Lead Project Scientist

Date 9-28-19 **Flight ID** 20190928I1

Storm or Project Mission ID Lorenzo **Experiment name** NESDIS Ocean Winds / SFMR Validation

Pre-flight

- [x] 1. Participate in general mission briefing.
- [x] 2. Determine specific mission and flight requirements for assigned aircraft.
- [x] 3. Determine from AOC flight director/meteorologist whether aircraft has operational fix responsibility and the mission designation.
- [x] 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.
- [x] 5. Meet with AOC flight director and navigator at least 3 hours before take-off for initial briefing.
- [x] 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.
- [x] 7. Report status of aircraft, systems, necessary on-board supplies and crews to Field Program Director.
- [x] 8. Before take-off, brief the on-board GPS dropsonde operator on times and positions of drop times.
- [x] 9. Make sure each HRD flight crew member has a life vest.
- [x] 10. Perform a headset operation check with all HRD flight crew members. Make sure everyone can hear and speak using the headset.

In-Flight

- [x] 1. Confirm from AOC flight director that satellite data link is operative (information).
- [x] 2. Confirm camera mode of operation.
- [x] 3. Confirm data recording rate.
- [x] 4. Complete Lead Project Scientist Form.
- [x] 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.
- [x] 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 Lorenzo **Experiment name** NESDIS Ocean Winds / SFMR validation

Flight ID 20190928I1 **Mission ID** WD13A

A. Participants:

Function	Participant	Function	Participant
Lead Project Scientist	Holbach	Flight Director	Lundry / Flaherty
Radar	Holbach	Pilot	Didier, Rossi,
Workstation		Pilot	Legidakes
Cloud Physics		Navigator	Freeman
Dropsonde	Ryan	Systems Engineer	T. Richards
Dropsonde		Data Technician	Naeher
AXBT/AXCP		Electronics Technicians	McAlister
Observer/Guest	Hlywak		Sans Souci
NESDIS ~~Observer/Guest~~	Chang, Jelenak, Sanchez	Flight Engineer	Lalonde, Sanchez

B. Take-off and Landing Times and Locations:

Take-Off: 1404 UTC Location: TBPB

Landing: 2325 UTC Location: TBPB

Number of Eye Penetrations: 4

C. Past and Forecast Storm Locations:

Date/Time	Latitude	Longitude	MSLP	Maximum Wind
28/0900Z	21.4N	44.8W	957 mb	100 kt
28/1800Z	22.7N	44.8W		95 kt
29/0600Z	24.5N	44.7W		90 kt
29/1800Z	26.0N	44.2W		90 kt
30/0600Z	27.6N	43.5W		85 kt

D. Mission Briefing: Hurricane Lorenzo is currently a category 3 hurricane w/ max winds estimated at 100kts. The NHC said that the various satellite intensity estimates ranged from 77 to 110kts. MW imagery indicates that it is just completing an ERC + the new eyewall is estimated to be about 40-45 nmi wide. Lorenzo is in a region of light west-SW shear, but satellite imagery suggests that is not hindering it too much. Lorenzo is currently making its northward turn.

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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:

- SFMR stopped reporting around 1630Z, troubleshooting data system
- SE eyewall was open. On final outbound was still moderately turbulent.
- Last pass through eye, MMR indicates there may be several mesovorticies forming.
- SFMR 1-sec peaked at 60.7 M/s around when we hit a slightly more turbulent region.

Lead Project Scientist Event

Date **Flight ID** **LPS**

Time	Event	Position	Comments
1714Z	Loitering near IP	to troubleshoot	data system. After
	15 mins if data system is	still down we	
	will continue to IP &	use radar to fix	
	the center.		
~1720Z	data system	shut down	
1725Z	data system back up &	SFMR showing up	again
	(SFMR was still recording)		
1736Z	IP Sonde	22°45' 46°10'	HRD request
1745Z	IP sonde indicated	dry air in upper	portion of profil
1746Z	entering rain band	just outside eyewall	
1748Z	entering eyewall		
1752Z	mark center	center sonde	NHC request
1757Z	entering eyewall	outbound	
1812Z	EP	23°20' 43°37'	
1823Z	mini sonde	23°14' 44°12'	NESDIS
1826Z	mini sonde	23°8' 44°25'	NESDIS
1828Z	sonde	23°5' 44°31'	NESDIS
1829Z	sonde		NESDIS
1830Z	sonde	23°2' 44°4'	NESDIS
1849Z	passing over	sonde splash	23°13' 44°34'
1902	EP spoke1	23°41' 43°44'	
1914Z	mini sonde	23°21' 44°18'	NESDIS
1915Z	mini sonde	23°19' 44°21'	NESDIS
1917Z	sonde	23°15' 44°29'	NESDIS (bad)
1918Z	Sonde	23 15 4432	NESDIS
191843	sonde		NESDIS
191930	Sonde		NESDIS

Lead Project Scientist Event

Date **Flight ID** **LPS**

Time	Event	Position	Comments
1932 z	outbound to splash		
1936Z	sonde	23° 22' 44°43'	NESDIS
1937Z	sonde	23°24' 44°42'	NESDIS
193743	sonde	23°26' 44°41'	NESDIS
1938 Z	sonde	23°28' 44°40'	NESDIS
1945Z	turning downwind to line up with splash for inbound		
1948Z	inbound	23°57' 44°36'	
1955	mini		NESDIS
1955	mini		NESDIS
1956	mini		NESDIS
1956	mini		NESDIS
2005	mini		NESDIS
2006	mini		NESDIS
2014	end science	22°2' 45°18'	
2050	TDR ~~off~~		

Mission Summary

Scientific Crew (4 RF)
Lead Project Scientist Holbach
Radar Scientist Holbach / Gamache
Cloud Physics Scientist
Dropwindsonde Scientist
Boundary-Layer Scientist
Workstation Scientist
Observers (affiliation) Hlywiak (UMRSMAS)

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

The plan for today's mission is to come inbound from the west on a 090° track for 70 nm then fix the center & continue outbound for 50 nm. We will then come back inbound & begin an in-out pattern through the eyewall rotating downwind to overfly sonde splash locations. Legs will alternate between 50 & 80 nm.

Mission Synopsis: (include plot of actual flight track)

Given the time allotted in storm we flew inbound from the west, fixed the center & then flew 3 "spokes". On the first two inbound spoke legs sondes were released in rapid succession in the high gradient region of the eyewall & the overflown on the subsequent out bound. We released sondes on the final outbou on the N & overflew those on our final inbound.

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

This was an incredibly successful mission where we were able to collect collocated SFMR, UMASS SFMR, WSRA, & dropsonde data to help validate the SFMR units! Miss Piggy performed admirably on her welcome back flight!

Also, transmitted TDR data to EMC successfully

Problems:(list all problems)

Data systems issue approaching IP forced us to loiter for a little while before beginning inbound leg.
Minor bugs w/ ASPEN. iPad displays were freezing up.

Expendables used in mission:

	Deployed (regular / mini)	Good	Bad	
GPS sondes :	14 (10)	14	0	11 transmitted
AXBTs :	0			
Sonobuoys:	0			
UAVs	0			