Flight Summary: Monday August 18, 2008

Weather: very high winds (40-50 miles/hr) in the morning, then subsided in the afternoon to 15 knots at 3PM local. Some very high clouds throughout the day, only some low clouds late afternoon. Extremely hazy. Particle counts exceedingly high at ground level (Gosan obs, 6000/cm³).

MAC-3 (aerosol radiation). All instruments functioning (OPC, CPC, Aeth, pyranometer, PAR)

Takeoff from Jeongseok airport at 3:30PM local
15 minutes, orbited at 3000ft AGL for radar check per ATC from Jeju Airport
45 minutes, northsouth track 9 miles long at 6000ft AGL (special permission from Jeju ATC)
45 minutes, at 3000ft AGL
30 minutes, at 2000ft AGL
30 minutes, at 1000ft AGL

MAC-5 (cloud physics), only CDP functioning. LWC was not turned on due to no clouds, to avoid heating element burning out. When MAC-3 was at 6Kft, MAC-5 was launched and stayed at 1500ft AGL for ~70 minutes in stack formation with MAC-3. Before landing (vacated the airspace prior to MAC-3 descending to 2000ft AGL, otherwise 2 aircraft would have been separated by only 500ft which is a safety concern), circled overhead at 1500ft AGL in 15 minutes in 3 miles radius orbits to penetrate large areas of low clouds by then had formed.

*There is a problem with radar altimetry, Jeju airport radar reported altitudes of our aircraft 500ft lower than our transponders broadcast. The altitude of commercial aircraft, with acceptable 1% error at 30000ft or 300ft off, is based on atm pressure while ours is on differential GPS which does not change daily thus highly accurate for auto takeoff and landing. We are waiting for suggestions from ACR engineers. ATC said a solution must be found otherwise high altitudes (more than 3000ft AGL) might not be granted.

One addition to the flight operations summary, while at 6000ft AGL and in stack formation, communication was lost for about 1.5 minutes (at the farthest north end of the 9 miles long track) during which MAC-3 and 5 both descended and returned to their respective lost-com points at opposite sides of the flight track (this is a standard safety procedure). When communication was reestablished, MAC-3 was at 4500ft AGL, and then climbed back to 6000ft AGL to finish this portion of the flight. MAC-5 was also resumed it stacked position below MAC-3. Due to high winds aloft, stack software control was relaxed then done manually to avoid over-stressing the aircraft.

(Lost communication is a common concurrence, usually under 30 sec. So this one was rare, we will pay specific attention to the north end of the track in future flights. This did not happen during flights on Aug 9 and 10.)