

Lead Project Scientist

Date 2019 0929

Flight ID 20190929 H 1

Storm or Project

Experiment name NESDIS OCEAN WINDS/
SFM2 EXPERIMENT

Mission ID AL13/LORENZO

TC IN SHEAF

Pre-flight

1. Participate in general mission briefing.
2. Determine specific mission and flight requirements for assigned aircraft.
3. Determine from AOC flight director/meteorologist whether aircraft has operational fix responsibility and the mission designation.
4. 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.
5. Meet with AOC flight director and navigator at least 3 hours before take-off for initial briefing.
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 drop times.
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. Complete Lead Project Scientist Form.
5. Check in 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 10-s flight listing from the AOC flight director. Turn in with completed forms.
4. Obtain a copy of the radar DAT tapes. Turn in with completed forms.
5. Obtain a copy of serial flight data on thumb drive. Turn in with completed forms.

[Note: all data removed from the aircraft by HRD personnel should be cleared with the AOC flight director.]

6. Report landing time, aircraft, crew, and mission status along with supplies (tapes, etc.) remaining aboard the aircraft to Field Program Director
7. Determine next mission status, if any, and brief crews as necessary.
8. Notify Field Program Director as to where you can be contacted and arrange for any further coordination required.
9. Prepare written mission summary using **Mission Summary** form.

Lead Project Scientist Check List

Storm or Project AL3 / LORENZO Experiment name NESDIS OCEAN WINDS
SEMPR VALIDATION
 Flight ID 20190929H1 Mission ID WF13A TC IN SHEAR

A. Participants:

Function	Participant	Function	Participant
Lead Project Scientist	ZAWISLAK	Flight Director	HOLMES
Radar	ALVEI	Pilot	KAIN
Workstation		Pilot	MITCHELL / ARIBOL
Cloud Physics		Navigator	RICHARDS (B)
Drosonde	SELLWOOD	Systems Engineer	
Drosonde		Data Technician	MASCARO
AXBT/AXCP	NESDIS OCEAN WINDS	Electronics Technicians	
Observer/Guest	CHANG		
Observer/Guest	ZELENAK		
Observer/Guest	SHO	Flight Engineer	DARBY / HURSTOCK

B. Take-off and Landing Times and Locations:

Take-Off: 1426 UTC Location: BARBADOS

Landing: 2342 UTC Location: BARBADOS

Number of Eye Penetrations: 3

C. Past and Forecast Storm Locations:

Date/Time	Latitude	Longitude	MSLP	Maximum Wind
29 / 0900 Z	25.1N	44.6W	925mb	135 kt
29 / 1800 Z	26.4N	44.2W		125 kt FCST
/				
/				
/				

MOTION:
10° at 9 k

FCST

D. Mission Briefing:

THE GOALS TODAY ARE TO SUPPORT NESDIS OCEAN WINDS, AND FOR HRD SEMPR VALIDATION AND MATURE STAGE OBJECTIVE, IF APPLICABLE.

FOR THE FIRST TIME SINCE PERLAS 2004, BOMBS 42 AND 43 WILL BE IN STORM AT THE SAME TIME. 42 WILL LEAD AT 8K6, 43 WILL FOLLOW 15-30 MIN LATER AT 10K1, FLYING THE SAME EQUALS PATTERN. THE GOAL IS TO GET FROM CONCURRENT MEASUREMENT FROM BOTH PLANKS.

THE PLAN IS FOR A BUTTERFLY. GOMU LEGS: 240 → 60, 360 - 180, 120 - 300. THE USE OF BOMB 43 MAY NOT HAPPEN BASED ON THE THE GIN U AND AIRBORNE PROBE WORK.

