June 1 Mission Scientist Report

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ER-2 took off at 1545 CDT, diverted to a cell that fired in central KS. ER-2 flew bowtie pattern over this cell. Pilot had to reset AMPR once on the ground and once in the air shortly after takeoff. ER-2 flew repeated legs along a convective line in Kansas from approximately 1600 through 2030 UTC at the pilot's discretion (Fig. 1). This cell produced large hail repeatedly (up to tennis ball size according to NEXRAD), heavy rain, and was nearly stationary over its sampled lifecycle. This case should provide an excellent dataset in deep continental convection for the algorithm developers. Radar-estimated precipitation was over 6 inches from this storm (Fig. 2).

Citation took off at 1630 CDT to fly a cloud mission. Cloud base was reported by pilot to be FL 4000 MSL, with a 7-8 kft top. After an aerosol profile up to FL 310, the Citation began a spiral down over the CF to FL 3200 MSL to sample the low cloud deck. The Citation was to have flown an along-wind line through these low clouds, but the clouds dissipated and they were requested to RTB in anticipation of convection later in the day. Fig. 3 shows a KAZR image of the breakup of the low cloud deck and the development of boundary layer turbulence.

Citation launched again at 1900 UTC to fly cumulus congestus clouds that developed near the CF. The Citation made passes at cloud base and near cloud top, then was diverted to join the ER-2 in NE KS around 2020 Z.

The Citation arrived at the point 39.69°N 95.52°W around 2100. The ER-2 and Citation performed coordinated sampling in the forward anvil region of the cell earlier sampled by the ER-2. The Citation spiraled down from FL 310 to around FL 100, with the ER-2 doing bow-tie patterns above the spiral and over the convection to the west (Fig. 4). After one spiral down, the Citation had to refuel in Lincoln, NE, and then was asked to RTB in Ponca City. The ER-2 then continued to perform passes over the most intense cells at the pilot's discretion. The ER-2 reached the end of its duty cycle around 2315 Z. Fig. 5 shows the total ER-2 path before a REVEAL dropout.

Overall, this mission provided cloud sampling near SGP, life cycle sampling of a severe convective storm in KS, and coordinated Citation-ER-2 sampling within the forward anvil of this storm.

Nesbitt/Kollias/Petersen

Attachment	Size
fig1.png	1.87 MB
fig2.png	246.31 KB
fig3.png	708.41 KB
fig4.png	1.35 MB
fig5.gif	458.05 KB