

Lead Project Scientist

Storm or Project Michael Experiment type TDR
Flight ID 18100941 Mission ID 0914A

Preflight

1. Participate in general mission briefing.
2. Determine specific mission and flight requirements for assigned aircraft from the Field Program Director.
3. Contact HRD members of crew to:
 - a. Assure availability for mission.
 - b. Review field program safety checklist
 - c. Arrange ground transportation schedule when deployed.
 - d. Determine equipment status.
4. Meet with AOC flight director and navigator at least 3 hours before take-off for initial briefing.
5. Determine from AOC flight director the mission designation and whether aircraft has operational fix responsibility
6. Meet with AOC flight crew at least 2 hours before take-off for crew briefing. Provide copies of flight requirements and provide a formal briefing for the flight director, navigator, and pilots.
7. Report status of aircraft, systems, necessary on-board supplies and crews to Field Program Director.
8. Before take-off, brief the on-board GPS dropsonde operator on times and positions of drops.
9. Make sure each HRD flight crew member has a life vest.
10. Perform a headset operation check with all HRD flight crew members. Make sure everyone can hear and speak using the headset.

In-Flight

1. Confirm from AOC flight director that satellite data link is operative (information).
2. Confirm camera mode of operation.
3. Confirm data recording rate.
4. Request AOC flight director to leave radar in non-sector mode for initial Figure 4.
5. Once at IP, request AOC flight director adjust radar tilt to minimize sea clutter.
6. Complete Lead Project Scientist Form.
7. Check in occasionally with the flight director to make sure the mission is going as planned (i.e. turns are made when they are supposed to be made).

Post flight

1. Debrief scientific crew
2. Gather completed forms for mission and turn in to data manager at HRD.
3. Obtain a copy of the Dropsonde raw and processed files from the AVAPS operator on thumb drive.
4. Obtain a copy of the radar LF files from the radar technician on thumb drive.
5. Obtain a copy of the tar'ed radar TA files from the radar scientist on thumb drive.
6. Obtain a copy of serial flight data and raw NetCDF file on thumb drive from the data technician.
7. Obtain a copy of SFMR data on thumb drive from the data technician.
8. Obtain a copy of DMT data on thumb drive from the data technician.
9. Report landing time, aircraft, crew, and mission status to the Field Program Director.
10. Determine next mission status, if any, and brief crews as necessary
11. Prepare written mission summary using **Mission Summary** form.

Lead Project Scientist Check List

Storm or Project Murr Michael Experiment name TDR

Flight ID 1810 09 H1 Mission ID _____

A. Participants:

HRD		AOC	
Function	Participant	Function	Participant
Lead Project Scientist	<u>Rogers</u>	Flight Director	<u>Sears</u>
Radar/Workstation	<u>Flazelton</u>	Pilots	<u>Kibbey, Abitbol, Kahn</u>
		Navigator	<u>Richards</u>
Cloud Physics		Systems Engineer	<u>Peck</u>
		Data Technician	<u>Richards</u>
Dropwindsonde	<u>Sellwood</u>	Electronics Technician	<u>Paul</u>
AXBT/AXCP	<u>Jaines (UM)</u>	Other	
Photographer/Observer			
s/Guests			

B. Take-off and Landing Times and Locations:

Take-Off: 0750 UTC Location: KLAL
 Landing: 1537 UTC Location: KLAL

Number of Eye Penetrations: 5

C. Past and Forecast Storm Locations:

Date/Time	Latitude	Longitude	MSLP	Maximum Wind

D. Mission Briefing:

Conduct TDR mission into Hurricane Michael, an 80-kt hurricane in the SE Gulf. Michael is experiencing some westerly shear (moderate), and is currently steady-state, though it has strengthened 50 kt in a 36 h up to now. Large eye has not cleared out. Repeated convective bursts evident in eyewall, developing downshear and wrapping around upshear side. Fly radial 4, 1P on inside, and on SE side 105 nm leg bursts. Drop sondes at end, mid, RMW points, plus center. Drop BTs combo w/ smelers at all end, mid points. Drop CPs outside RMW at 6 radials (not S and W). Drop CTDs on 1st and 3rd center pass. If opportunity arises for CB module after pattern complet. Fly at 8000 ft pressure.

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Flight ID 181009M1 Mission ID _____

E. —Equipment Status (Up ↑, Down ↓, Not Available N/A, Not Used O)

Equipment	Pre-Flight	In-Flight	Post-Flight	# DATs / CDs / Expendables / Printouts
Radar/LF	✓			
Doppler Radar/TA	✓			
Cloud Physics	✓			
Data System	✓			
GPS sondes	✓			
AXBT/AXCP	✓			
Ozone instrument				
Workstation				
Cameras	✓			

REMARKS:

Lead Project Scientist Event Log

Date 10/9/18 Flight ID 181609.HI LPS Rogers

Time	Event	Position	Comments
0750	takeoff	KLAL	takeoff
0838	obs	near IP	IR imagery shows repeated CB development, initiating on WNE side, moving out on N, NW, SW sides; classic CB initiated and evolution in moderate shear
0839	drop 1, BT 1	at IP, 105 nmN of center	FL 25, SF 20 m/s some chop
0852	drop 2, STA	just outside midpt	dropped a little outside midpt, b/c it was just outside connecting; sample a little inflow; FL 30, SF 20-25 m
0858	obs	inland from N	in precip, all stratiform here
0903	CP 1	outside eyewall on N	
0906	drop 3	N RNW	FL 45, SF 40 m/s
0911	obs	in eye	eyewall looks open on NW side
0912	drop 4, CTDI	24° a' 85° 59'	center mark
0916	drop 5	S eyewall	FL 40, SF 30 m/s
0918	BT 3	S eyewall	
0923	drop 6, BT 4	S midpt	FL 30, SF 20 m/s 25.5 ° SST, in the cold eddy. Could explain why bursts are initiated, but then do not persist around storm, reduced to
0940	drop 7	S endpoint	FL 20, SF 15 m/s
0943	obs	on downwind leg	on upshear side, perhaps

