics not available.

Surface Instrumentation Status

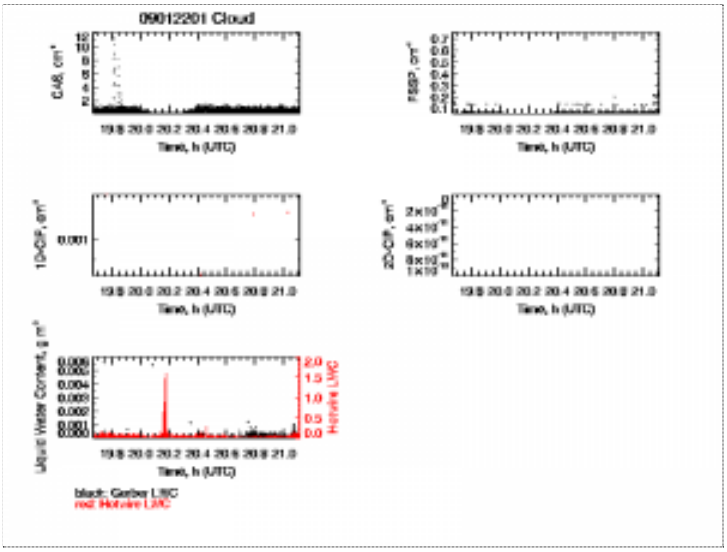
N/A (flight not over SGP)