Storm or Project AU3/LIRENZO Experiment name MESOS OCEAN WINDS / SFR VALIDATION

Flight ID 20190929HJ

Mission ID NF13A

E. — Equipment Status (Up U, Down D, 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

Date 9/29/19

Flight ID 20190929 H1

LPS ZAWISLAW

Time	Event	Position	Comments
1426 Z	TAKOFF BGI		
1712 Z	ABOUT 45 MIN FROM IP		WE'LL BE STARTING THE TOR ANALYSIS EARLY SINCE WE'LL CAPTURE PRECIP COMING INTO THE IP.
			STARTING UP CALCULATING, SIMILAR PATTERNS, WHICH WILL ALLOW US TO COMPARE THE RADAR ECHOS WHICH HOSMT BEEN DONE W/ THE NEW SOLA STATE SYSTEMS
			THE STORM ITSELF LIKELY HAS AN EXPANDED WIND FIELD, BUT THE EYE IS CLEARER AND MORE RAGGED, W/ C SUGGEST THE STORM IS WEAKENING
1755 Z	NEARING IO	N43 IS JUST BEHIND US BY ABOUT 10 CM	
			SETTING UP OUR IP THEN TRY'LL DO THE SAME NO HUNTING OR CEE WHICH COULD HURT OUR TIMING.
1759	1 st SONDE #1	^{IN} 060° 04240° 060 26°11' / 45°31'	NOW DEPARTED IN BOUND, LESS PRECIP NE ON THE WEST SIDE, BUT SATELLITE DOES SUGGEST NEW CONVECTIVE BURST DEVELOPING ON WEST SIDE NOT MUCH RETURNS ON MMP, SHOULD BE ABLE TO KEEP TRACK MORE LIKE 45 AMU LEG.
1806 Z			PRETTY MUCH IN THE EYE AND VERY MUCH OPEN ON SOUTH AND WEST SIDES. INBOUND SEEM HS HIGHER THAN FL.
1810 Z	SONDE #2	074°1 26°25' / 44°23'	LOOKS TILTEN SFC WINDS DISAPPEAR LOW BUT FL DID NOT... MAMBE 20 FT WINDS CAME DOWN FROM THE NW TO SOUTH/SOUTHWEST
1813 Z	SONDE #3	1 st RMW 26°32' / 44°31'	2 NISOLU RAW TO
1813 Z	SONDE #4	2 nd RMW 26°33' / 44°31'	EINE SIDE
1818 Z	SONDE #5	IN RAINBAND 081105 RMW 26°41' / 43°49'	LOTS OF STRATIFORM RAIN ON NW SIDE JUST IN HEAVY STRATIFORM RAIN
1822 Z	SONDE #6 (MINI)	26°48' / 43°34'	IN RAINBAND NEARING RADIANT ON 060° WINDSPEED AT FL IS MUCH LOWER THAN SFC ON OUTBOUND

CTR #1
PSURF EXTRAD
GET DOWN
TO 951ms
INBOUND HAD
2 WIND PEAKS
HIGHER BEING
FURTHER OUT.
IN THIS AREA,
SFC Z FL WIND
26.4 / 44.4
FOR CTR CTR

1825 Z SONDE #7 26°53' / 43°21' ENDPOINT SONDE TO NE
182546 Z TURNING DOWNWIND

THE BAND WE WERE POINTING AT
DOWNWIND IS MOSTLY STRATIFORM
SO THE OUTBOUND STARTED AT WITH
SFC HIGHER THAN FL, BUT
SWITCHED MAKE CUMUL ENDPOINT
TO MARKEDLY HIGHER FL WINDS

OUTBOUND
TO 060
ON 060

Lead Project Scientist Event

TC IN SHEAR

Date 20190929

Flight ID 20190929H1 LPS Zawislock

Time	Event	Position	Comments
1800		27°11' / 44°25'	GENERAL TO COME DOWN FROM NUBS
			VERY EMPTY ON DOWNWINDS VERY FEW ECHO IS SHOWN - JUST ABOVE US AND BELOW
1840	SONDE #8 ^{INDIC ON 185} _{TO ENDPOINT}	27°9' / 44°24'	\$ IP TO POINT NOW AT ~4000 FEET FROM CTR SEMR HIGHER THAN FL SO EVEN OUTBOUND SEMR HIGHER THAN FL
1847	SONDE #9 ^{RMW IN CW} _{365'}	26°42' / 44°22'	SEC WIND HIGHER THAN FL 2 MESOS RMW DRIFT ON NORTH SIDE
1848	SONDE #10 ^{RMW} ₁₂	26°41' / 44°28'	
	CTR #2	26°29' / 44°22'	
	MARKER OPEN TO SOUTH AND WEST STILL		SO CTR IS EXPOSED UNDER ONLY SOME CONVECTION AROUND BUT MOSTLY STRATIF
			SEMR HIGHER THAN FL IN INNER CORE
1908	SONDE #11 ^{AT ENDPOINT} _{TO TURN SOUTH}	25°25' / 44°22'	CLOUDY, BUNDS, BUT NOT A LOT OF RETURNS SO LITTLE ECHO, BUT TURBULENCE → SHEAR?
	TURNING DOWNWIND TO SE AT FOR A 120° RADIAL	28°1' / 44°21'	
1914	SONDE #12 ^{ON DOWNWIND} _{TO SE}	25°38' / 43°58'	DROPPED ON DOWNWIND MESOS
1919	SONDE #13 ^{ON DOWNWIND} _{SEPARATE ENDPOINT} ^{CURT TO TURN} _{SONDE, BUT BEFORE THE TURN}	25°15' / 43°35'	MESOS IMPROVED SONDE AT ENDPOINT NOT TO HARD
1922	TURNE INBOUND ON 120°	26°11' / 43°88'	NOW INBOUND ON 120° 3000 FEET GETTING THROUGH A BND TRK 295° IN
1925	SONDE #14	26°17' / 43°41'	RMW MESOS HEADING INBOUND ON
1928	SONDE #15	26°23' / 43°55'	MESOS RMW 42 INBOUND
1931Z			PAINTER DEPART EQUAL CONVECTION
1936Z	CTR #3	26°35' / 44°22'	

