

Date: June 27th 2006

Cloud/Drizzle flight with MODIS overpass at 19:30

Flight scientist – Rob Wood

Takeoff: 18:32 UTC, Arcata

Landing: 22:12 UTC, Arcata

- 18:32 Climb to 3kft and transit to intermediate waypoint at 42°N,125.5°W before heading to 42°N,127.5°W
Light winds near coast, few whitecaps.
Fog to N, cleared mostly. Scattered cumulus at 3000 ft, mid-level cloud above
PCASP 500 cm⁻³ near coast, hazy, polluted. CPC high (several thousand)
- 18:40 Level off at 3000 ft
Coastal fog below, clearing to NW
- 18:48 Passing under midlevel cloud at 5-6 km. Virga
CPC falling. Some thin low cloud (Cu Hu) below, with edge of haze layer visible ahead
- 19:00 Sharp transition to clean airmass ahead. PCASP down to 40 cm⁻³. Drying out at flight level
- 19:05 CPC/PCASP increases somewhat into airmass to be sampled. Wind speed 20 m s⁻¹ out of the north. Strong whitecapping at surface.
Cloud tops below at 1500 ft, patchy, but becoming more extensive ahead.
- 19:15 Turning W at 42°N onto E-W track. Aerosol concentration remaining steady
PCASP 175 cm⁻³, CPC=450 cm⁻³.
- 19:28 Dropping down to cloud level to sample clouds. Cloud tops 1400ft, strong inversion (8 K). Continuing descent to 500ft. PCASP 150 cm⁻³ below cloud.
- 19:34 Level at 1000ft. FSSP around 125-150 cm⁻³ in cloud, LWC_{max} around 0.3-0.4 g kg⁻¹
- 19:34 Strong whitecapping. MBL winds consistently 15-18 m s⁻¹ out of the north. Some shear turbulence.
- 19:35 Mesoscale variability in crosswind direction clearly evident. Scales of roughly 10 km.
- 19:54 Set pointer at 1000 ft at 42°N, 127.5°W. Will return to advected pointer throughout.
- 19:59 About 15 miles W of pointer, 90/270 turn back to E and descend to 300 ft run. PCASP around 140 cm⁻³. Run back quite bumpy. Winds 16-18 m s⁻¹ out of the north
- 20:15 East end of leg. Climb with 90/270 for run to W above cloud at 1750 ft.
- 20:18 Climbing shortly after start to 1900 ft to remain above cloud. Cloud base 700 ft, Cloud top 1400 ft. PCASP 20-40 cm⁻³ immediately above cloud. Water vapor mixing ratio around 5-6 g kg⁻¹. Winds above MBL not strongly different from those in the MBL
- 20:32 Start descent for porpoising legs back to E. MBL well mixed and with consistent LWC maximum of 0.3-0.4 g m⁻³. FSSP showed some interesting mesoscale variability from one profile to next, possibly consistent with subcloud aerosol variability. Wind speed remaining high all along run.

- 20:48 End of run, but continuing to porpoise back to intermediate waypoint for transit back to airport. Cloud noticeably more extensive than during transit out.
- 21:14 End of porpoise. Slow climb to cruise level 5000 ft for transit home. PCASP remaining low above cloud. All aerosol exhibiting only weak gradients. Clear haze layers in evidence near coast. The clear-polluted edge is now much closer to the coast than it was before.
- 21:44 Cloud layer below almost completely gone. Edge of polluted layer at 21:46 with jump of PCASP from 200 to 600 cm⁻³. Visibly hazy. Wind speed dropped at flight level to 10 m s⁻¹ out of N. Midlevel clouds ahead.
- 21:50 Interesting gravity wave coast-parallel cloud lines (not MBL rolls). Profile into Arcata shows a very stably stratified layer below 3000 ft with no clear inversion.
- 22:12 Landed to S.