Flight Plots

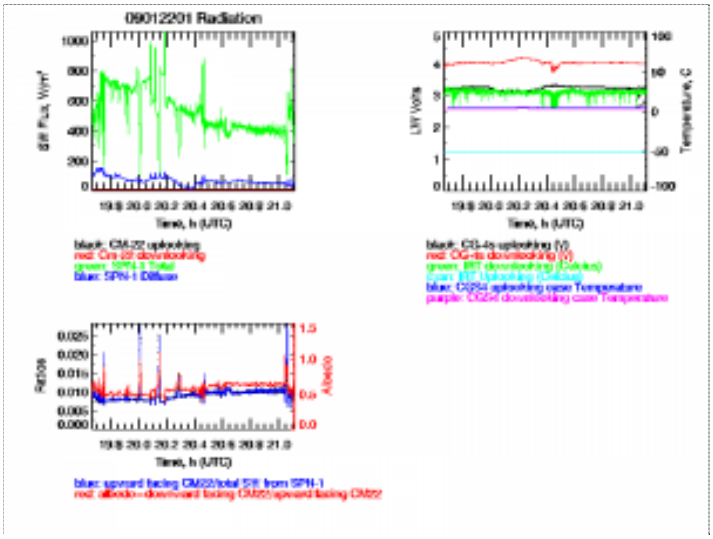
Aerosol



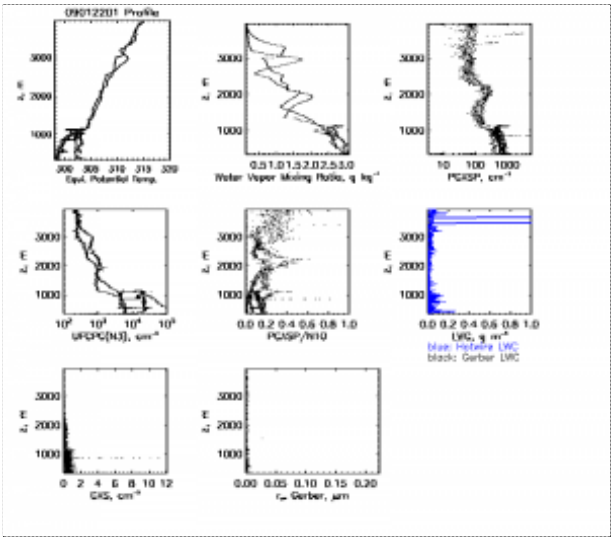
Cloud



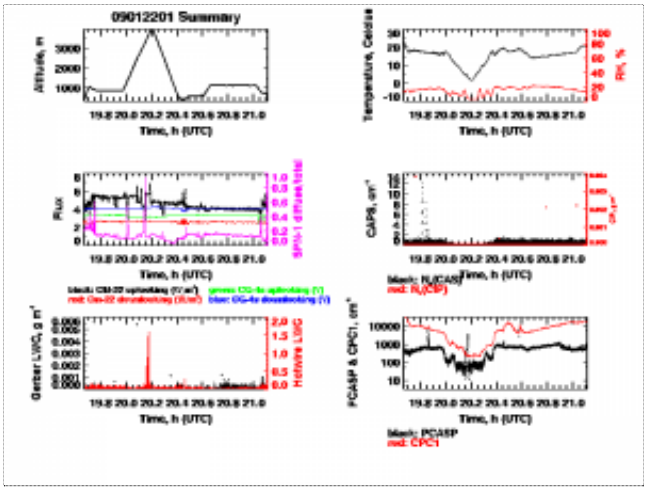
Radiation



Profile

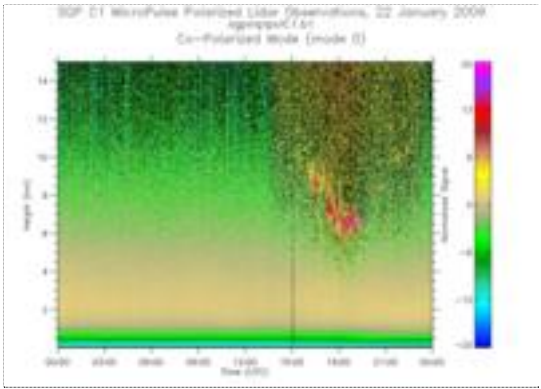


Summary



SGP Plots

MPL Co-Pol



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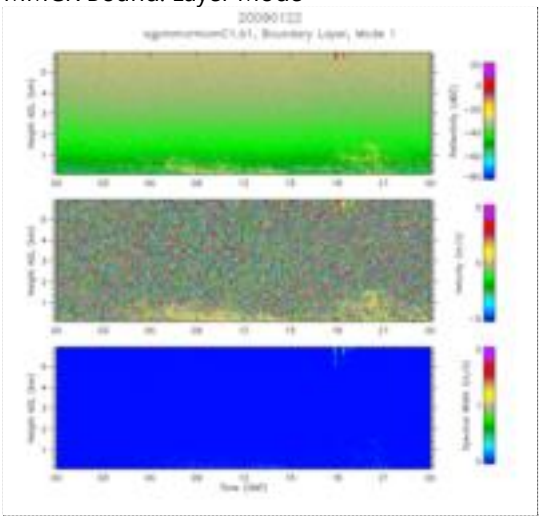
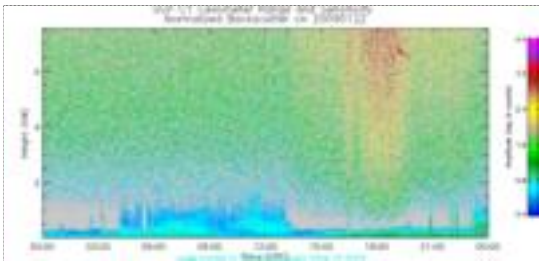
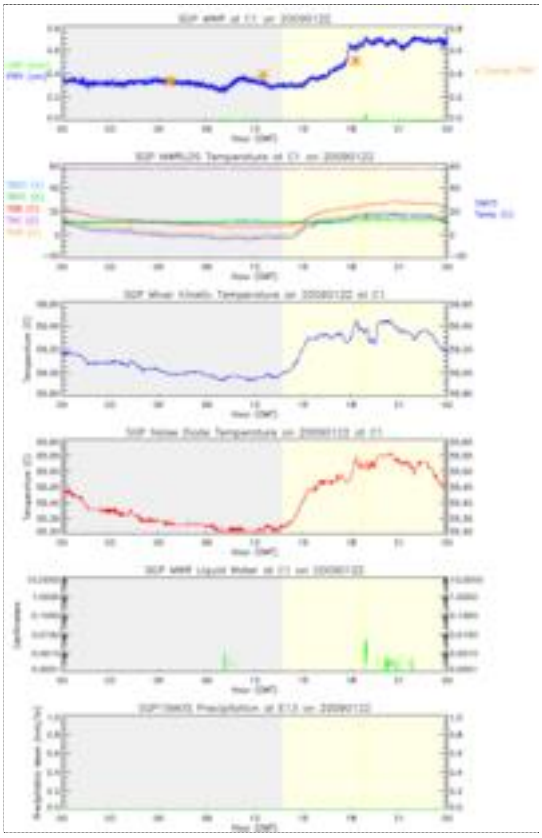


Ceilometer Backscatter



Microwave Radiometer



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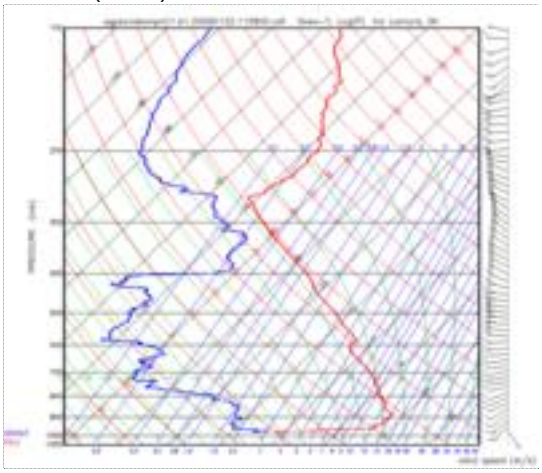
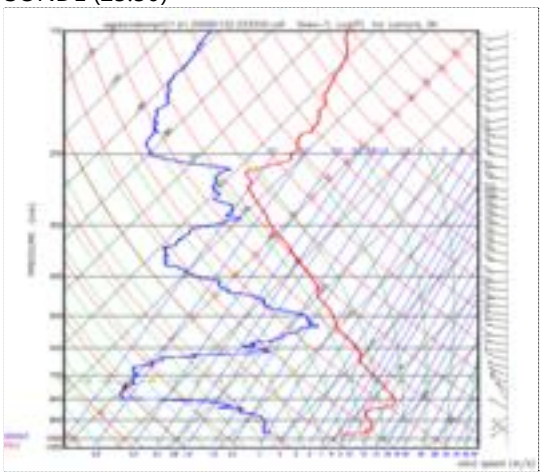
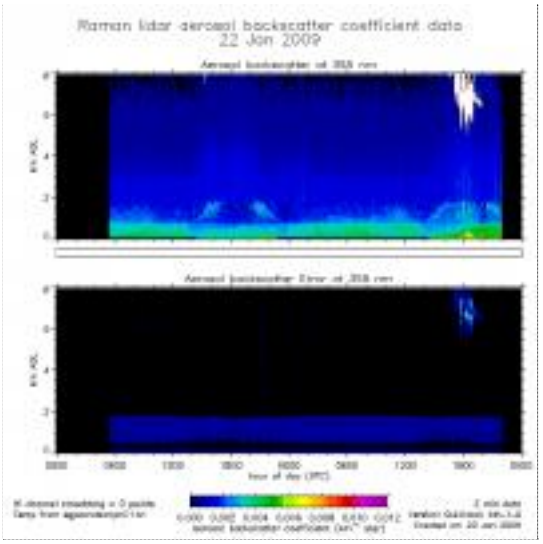


SONDE (17:30)

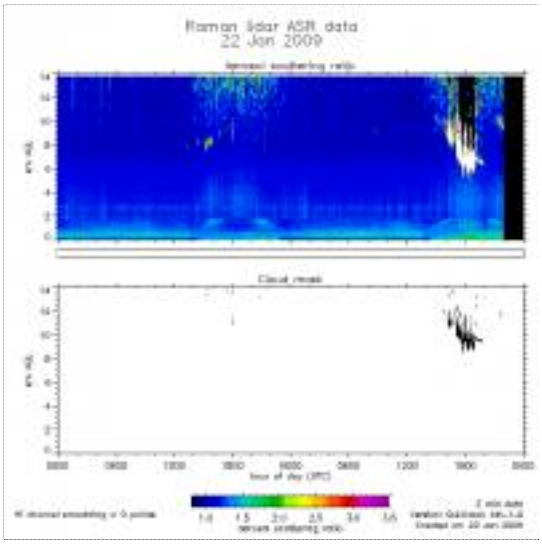
SONDE (23:30)



