## Middle Latitude Cirrus Cloud Properties Experiment (MACPEx) Flight 2 Summary Report (3 April 2011).

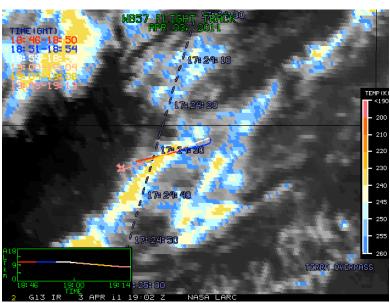


Figure 1. Flight Track overlayed on IR satellite image. Dashed line is Cloudsat track. Images Courtesy of Minnis Group.

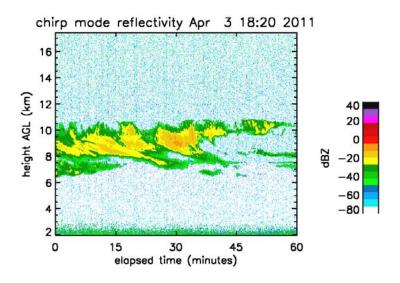


Figure 2. Ka Band Zenith Radar (KAZR) reflectivity collected from 18:20 until 19:20 UTC corresponding with the flight track shown above.

1. Purpose of Mission: Primary Mission: Sample cirrus clouds over the SGP ARM site.

Secondary Objective: Compare measurements of stratospheric water vapor.

2. Flight Summary The WB57F (926NA) sampled fast moving cirrus in the vicinity of the Southern Great Plains ARM site that were embedded in a strong southwesterly jet stream. The flight profile included level legs and a spiral descent over the SGP site. In addition, measurements of stratospheric water vapor at several altitudes were collected for comparison among water vapor instruments.

### 3. Instrument Operations Officer Report:

**General Information** 

Flight date- 3 APR 2011

Flight duration – 5.3 hours

Crew - RKE/DOM

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

**VIPS** 

Flight Log

Engine

**Start** 1153

Data Rec 1156 Begin 1619 Landing 1714

On Descent

Gear extension/retractions

Gear Up 1207

**Gear Down** 1703 (2,000ft)

**Weather Observations** Ascended through cloud deck approximately 1000 foot at 3,000ft

Clear air in route.

Solid under cast and deck until within 60 nm of ARM site.

Proceeded with flight pattern one time in mostly clear air except for about 40 nm Spiraled up over clear site, about 7 nm west of center point.

Entered mid level could cover for most of the transit from IFI to TUL.

#### Flight Profile

Transit to range uneventful. Transit at FL530 with slow decent to initial point. Descended into IP at FL350

Diverted, per science direction, to line between IFI and TUL before RTB at FL570 with stair descents at FL530, FL510, FL370.

MMS maneuvers during staged decent.

#### **Instrument Notes**

NMASS fail on initial start up. Action per checklist; reset 3X.

Held for remainder of flight

HARVWV fail light at 1334. Action per check list; reset without incident 1X. Fail on on decent about 5,000 ft

# 4. Preliminary Instrument/Data Status for this flight:

SID3	Worked Well
VIPS	Worked Well
2DS	Instrument ran. Quality unknown.
FCDP	Unknown
HVPS	Worked Well
CPI	Worked Well
CIN	Instrument Defunct
NMASS	Instrument ran. Issues.
FCAS	Worked Well
PALMS	Major Problems
MMS	Worked Well
ALIAS	Aircraft Problems. Instrument not Flown
CLH	Aircraft Problems. Instrument not Flown
JLH	Worked Well
ULH	Aircraft Problems. Instrument not Flown.
DLH	Aircraft Problems. Instrument not Flown.
Harvard Water Vapor	Worked but Issues Noted
Harvard TDL	Unknown
Harvard Total Water	Not Ready For flight
Harvard Halogen	Not Flown
FISH	Worked Well
CIMS	Worked but Some Issues Noted
03	Worked Well
03Lite	Worked Well

