

Date: June 16<sup>th</sup> 2006

**Drizzle flight with Aqua/Cloudsat overpass at 21:32 UTC**

*Flight scientist – Rob Wood*

Takeoff: 21:02 UTC, Arcata

Landing: 00:56 UTC, Arcata

21:02 Climb to 3kft and locate Cloudsat overpass line  
Light winds near coast, few whitecaps  
Cloud layer, base 1.6 kft, top 2.1 kft, max LWC=0.3 g/kg  
PCASP 70 cm<sup>-3</sup> near coast

21:07 Level off at 3000 ft  
Multiple stratus layers ahead around 3-5 kft with fog/low stratus near sfc

21:09 Turning to NNW onto Cloudsat path

21:11 Patchy fog/stratus below, some rolls.

21:12 Broken/thinning Sc above at 3600 ft  
Climb to level of upper layer at 4200 ft

21:20 In-cloud straight at 4200 ft, FSSP 50 cm<sup>-3</sup>, LWC 0.1 g/kg

21:25 Climbing to 4900 ft to remain in cloud, weak inversion above

21:27 Levelled off, very few wisps of scattered cloud above

21:29 Drop 300 ft to 4600 ft as cloud layers change below.  
Clear multilayered radar returns, some drizzle, 0 dBz

21:32 Waypoint set. Continuing along run to NNW at 4600 ft

21:40 Turning 90/270 to run SSE through air-relative waypoint

21:40 Start porpoise run 500 ft/min from top to cloudbase around 2400 ft then  
back up to 5000'. In center of layers very low PCASP concentration of 1-2  
/cm<sup>3</sup>

21:56 Turning 90/270 for final run back NNW at 5000 ft

21:58 In and above cloud tops. Descend a little mid-run to remain in tops. Strong  
gradient in cloud top lower to N

22:09 END OF CLOUDSAT COMPARISON

22:09 Head W to locate drizzle cells at 4500 ft

22:20 Cross stratus edge. Clear slot for 40 miles, then stratus beyond. Becoming  
polluted and visibly hazy. Haze layers visible to N

22:28 Bands of stratus visible ahead. Tops 3500 ft

22:34 Enter cell at edge of clear region. 8/8 stratocumulus beyond at 2000-3000 ft.  
Only weak returns so progress further into sheet

22:42 Climb to survey. Homogeneous stratocumulus, well-capped. Back down into  
cloud at 2500 ft

22:43 Set pointer (126°25', 42°23') in center of drizzle cell located using radar. 0  
dBZ returns probably not reaching surface

22:50 Return to waypoint at 2500 ft. Some drizzle on windshield at cloudbase  
2300 ft. PCASP concentrations higher on E side, lower on W.

23:00 Descend into clear air at 300 ft. Run back to waypoint at 300 ft with CCN  
cycling through supersaturations. More polluted at E end. The drizzle cell has  
lower cloud bases. PCASP around 70 /cm<sup>3</sup> decreasing to 50 /cm<sup>3</sup> at W end

23:10 Reverse run to E at cloud level, 2400 ft. Scud/cumulus below but not penetrating stratocumulus

23:16 Turn and climb to 3000 ft. FSSP has interesting structure through cell with low values (20-30 /cm<sup>3</sup>) in cell center, highest values to E (70 /cm<sup>3</sup>) and intermediate values to W (40 /cm<sup>3</sup>).

23:19 Run skimming cloud top at 3500 ft.

23:32 2000 ft run back near cloud base. PCASP at E end around 80-90 /cm<sup>3</sup>

23:40 END OF DRIZZLE CELL SAMPLING

Climb out. Inversion 5-6 K, quite strong hydrolapse

00:26 Going to investigate near-coastal returns. Some interesting cloud structures bunched up around Cape Mendocino. Echo returns around 0 dBZ.

00:56 LANDED