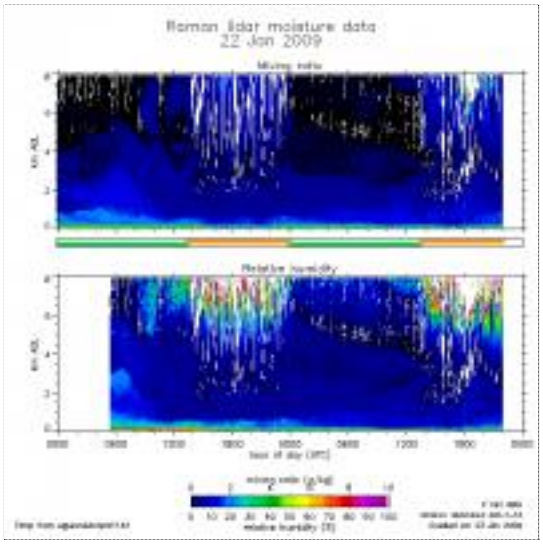
RL Backscatter



RL ASR



RL Moisture



Weather Maps

map1222

OK City: Clear; calm winds | Tulsa: Clear; calm winds; 1161 mb | 53 F/18 F dew point

20090122

Flight Summary

Depart	Return	Hours	Synopsis	Google Earth
18:20 UTC	20:25 UTC	2.1	Test flight for radiometer characterization (Overhead sky was clear, but clouds on the horizon)	KML
Flight hours to date		3.6		

Flew radiometer characterization patterns at 12500 ft:
1. Box pattern
2. Chuck's pitch and roll maneuvers
3. Slow (300 ft/min) step descent for Hydrorad (12500, 7500, 2000 MSL)

Weather Summary

Clear skies.

Aircraft Instrumentation Status

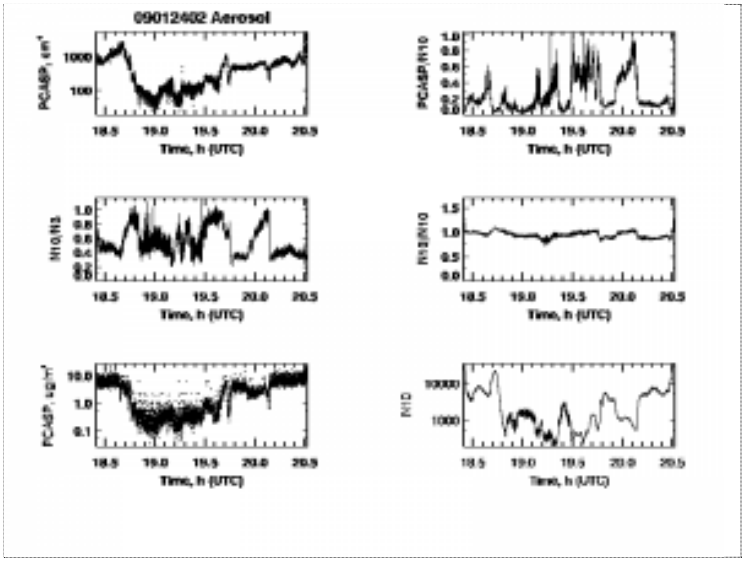
CIP: Did not measure flight speed
CIN: Ground fault issue discovered
DLH: Not on
2D-S: Heaters faulted possibly because of extreme cold
Radiometers: Hydrorad radiance upward. See radiometer status readme file.
DAC pics not available.

Surface Instrumentation Status

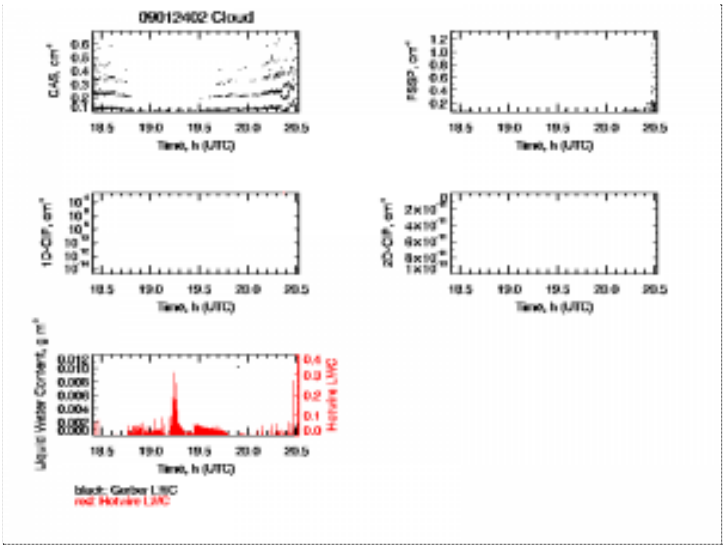
NA (flight was not over SGP)

