

Flight Scientists Notes – DMIMS06 20060620  
Crew: Cooksey, Leon, Oolman, Pokharel

ASTER overpass @ 19:26:40.

Basic plan: Ferry out to the site of the ASTER scene and try to find a region of cloud that is likely to be advected into the box during the overpass time. Satellite images prior to the flight show clouds starting fairly far offshore. Based on previous experience the clouds at our latitude appear likely to burn off or collapse during the day (even the earliest visible satellite images show breaks in the clouds for the target region).

Conditions of the flight evolved more or less as expected until we reached the western edge of the ASTER observation region. At this point it became evident that we were too far upwind of the region since the BL winds at this longitude were only about half of what we observed closer to the coast. We then turned southward in order to find a region of stronger cloud within the ASTER observation region. At this point the flight started to unravel as the clouds in this region were much weaker than before and frequently did not show up on the radar. After some attempts to find a suitable area to focus on we started working across a boundary in the cloud layer that was marked by very thin clouds with a lower cloud top on one side and deeper, brighter cloud on the other. After a few passes in and below cloud we decided that this was not a good region to focus on due to the weakness of the radar echoes and apparent lack of structure in the cloud layer.

An attempt was made to find a better region within the area covered by the ASTER scene, however this too was unsuccessful and shortly after the overpass time we decided to return to Arcata at low levels in order to (hopefully) get some good aerosol data for Jeff Snider. Windspeeds along the coast were similar to those observed on the ferry out (20+m/s).

Looking at satellite images after the flight revealed that some cloud remained near where we were working, but that the region of the cloud field that we were working in was eroding rapidly during the time that we were on station.

As a final note, I was informed that for an unknown reason, the ASTER data acquisition that had dictated the timing and location of our flight had not actually been acquired.

Points for future flights: As noted by others it is very difficult to see the visible satellite imagery on the front display. For this reason, either the person in the forth seat should be in a position to make suggestions regarding where to go or somebody on the ground should be available to

contact for help in flight planning.

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Literal flight notes:

164850 Engines running. Pictures of front display.  
165155 Taxiing, waiting for incoming plane to land  
165610 Takeoff. (Note from Larry: Chilled mirror wrong)  
165731 Over shallow clouds next to coast.  
165847 (Larry to Binod) Nadir port door open, ultrafine CPC on.  
165956 Slight bumpiness @ 2750 (zft)  
170156 Clouds on the horizon  
170432 Haze layers to S.  
170531 Some whitecaps on ocean  
170609 Haze above, clouds below.  
170719 End of climb.. return to 1000 ft.  
171000 Estimate from Don: clouds are ~50nmi out.  
171305 start of light turbulence  
171442 Top of boundary layer is at ~1500ft (zft)  
171537 winds 23 m/s @ 354 deg true  
171629 Clouds look stronger to S.  
171800 (Larry) Lots of aerosol.  
172022 Descend to ~500ft. Increased turbulence.  
172130 Haze increasing  
172537 Request to Binod to get satellite image  
172758 End of the 1<sup>st</sup> sequence on the CCN. To be followed by a quick  
sounding  
173508 Approaching cloud.  
173529 Ship off to the north (small ?)  
174015 Encountering cloud- tops at 2500ft. Some echoes on radar.  
Looks worse to west.  
174419 Climb to 6kft to get a better view,  
174419 Some higher cloud tops to the north. Additional cloud (haze ?)  
layer above stratus ahead.  
175307 Descend to 4800 to keep sfc within radar recorded range.  
175424 Well defined haze layer above cloud (pictures).  
175704 (Larry) BL depth 2700 ft.  
175726 Coming over cloud  
175945 Echoes to +5dBZ in cloud layer.  
180302 Echoes broken, clouds dimmer below.  
180508 (Larry) Puttins in a file break for the WCR.  
180800 North of box. Will try to to pick region based on the echoes,  
cloud tops.  
181317 (Larry) Time gap at home.  
181344 Rift between clouds, brightness difference.  
181425 Haze layers above cloud.  
181746 Approaching rift. Will descend into it and try to fly return leg

under cloud.

182028 Descending for under cloud leg.  
182056 Cld top at 2971 zft.  
182248 Winds lighter ~12 m/s (20kts).  
182500 ~ 1hr to overpass. Echoes getting stronger.  
183000 Turning to go S, through the box (current track would be too close to N. end of box at the overpass time)

184020 Climbing back on top of cloud layer to find a better spot to work.

184151 Climbing through break in the cloud

184301 Top of the cloud layer

184437 Above cloud but no echoes.

184750 Turning and heading to stronger- looking clouds.

184930 Aerosol layer above

185038 Approaching rift next to brighter clouds.

185306 Edge of cloud layer

185914 90- 270 turn and drop into cloud.

190140 In cloud. Lwc ~0.5 g/m<sup>3</sup> FSSP 100/cm<sup>3</sup>

190347 @cloud top. In and out of cloud. FSSP conc @ ~100

190508 above cloud

190901 Re- entering cloud ~100m lower

191215 Not working well (flight strategy) Will climb above cloud and try to find something better.

191624 Above cloud. Well- defined haze layer to N.

193850 End of spiral descent. Head for home low down.

194525 ATC problems current altitude 6- 10kft

194844 Haze layers above

195000 No cloud below.

195430 Got clearance. Descending to ~300ft.

195650 Top of inversion @ (?) (Larry)

195743 Spike in aerosol concentration.

201144 Sounding to ~500 ft above BL.

201642 Descending after sounding. Aerosol layer above.

203217 End of low- level leg. Climb out and head to Arcata.

204736 At hangar.