

Middle Latitude Cirrus Cloud Properties Experiment (MACPEX) Flight Summary Report (18 April 2011).

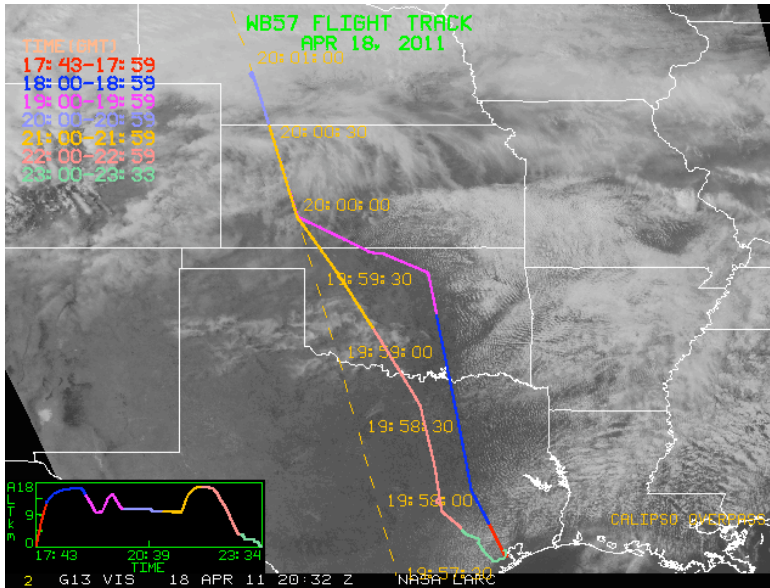


Figure 1. Flight Track overlaid on Visible satellite image. Images Courtesy of Minnis Group.

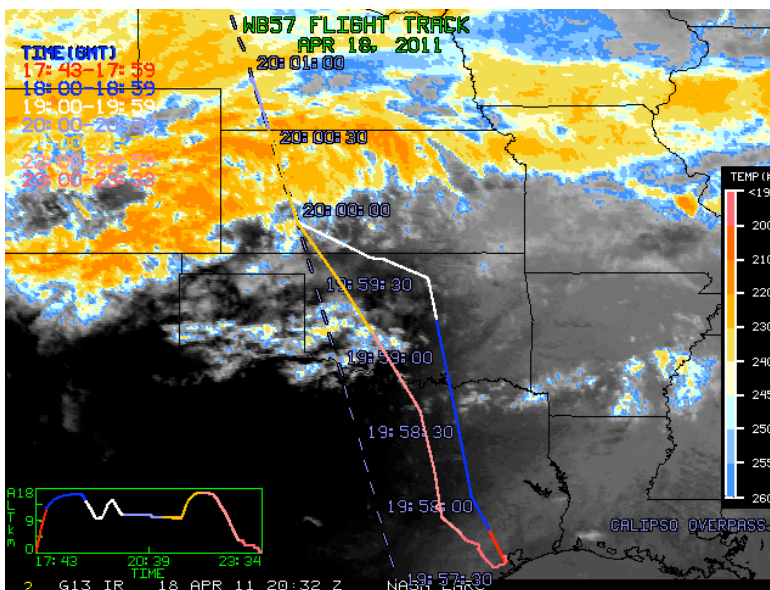


Figure 2. Flight Track overlaid on IR satellite image. Images Courtesy of Minnis Group.

1. Purpose of Mission:

Primary Mission: The purpose of this mission was to sample cirrus clouds over Nebraska and Kansas in coordination with the SPEC Lear Jet.

This coordination was to take place along the A-Train satellite track.

2. Flight Summary

The WB57 proceeded northbound towards the ARM SGP site and made a pass over the site encountering thin cirrus. The WB57 proceeded to a point on the A-Train track over Western Kansas and proceeded North bound along the track in clouds. Meanwhile, the SPEC Lear staged out of Garden City Kansas. The two aircraft began coordinated flight at approximately 30k feet with the Lear northbound along the track. The separation of the aircraft was approximately 40 Nm or greater during the coordinated flight. The A-Train overpass occurred during this northbound segment. Unfortunately Cloudsat was NOT



Figure 2. Picture of the WB57 captured by Lear Pilot during turns at northern point.

node several days prior. The aircraft turned and descended 2kft (Figure 3) and proceeded southbound along the satellite track in coordinated flight for approximately 150 Nm. The entire operation, except along the extreme northerly portion of the track took place in cloud,. The RTB to EFD took place near max altitude.

3. Instrument Operations Officer Report:

Flight duration – 6.0 hours

Crew – HEI/DOM

Instruments flown: 2DS, ALIAS, CPI, CIMS, CLH, DLH, FCAS, FCDP, HARWV, HVPS, JLH, MMS, NMASS, O3, O3LITE, PALMS, SID3, ULH, SP2, VIPS

1240	Takeoff	1840	Land
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Flight Log

Engine

Start 1226

Data Rec	1230	Begin	1718	Landing	1840
On		Descent			

Gear extension/retractions

Gear Up 1840

Gear Down 1831

Weather Observations

Ascended through broken cloud layer at 1,500.

Light cirrus evident near FL350 approaching PT1. Layer appeared to be above at FL320 during the SGP transit. At the SGP point we were in the base of the cloud layer.

Ascended through some light cirrus haze in route to point C1 FL380.

Cloud tops appeared to be around FL375 near C1.

By 50nm from C2 in solid layer for duration of C2-C3-C2 transit. Exited between layers nearing point C1.

Broken cloud layer over EFD bottoms near 1800 feet.

Flight Profile

Transit to range was uneventful. Descended to FL350 just after PT1. Transited SGP at FL350 to PT2 30nm past SGP on PT1-SGP line.

Directed per Science to point C1 ascending to FL490 in route.

Established on line at C1 North bound at FL350 14:50.

ICE09 traveling Southbound on line co altitude extended past C2 to turn in front approximately 35nm for Northbound leg.

Returned Southbound at FL 330 15:37.

RTB at C1, ascending to FL550 in route.

MMS maneuvers accomplished at FL1,100 for Yaw and Pitch (17:59), and FL5,000 for the box at 18:20.

Instrument Notes

PALMS failed upon start. Reset 1X

HARVWV fail at 14:28. Reset 1X

HARVWV fail below 3,000'. No action per checklist.

Note: error message appeared at 17:45 to the effect of 'Unable to read data from transport connection. Cannot block a call from the socket if an earlier asynchronous call is in progress' on the SID3 GUI. Flag disappeared upon moving mouse.

SID3 did not appear to shut down as previous when STOP SID3 toggled. "black" screen remained up. Second activation of STOP SID3 returned the error message that the program was already shut down.

4. Preliminary Instrument/Data Status for this flight:

SID3	Worked Well
VIPS	Worked Well
2DS	Worked Well
FCDP	Instruments ran, quality unknown.
HVPS	Worked Well
CPI	Issues with particle collection noted.
CIN	No Data Collected
NMASS	Major Problems.
FCAS	Worked well
PALMS	Instrument Worked, minor problems noted
MMS	Worked Well
ALIAS	Worked Well
CLH	No Data Collected
JLH	Worked Well
ULH	Worked Well
DLH	Worked. Quality improving.
Harvard Water Vapor	Worked Well
Harvard TDL	Unknown
Harvard Total Water	Not Ready For flight
Harvard Halogen	Worked but Issues Noted
FISH	Instrument Not Flown
CIMS	Worked Well
O3	Worked Well
O3Lite	Worked Well