Flight Plots

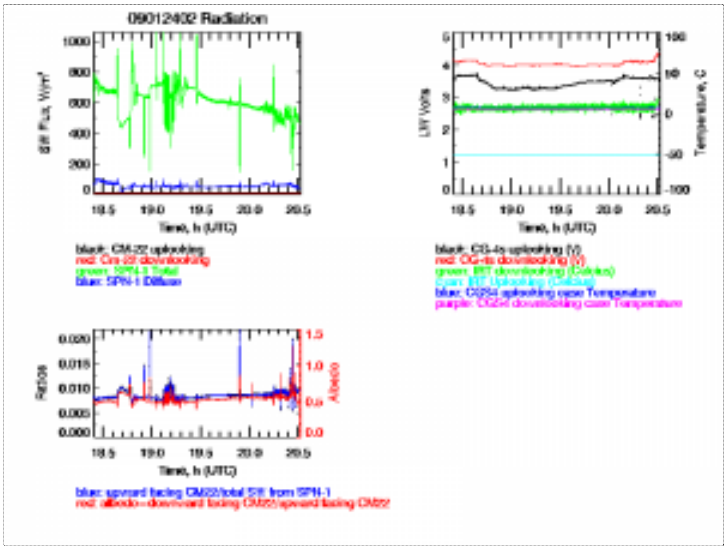
Aerosol



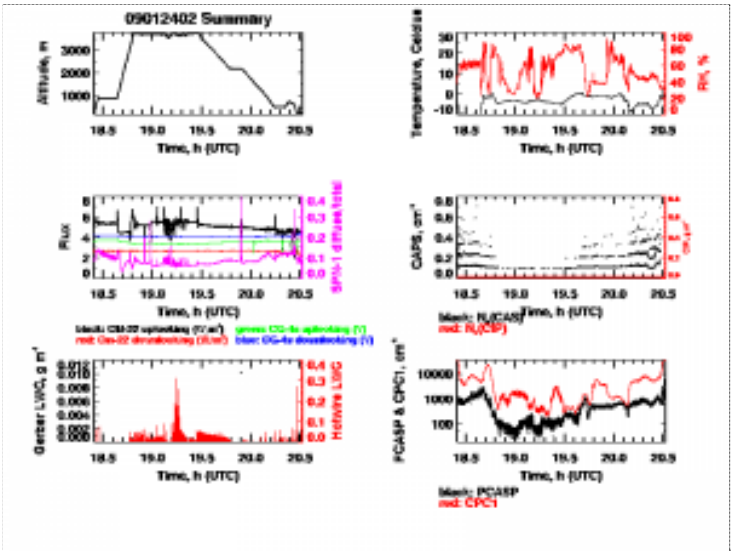
Cloud



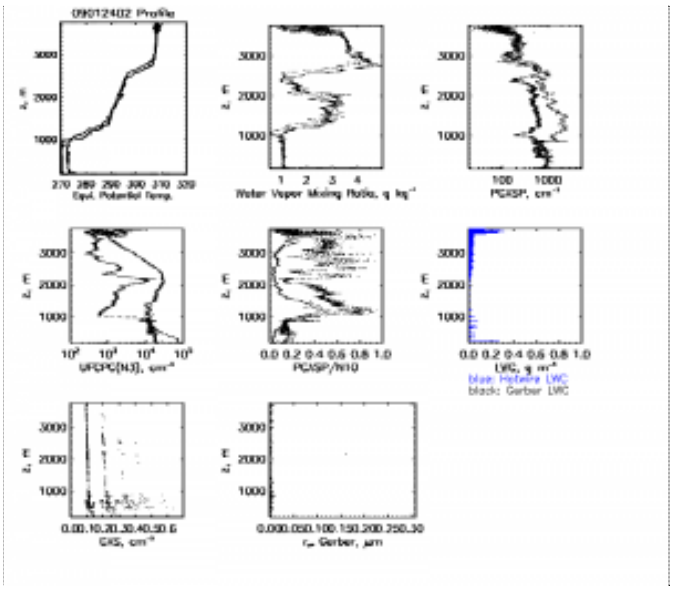
Radiation



Summary

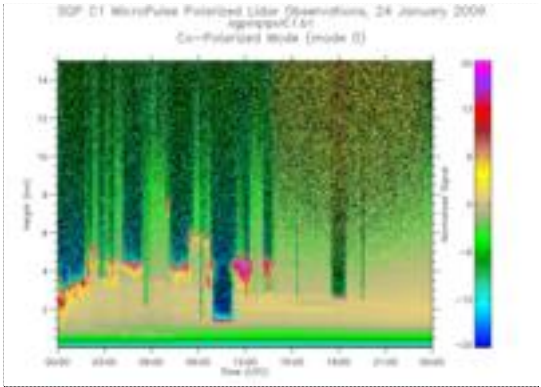


Profile



SGP Plots

MPL Co-Pol



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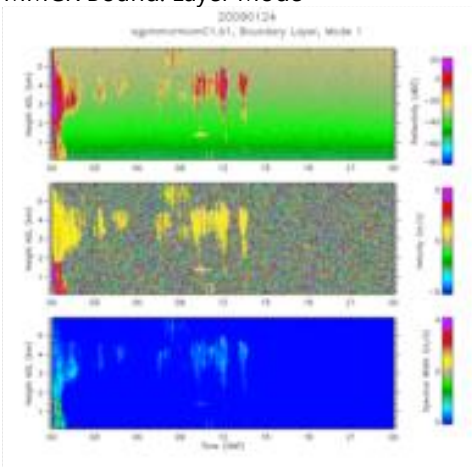
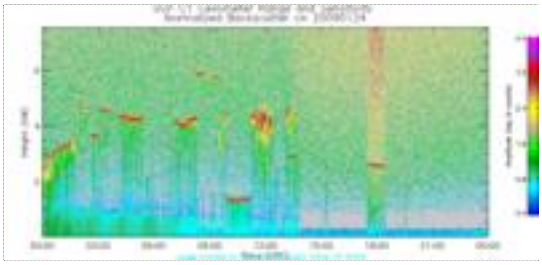
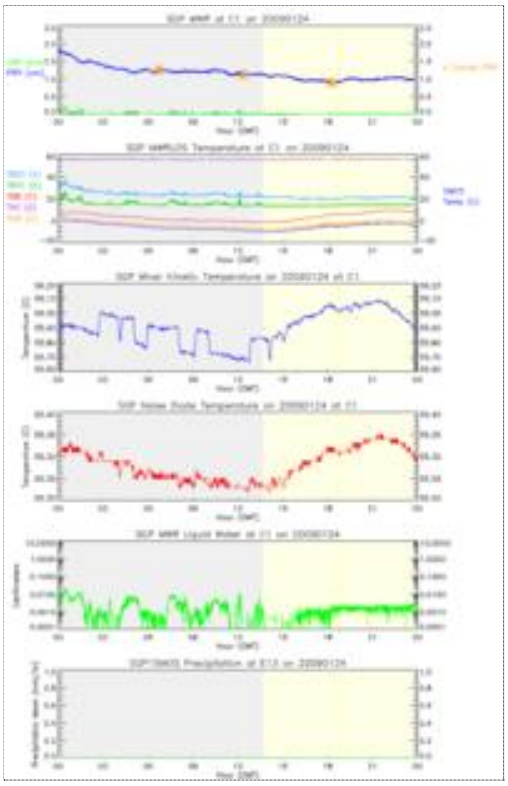


