Date: June 29th 2006

**Second Cloud/Drizzle flight of the day in “Stratocane”**

*Flight scientist – Rob Wood*

Takeoff: 23:00 UTC, Arcata
Landing: 02:16 UTC, Arcata

23:00  Take off. Transit to waypoint 39.5°N, 126°W.
23:06  Transit to waypoint. Essentially same structure as last flight, so won’t bore the reader with superfluity.
23:26  First signs of drizzle on radar (OK, so I will discuss something about the transit if drizzle is involved).
23:48  Almost at waypoint and located elevated cloud tops. Lo and behold, the drizzle is profuse below. Set pointer at 39.98°N,126.03°W. PCASP 250 cm$^{-3}$ above cloud.
23:50  Turn and descend for run to NE in cloud layer at 3000 ft. FSSP 100 cm$^{-3}$.
23:52  Started run. Winds 4 m s$^{-1}$/160°. In solid cloud at 3000 ft. Drizzle on windshield. FSSP climbs to 200 cm$^{-3}$ in cell center. LWC as high as 1.1 g m$^{-3}$. Bumpy through cell center at 23:56.
23:59  Turning 90/270 back to pointer at same level. Almost out of tops at NE end.
00:00  Start run at 3000 ft to SW. FSSP increases from 100 cm$^{-3}$ at cell edge to over 250 cm$^{-3}$ and sometimes higher, at cell center. This general behavior is repeated throughout flight.
00:05  Descending to 500 ft with 90/270 and run to SW. Sea calm. Base of upper layer 2000 ft, lower layer 1300 ft. Can see the portentous wall-cloud ahead. A harbinger of drizzle to come for the seafarer, wary of the dangers of stratocane transits in his flimsy vessel. PCASP 200-250 cm$^{-3}$ in surface leg. Puts to bed the idea that you need really clean clouds to get significant drizzle. Very interesting wind shifts (with some bumps) at low levels. Clear convergence into cell.
00:18  Turn quick for turn back to pointer. Scud is not in prominence. Instead there appears to be a lower level sheet.
00:28  Turned for 3rd run back to pointer at 300 ft. PCASP almost doubled under cell from around 100 to 200 cm$^{-3}$. Lower concentrations to SW.
00:35  90/270 and climb for run at 2000 ft. PCASP high at surface (300 cm$^{-3}$). First cloud layer at 1100 ft. Main bases around 2000 ft, but variable.
00:37  Start run at 2000 ft. FSSP increasing from 100 to over 300 cm$^{-3}$ in cell center.
00:45  Left turn back for run to N at 2000ft. Some cumulus (wall clouds?) but not penetrating upper deck. Second cell core entered about 6 km to NNE of first at 00:52.
00:53  Turn and climb to 2500 ft for run to SSW. 90/270 turn.
01:04  Turned fast to L for run back at 2500 ft.
01:10  Turning 90/270 with descent to 300 ft. Enter lower cloud layers at 1400 ft. Cell center appears now to be S of pointer. Possible propagation?
Profiling up to 3500 ft through cloud main bases 2300 ft. Very thin here. Tops 3100 ft. Tops very uniform visually. Climbing to 3800 ft to remain above cloud. Most active cell now appears to be 1-2 miles to NE of center point.

For run in cloud the linear relationship between cloud liquid water content and cloud droplet concentration was observed. Similar to first flight. Evidence of drizzle removal, or simply of mesoscale cell dynamics and mixing?

End of cell sampling. Transit home

Landed.