USR; limited precip, perhaps some Cu on NW side of plane, but that's ~~limited~~ limited to

Lead Project Scientist Event Log

Date _____ Flight ID _____ LPS _____

Time	Event	Position	Comments
1012	obs	near E end point	on BS sub, good (help) mostly strat, though some growing Cu here from tail sweeps
1014	drop 8, BT5	E end pt	FL 25, SF 20 m/s 27.955
1024	obs	in bowl on F side	widespread strat precip some shallow/mid rate convection too
1027	drop 9, BT6	mid pt F	FL 40, SF 30 m/s
1032	CP2	outside E eyewall	
1036	drop 10	E eyewall	peak FL 50, SF 48 m/s
1040	drop 11, center	2425' 8605'	min extrop SLP 968
1044	drop 12, BT7	W eyewall	FL 55, SF 25 m/s, 28.355
1046	obs	W side outside eyewall	nearly devoid of precip here, except perhaps for anvil
1057	drop 13, BT8	W mid pt	FL 15, SF 12 m/s, 28.80
1105 1105	drop 14, BT9	W end pt	FL 12, SF 12 m/s, 28.70
1120	drop 15, BT10	SW end pt	FL 15, SF 12 m/s
1120	obs	SW end pt	radar analysis show altitude of peak w high, above 12 km; on upshear side; south (USP) side of storm showing more CB development
1132	drop 16, BT11	SW mid pt	FL 25, SF 20 m/s, eyewall still open on SW side; side
1139	CP3, drop 17	SW eyewall	after peak wind, peak amp was 38, SF 32 m/s

24.5/85.6



Lead Project Scientist Event Log

Date 10/9/18 Flight ID 181009H1 LPS Rogers

Time	Event	Position	Comments
1141	center drop 18, BT12	24°32' 86°10'	28.0°C
1146	drop 19	NE eyewall	FL 45, SF 35 m/s
1148	CP4	outside NE eyewall	
1150	obs	near NE midpt	strongest winds so far on E side, mostly strat. here
1155	drop 20, BT12	NE midpt	FL 35, SF 25 m/s
1208	drop 21, BT13	NE endpt	FL 25, SF 15 m/s
1243	drop 22, BT14	NW endpt	FL 22, SF 12 m/s, 29.0°C
1259	drop 23, BT15	NW midpt	FL 25, SF 20 m/s
1309	drop 24, CP5	NW eyewall	FL 45, SF 38 m/s (Peak)
1313	drop 25, center	center 24°46' 86°06'	
1317	drop 26	SE eyewall	FL 50, SF 38 m/s
1324	CP6	outside SE eyewall	
1332	pattern	on SE log	going to do a modified CB module, start end of outburst log, go downwind to 105 um/1090, then rebound to center, then outburst track out to 105 um, then home; IR scans at midpt, reg. at eyewall,
1343	drop 27	SE endpoint	FL 25, SF 12 m/s } BT core in NE eyewall
1402	pattern	E side ~ 90 um out	begin CB module, track 270
1411	drop 28	E midpt, CB module	FL 37, SF 24 m/s
1414	obs	in CB module	extensive strat, limited vertical extent, no obs above 10 km
1417	drop 29	E eyewall	FL 50, SF 40 m/s, getting brighter in eye

1424 center 24°54' 86°16'

1430 drop 30, BT16 CB module, NE eyewall

1434 obs in NE

1445 drop 31 (IR scan) NE midpoint

1452 end pattern

convective, getting to 14 km

Mission Summary

Storm name

YYMMDDA# Aircraft 4 RF

Scientific Crew (4 RF)

Lead Project Scientist Reyes
Radar Scientist Hazelton
Cloud Physics Scientist _____
Dropwindsonde Scientist Sollweck
Boundary-Layer Scientist Tommas (UM)
Workstation Scientist _____
Observers (affiliation) _____

Mission Briefing. (include sketch of proposed flight track or page #)

see previous

Mission Synopsis: (include plot of actual flight track) Plan mission as planned, plus added

a convective burst module. At end of outboard leg to SE, went downwind to a point ~90 nm E of center, then inbound to center, then outboard track 045 for 105 nm. Dropped sondes at mid and eyewall points on E, NE legs, IR scans at mid on NE. Dropped BT for combs in NE eyewall.

Evaluation. (did the experiment meet the proposed objectives?) Mission was a great success. Flew

4 passes for LMC, plus 5th pass for HRD (CB module). Storm is steadily intensifying even though it's asymmetric. Asym. may be reducing, though, as repeated cycles of CBs develop DSE, wrapped around DSE and onto west (upshear) side, presumably moistening mid levels as it wraps around. Shear may be reducing too, and higher OTC/SS7 environment also promoting deeper convection. Tilt also reduced to ~5 nm. Looks like this storm could be on the verge of an RF event. Strong updrafts apparent on upshear side inside RMM.

Problems: (list all problems)

No problems with mission.

Expendables used in mission.

GPS sondes: 32

AXBTs: 16

Sonobuoys: 6 CP, 2 CTDs