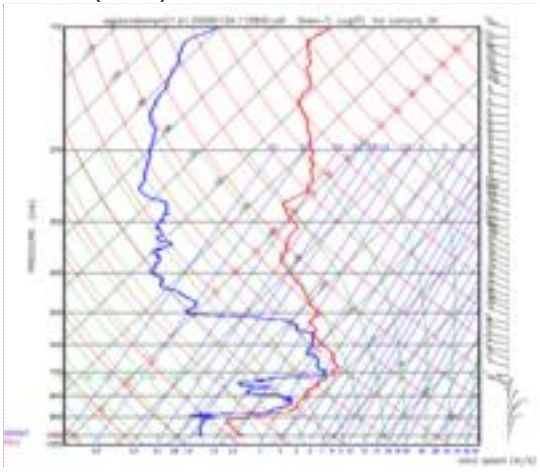
Ceilometer Backscatter



Microwave Radiometer



SONDE (11:30)



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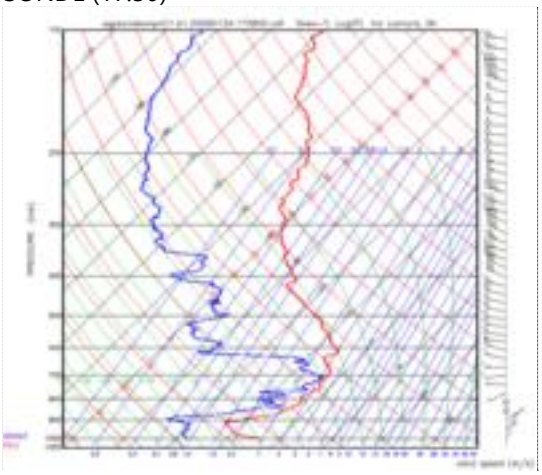

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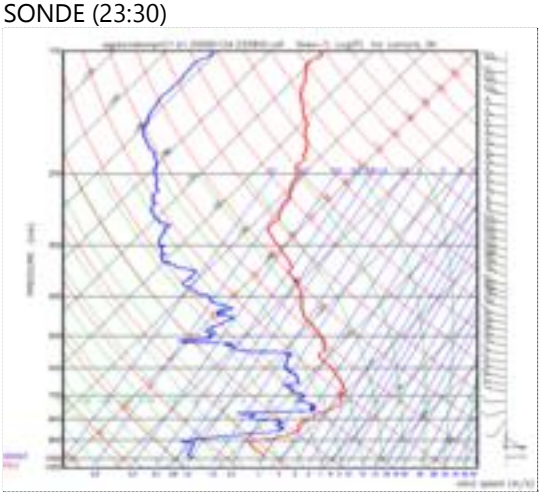
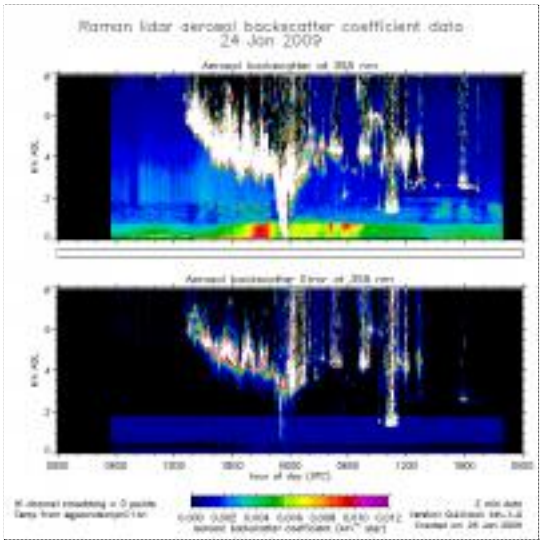
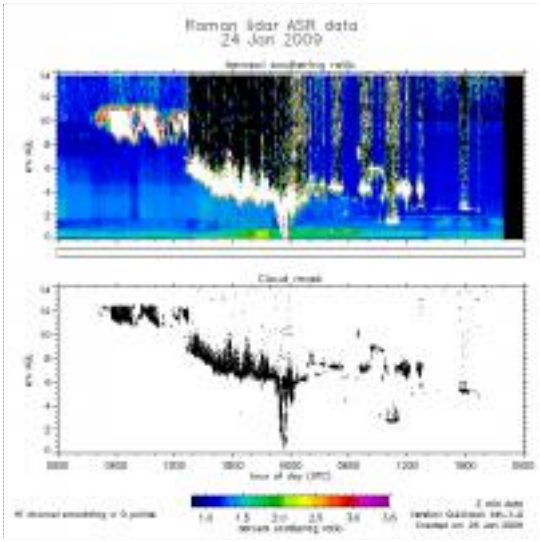


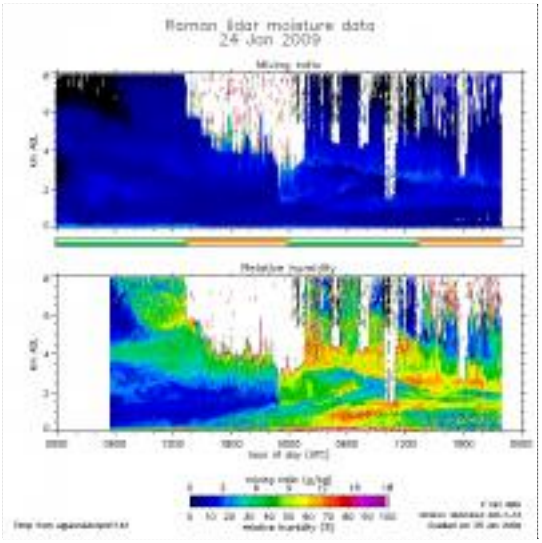
RL Backscatter



RL ASR

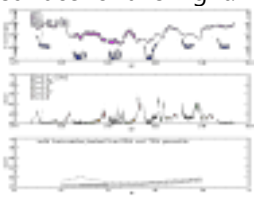


RL Moisture



CCN Activity

I've generated plots indicative of CCN activity from the Twin Otter CABIN and CCN files (i.e. CCN/CN as f(SS). On this test flight both CCN columns scanned through the series of super saturations. The flight was not over the SGP site so I did not make time series plots of CN, scattering and CCN fraction at the surface for this flight. Elisabeth Andrews - 06 Apr 2009



plot of CN and CCN and CCN/CN ratio as f(SS) from twin otter

Weather Maps

map1242

OK City: Overcast; 18-22 knots | Tulsa: Broken; 18-22 knots; 1247 mb | 41 F/20 F | Post-cold front