CTR #2
SEMR CONSISTENT
MIX IN
INNER CORE
THAN FL.
SWITCHES
AT FURTHER
RADIAL

CTR #3
AGAIN SEMR
HIGHER THAN FL
ON SE SIDE
NO CHANGE
IN PRESENCE OF
SAME EXCESS
PRESSURE

26.58 / 44 37
FOR CTR
IN RANGE ANALYSIS
PEAK SEMR APPROX
80 KT
SEE ALSO 100 kt
AT FL
FURTHER OUT FROM TRK.

GET WEST
WINDS DOWN TO
SK AT FL
MARKER
SEC WINDS HIGHER
THAN FL AT
MARKER CTR, SO DEFINITELY A TILTED STREA
TURNING OUT TO BE A TC IN SHEAR EXPERIMENT

RMW
MOSTLY
STRATIF
INBOUND
TO SE

Mission Summary

Scientific Crew (42RF)

Lead Project Scientist ZAWISLAK
 Radar Scientist ALVEY
 Cloud Physics Scientist
 Dropwindsonde Scientist SELLWOOD
 Boundary-Layer Scientist
 Workstation Scientist
 Observers (affiliation)

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

TODAY'S MISSION INTO LORENZO IS COORDINATED W/ SIMULTANEOUS FLIGHT WITH NOAA 42 AND 43 W/ 49 AROUND THE STORM PRIOR TO OUR ORIGINAL HURRICANE LORENZO APPEAR TO BE WEAKENING. QUESTION IS HOW MUCH. LOOKING MORE RACED, POSSIBLY STRAIGHT.

Mission Synopsis: (include plot of actual flight track)

BOTH NOAA 42 AND 43 WILL FLY THE SAME PATTERN, A BUTTERFLY WITH 60 KM LOW RADII LEGS, 240 → 60, 360 → 180, 120 → 300. 42 WILL GO FIRST AND BE AT 8 AM P AND 43 WILL TRAIL 15 MIN BEHIND AT 10 AM. THIS WILL TO GET COMPARISONS FOR TOR SOLID STATE SYSTEM (FIRST TIME) AND COLLING SPAN/UMASS SPAN, WRAV AND WSRV MEASUREMENTS

Evaluation: (did the experiment meet the proposed objectives?)

OVERALL THE PATTERN WAS FLOWN COMPLETELY, AND PRACTICALLY. 43 WAS ALWAYS 15 MIN OR SO BEHIND AND FLEW EXACT COPY OF THE SAME TRACK OVERLAPPING. NOT MUCH DEVIATION REQUIRED. HERE ON 42 WE DID ALL THE DRIPS, ENDPOINTS (TO US), RAYS AND RAINBANDS FOR NERDIS. WE GOT BURNED AT 8 AM, BUT MAYBE AT 10 AM INTERESTING TO SEE SOME SEC WINDS CONSISTENTLY HIGHER THAN FL IN THE INNER CORE AND BASIN. FLIPPED OUTSIDE 300 KM FROM CR ALMOST 100 KT + AT OUTER RADII OF PATTERN, BUT ONLY HURRICANE FORCE AT SEC, 460-700. DOES MAKE SENSE, PERHAPS STARTING TO FEEL THE INFLUENCE OF SHEAR AS THE FIREWALL IS MOSTLY OPEN TO THE SW AND WEST. SO GOOD VALIDATION WORK WILL COME FROM THIS

Expendables used in mission:

	Deployed	Good	Bad
GPS sondes :	17	17	(6 4RD, 11 NERDIS)
AXBTs :			
Sonobuoys:			
UAVs			

SO GREAT MISSION, WELL COORDINATED B/W THE TWO PATTERNS OF OVERALL GREAT FOR SPAN VALIDATION, OCEAN WINDS, AND EVEN TC IN SURE, CONSIDERING WE HAD A MAJOR HURRICANE THAT WAS STARTING TO FEEL THE INFLUENCE OF SHEAR. FRICTIONAL SPIN DOWN W/ HIGH WINDS, BURN MAY BE FURTHER OUT. INSTRUMENTS GOT GREAT DATA

FL 100 km SEC
 HURRICANE FORCE OUT TO GO TO 200
 BROOKER WITH TAILS, BUT WINDS WEAKEN
 * GOOD OPPORTUNITY TO CHECK 42/43 CAPTURED AND IS GREAT FEED FROM RADAR PERSPECTIVE

→ FLEW ALMOST RIGHT ON TOP OF ECHOES
 → KALTIMETER WSRV WRAV UMSS SPAN