

CUPIDO06: 20060802a

Flight 8

Flight notes: System Scientist (3rd seat)

Crew:

Pilot: Tom Drew
Flt Scientist: Rick Damiani
System Scientist: Jeff French
4th Seat: Cory Demko

Pre-flight:

Radar faulted on ground testing, took extra ~10 minutes to bring radar up so that it was not faulting. Conditions in aircraft were somewhat humid...perhaps leading to faults

Conditions on ground: T28/Td22, Press 30.03, winds calm

Some Cu around valley, some deeper convection over the mountain, but obscured by the cu/Sc around the valley

Plan on running radar primarily with 250 ns pulse if echoes are strong enough, will test 500 ns pulse affect on heating later in flight, if possible

Flight:

Wheels up 1636 UTC (all times hereafter are in UTC)

1641: begin circumnavigation at 1000 ft AGL

1641: **radar file 16-41-47** uplooking, 250, Tradar~96.1, Tout~20C, some clouds just above us

1651: Trad~98.8

1657: Trad~100.8, Tout~25C

1701: Trad~102.2, Tout~25C

1702: end circumnavigation, quit transmitting, go to FL110, will try a few pens without the radar in hopes of cooling down to upper 90s before running it again

1708: cu Pen, hdg 335 @ FL110, LWC~0.6 g/m³

1713: 90/270 setup for next pen

1715: Pen2, LWC 1.2 g/m³, FSSP conc~250 /cm³

1717: 90/270, Trad~98.8, will try running radar for next pens

1718: **radar file 17-18-01** up/dualdown, 50 gates, cloud top beyond range

1722: **radar file 17-22-16** up/dualdown, 70 gates

1727: end penetrations at FL110, climb to FL140

1730: setup @ FL140

1730: **radar file 17-30-48** up/dualdown, 70 gates

1731: cloud pen, ~2 g/m³, v~8-10 m/s

1733: 90/270 switch mirror to side

1733: cloud pen, ~1.8 g/m³, v~6 m/s

1735: stop radar file, climb to FL160, Trad 97.9 (Tradar has been dropping slowly, even though running more or less continuously, at altitude)

1738: **radar file 17-38-18** dualdown
1742: 90/270 @ FL 160
radar file: 17-42-45 up/dualdown
radar file: 17-44-43 dual side (??) – I may have screwed up and run dualdown(??)
radar file: 17-48-34 dual down
radar file: 17-55-01 up/dualdown
radar file: 17-57-26 up/dualdown
1800: climb to FL180
1801: **radar file 18-01-26** up/dualdown (made 2 penetrations)
1808: **radar file 18-08-01** dual side
1810: end at FL180, climb to FL200
1814: FL 200, **radar file 18-14-20** dual down, right at cloud top
radar file 18-18-36 dual side
radar file 18-20-39 side/dual down
1820-1830: looking for new targets
1831: **radar file 18-31-14** dual down
1832: over top of bubble
1836: over top of bubble
183845: over top of bubble
1840: things not growing as high??, descend to FL180
1841: **radar file 18-41-06** dual down, pen @ 184150
1845: **radar file 18-45-55** up dual down
radar file 18-48-10 dual side
radar file 18-50-20 up/dual down
radar file 18-53-19 up/dual down
1854: penetration, followed by mirror switch
1856: penetration 2
1858: pen 3
radar file 18-58-31 dual side
1902: climb to FL190
radar file 19-03-32 up/dual down
radar file 19-09-56 up/dual down
radar file 19-11-22 side/dual down
radar file 19-14-21 dual side
radar file 19-16-35 dual down
radar file 19-25-08 dual down
radar file 19-27-44 up/dual down
193415: mirror switch
193445: (??) pen very strong turret, v~18 m/s (!!) LWC > 2 g/m3
radar file 19-38-11 dual side
1940: climb to FL200
1941: **radar file 19-41-12** dual down
1946: descend to FL180, set up for box around mountain at “detrainment-level”
1952: **radar file 1952-21** dual down (500 ns) Trad~85.5
2003: end box @ FL180, look for new targets, Trad~88.4, Tout~-4C
200445: pen

2005: **radar file 20-05-43** dual side
2015: **radar file 20-15-06** up/dual down
2018: descend to FL110 for “statistical sampling run” over mountain
2020: clouds appear significantly weaker at this time than early in the flight, no precip at this level, max echoes < 0 dBZ
2024: end leg @ FL110, set up for box @ 1000 ft AGL
2026: **radar file 20-26-23** uplooking (500 ns) Trad~86
2044: end box on east side, continue at 1000 ft AGL to get around mtn before RTB
2051: RTB, stop radar (Trad~102.2)
2059: wheels down

Post-flight/impressions

No known instrument problems during flight

Radar still heated up on first circumnav leg around mountain, even with 250 ns pulse, however, did not seem to heat as fast as did on second circumnav leg that was run with 500 ns pulse. Outside T was cooler today than earliest flights in Cupido, if had been very hot outside, likely would have had to shut radar down before finishing first circumnav leg.

While at higher altitudes and penetrating, radar was actually cooling with time, ran 250 ns pulse almost exclusively, primarily because clouds returns were fairly strong and did not need the extra sensitivity.

Problems at beginning of flight (on ground) likely due to high humidity conditions causing radar to fault until tube heated up enough to dry out (at least that is the working hypothesis....)