20090125

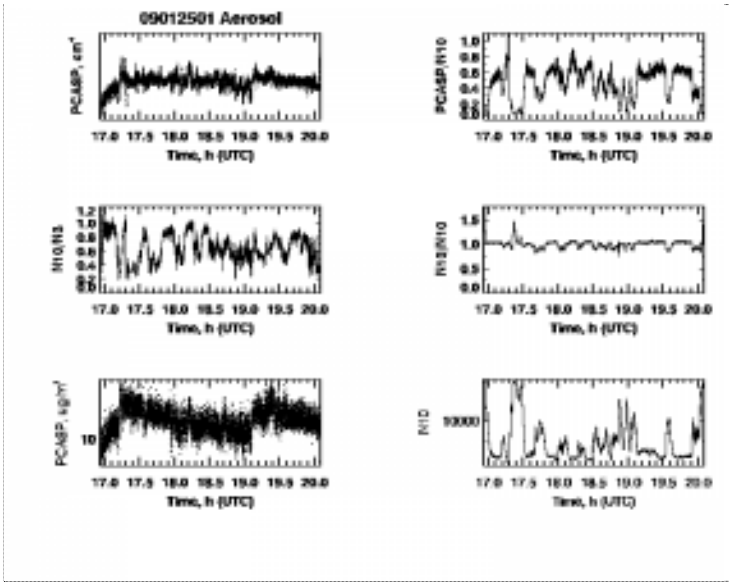
Flight Summary

Google Earth KML File

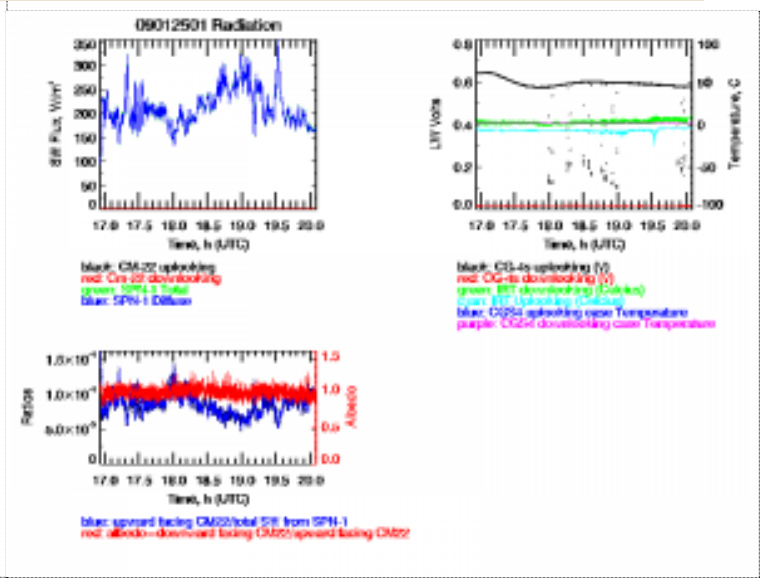
No flight(s) recorded.

