Mission Scientist Report, Flight Mission of April 27

Based on what turned out to be another very accurate forecast of fairly widespread stratiform precip over the SGP site, the ER-2 and Citation were able to time their flight time over the site with the best weather available.

The ER-2 took off about 0458, departed the SGP about 1109 UTC, estimating landing time (as of this writing) at 1212. The Citation took off at 0800, departed the SGP about 1109 UTC, and (as of this writing) estimated landing time at about 1225.

The forecast mesoscale precip area was developing nicely but still west of the SGP site when the ER-2 approached the area, so we set him up on several long N-S and S-N lines through this region which was stratiform on the north end and convective on the south end with some lightning at the south end (See figure). When the Citation arrived on the scene, some heavier stratiform regions were approaching the SGP from the SW, so set up W-E and E-W lines through that region until steady precipitation reached SGP about 0830 UTC (see figure).

At about 0840, both aircraft started WNW-ESE passes along the optimum line for radar data collection, along a line from Vance-Central Facility (CF) and NPOL, continuing for about 90 minutes. While the ER-2 repeated at altitude, the Citation stepped down from FL 180-160-130-100-70-40. The 7000 ft level was probably just above the 0C level, and the 4000 ft level well into the rain layer. After the Citation completed the 4000 ft leg, it spiraled up directly over the CF through at about 1000 ft/minute to FL 160, then descended at about 750 ft/minute to minimum altitude of 3200 ft, then RTB. During the spirals, the ER-2 executed repeated bow-tie patterns directly over the CF. The spirals and bow ties took place in a moderate stratiform precip region over the site from about 1030-1109 UTC. See figure showing cross section from C-SAPR at 1031; the CF is at about 28 km on the C-axis.

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