June 2 Mission Scientist Report

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Today's hydrometeor operations involved only the UND Citation aircraft since the ER-2 deployment had reached its end. During the early morning weather briefing, satellite and radar images indicated a patch of high level clouds advecting from the west over central Oklahoma (Fig. 1). The Citation launched at 14:45 UTC, heading toward the ARM CF at 26 Kft. When the Citation arrived at the CF, the cirrus clouds were still west of the ARM CF. The Citation was directed to conduct 30 miles long east-west legs with the CF as the most eastward point. To complement the cloud-radar coverage, the NPOL radar was placed into an RHI mode (scan 3), running six RHI's centered over the CF. The cirrus was detected at the flight levels being sampled. The first leg was at 26Kft and in every turn the Citation increase the altitude by 1Kft. Soon after the completion of the last leg at 31Kft, the cirrus layer was over the CF and the Citation was directed to make 3 miles diameter spirals over the CF. The descent/ascent rate was 750-1000 ft/min and the altitudes covered were from 23 Kft to 33Kft (Fig. 2). The Citation conducted several up/down spirals (total of 1,5 hrs of spirals). During the spirals, the Citation scientists reported ice crystals over varying size and density. Occasional fall streaks in the thickening portion of the cirrus were observed in the NPOL (peak Z of 5-10 dBZ) and cloud radar data. At 17:30 UTC, the Citation was directed to perform an aerosol profile from the cirrus base to the boundary layer over the CF and then return to base.

The MAPIR flew a 3.5 hour land surface flight over the CF from 1300 to 1630 UTC.

Fig. 1 Infrared satellite image of the high-level clouds sampled by the Citation

Fig. 2 Radar reflectivity of the cirrus clouds from the KAZR

Mission Scientists: Kollias, Nesbitt and Petersen

Attachment	Size
Figure 1.png	316.68 KB
figure 2.png	176.47 KB