Flight Plots

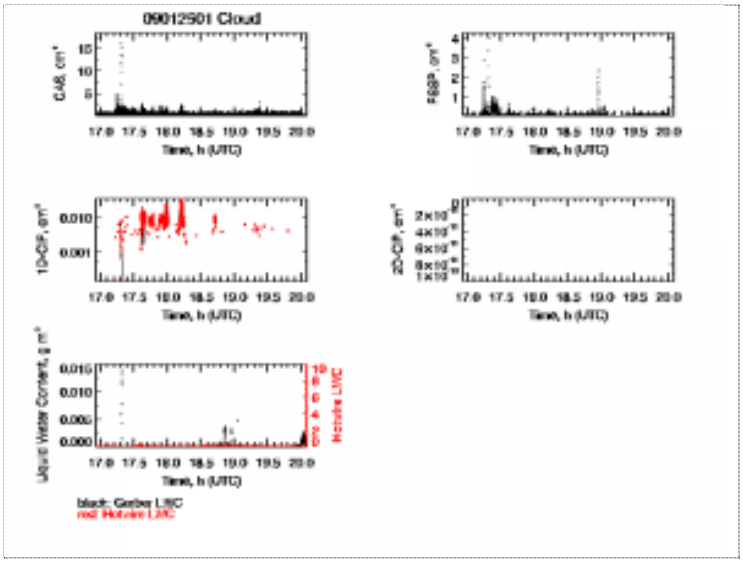
Aerosol



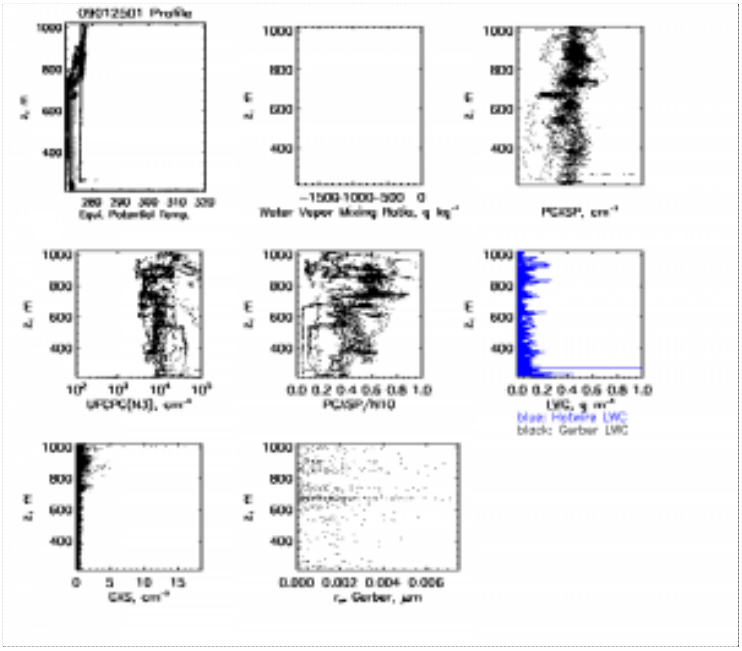
Radiation



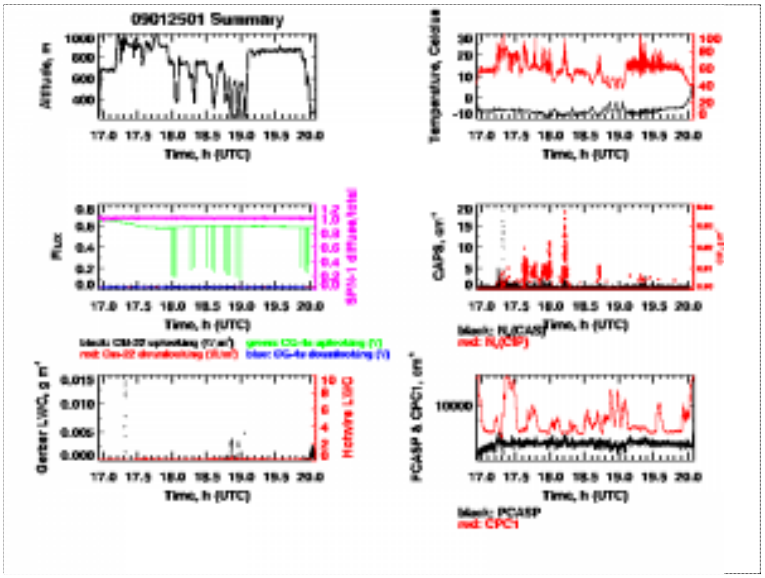
Cloud



Profile

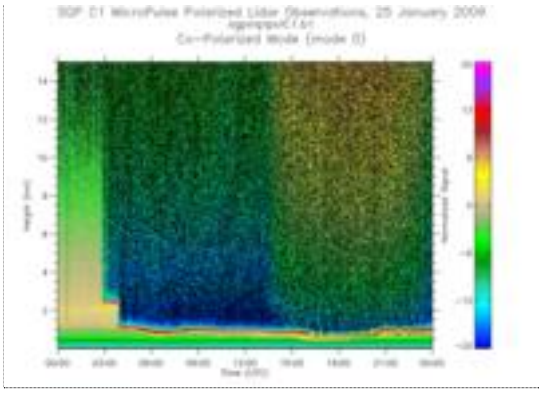


Summary

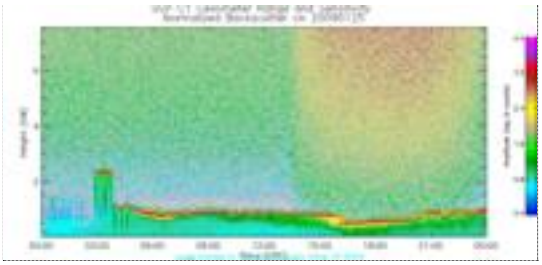


SGP Plots

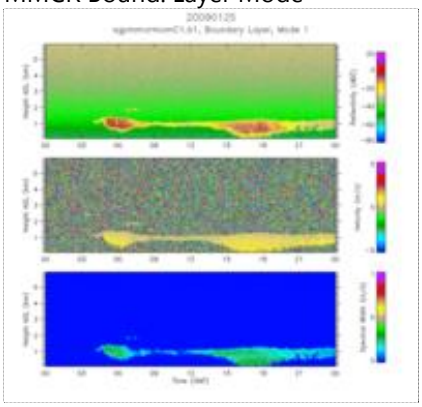
MPL Co-Pol



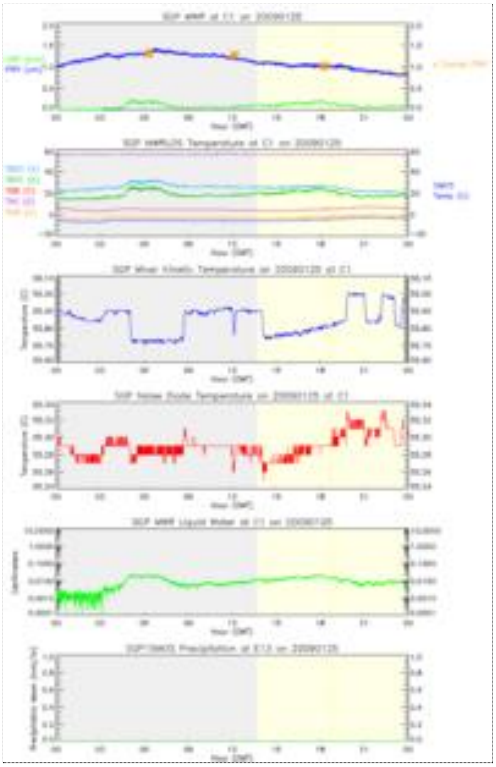
Ceilometer Backscatter



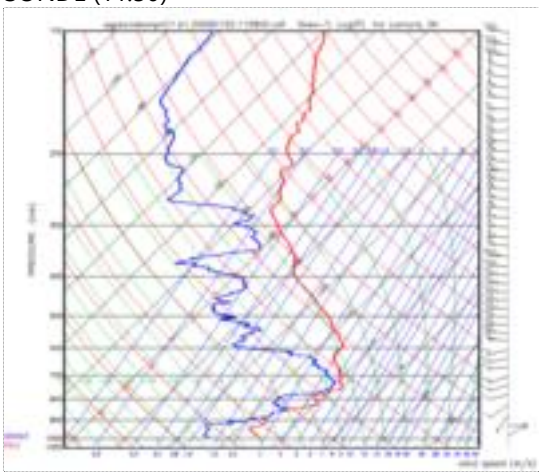
MMCR Bound. Layer Mode



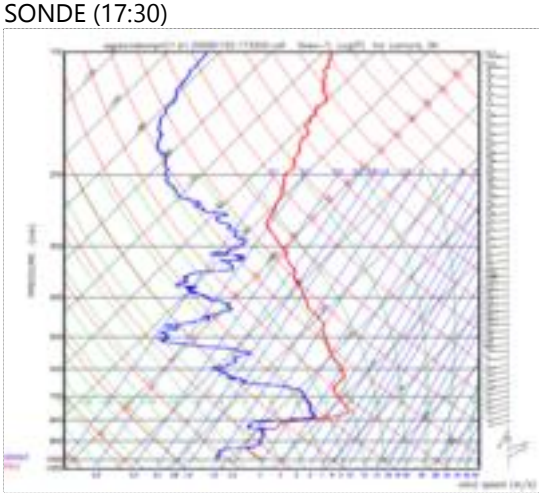
Microwave Radiometer



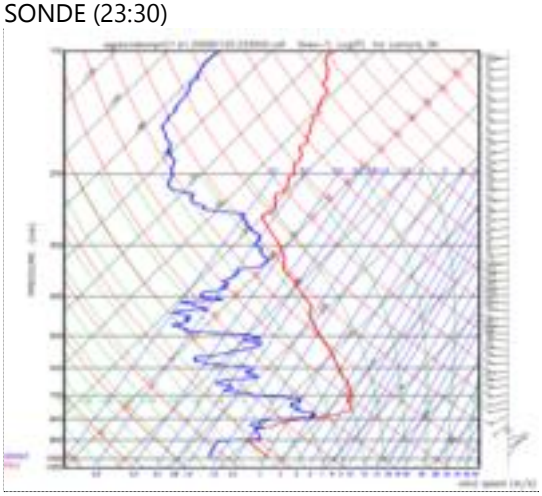
SONDE (11:30)



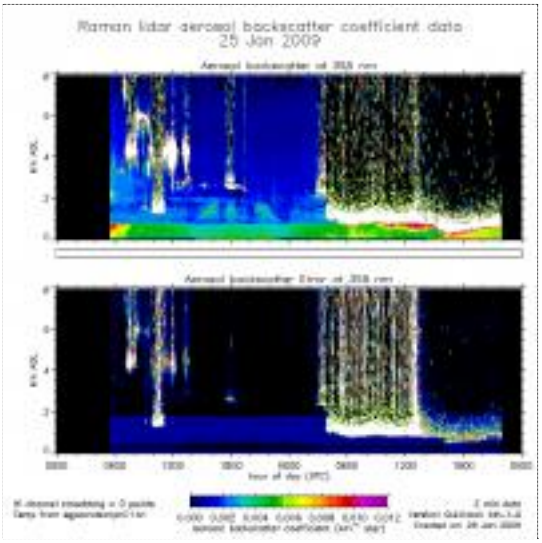
SONDE (17:30)



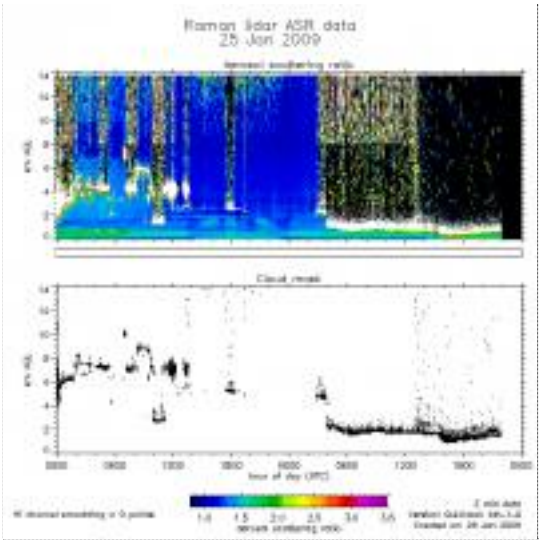
SONDE (23:30)



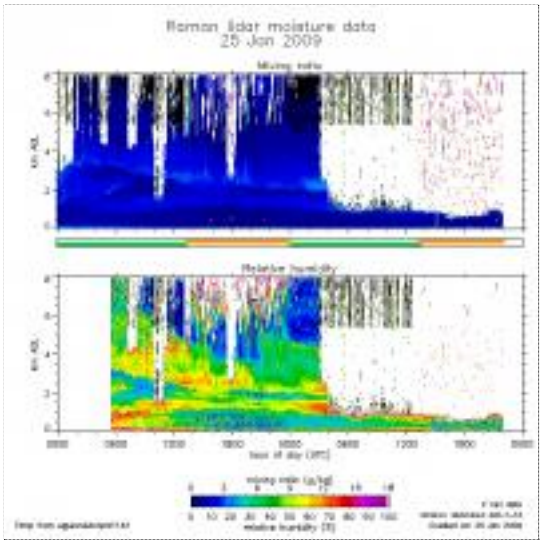
RL Backscatter



RL ASR

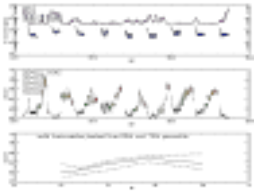


RL Moisture

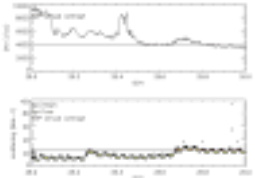


CCN Activity

I've generated plots indicative of CCN activity from the Twin Otter CABIN and CCN files (i.e. CCN/CN as f(SS). On this test flight both CCN columns scanned through the series of super saturations. I've also generated time series plots showing CN concentration and scattering at the ground (i.e. at SGP). I did not plot CCN fraction measured at the surface for comparison with that measured aloft as the CCN instrument at the surface was not working. Elisabeth Andrews - 06 Apr 2009

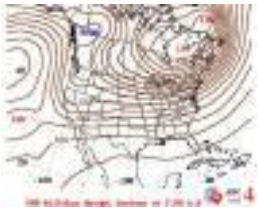


plot of CN and CCN and CCN/CN ratio as f(SS) from twin otter



time series of CN and light scattering at SGP

Weather Maps



map1252

OK City: 1/8 cloud coverage; 8-12 knots | Tulsa: Clear; 3-7 knots; 1292 mb | 30 F/4 F