

# May 23 Mission Scientist Report

Submitted by snesbitt on Tue, 05/24/2011 - 07:55

Flight Date:

Mon, 05/23/2011

Today's aircraft mission began with sampling strong convection along the dryline west and north of the CF.

Figure 1 shows the visible satellite picture from approximately half an hour prior to launch. The ER-2 launched on schedule at 20:58 Z and proceeded directly to Ponca City. The Citation launch was at 21:15 Z to the south, with an ascent to 25 kft. An aerosol profile was attempted, but there was too much cloud during the ascent to consider that attempt a success. The ER-2 sampled the intense developing convective line to the west of the CF, while the Citation sampled in the fresh anvils to the S. of the CF to near OKC (Figure 2). During these overpasses the ER-2 pilot (Denis Steele) noted an 8 K variation in temperature along his flight line, the largest variation the Aircraft Coordinator (J. Nystrom) could recall. The cells rapidly produced anvils that expanded to the ESE, and this became our target for the next several hours.

The Citation and ER-2 sampled along a NNE-SSW line for several coordinated passes, with the Citation stepping up from 25 to 33 kft. We then orientated a coordinated flight line to the east to sample the anvil evolution following particle trajectories from the convection, orthogonal to the first coordinated line on roughly a line passing through C-SAPR and NPOL. We made several passes with the Citation (in stacked legs) and ER-2 (doing bow-ties centered on the line midpoint). C-SAPR made a series of RHIs.

About this time, NPOL returned to service after several days down, and scanned PPI and RHI sectors (Figure 4) over this flight line. The Citation experienced a mechanical issue and had to return to base at 0041 Z, so ER-2 sampling switched to a mode centered on the most intense convective cells to the SW of CF. NPOL switched into dedicated PPI sectors covering this area, and the ER-2 (pilot directed) made several passes over cells producing large hail and high lightning flash rates (Figure 5). The ER-2 returned to base after several passes over these intense cells.

All in all, the forecast was very accurate despite model inconsistencies, flight lines were executed well, and aircraft coordination was excellent. Data should prove to be an excellent case of intense convection sampled by the ER-2 and coordinated sampling of forward anvils produced by severe convective cells.

Nesbitt/Rutledge/Kollias

Attachment	Size
<a href="#">Figure 1.jpg</a>	161.24 KB
<a href="#">Figure 2.jpg</a>	222.36 KB
<a href="#">Figure 3.jpg</a>	234.74 KB
<a href="#">Figure 4.jpg</a>	157.43 KB