0609 2011

Lead Project Scientist

Preflight

1. Participate in general mission briefing.
2. Determine specific mission and flight requirements for assigned aircraft.
3. Determine from field program director whether aircraft has operational fix responsibility and discuss with AOC flight director/meteorologist unless briefed otherwise by field program director.
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.
5. 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.
6. Report status of aircraft, systems, necessary on-board supplies and crews to appropriate HRD operations center (MGOC in Miami).
7. Before take-off, brief the on-board GPS dropsonde operator on times and positions of drop times.
7. Make sure each HRD flight crew members have life vests
7. Perform a headset operation check with all HRD flight crew members. Make sure everyone can hear and speak using the headset.
8. Collect "mess" fee ($2.00) from all on-board HRD flight crew members.

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. Report landing time, aircraft, crew, and mission status along with supplies (tapes, *etc.*) remaining aboard the aircraft to MGOC.
3. Gather completed forms for mission and turn in at the appropriate operations center. [Note: all data removed from the aircraft by HRD personnel should be cleared with the AOC flight director.]
4. Obtain a copy of the 10-s flight listing from the AOC flight director. Turn in with completed forms.
5. Obtain a copy of the radar DAT tapes. Turn in with completed forms.
6. Obtain a copy of the all VHS videos form aircraft cameras (3-4 approx.). Turn in with completed forms.
7. Obtain a copy of CD with all flight data. Turn in with completed forms.
8. Determine next mission status, if any, and brief crews as necessary.
9. Notify MGOC as to where you can be contacted and arrange for any further coordination required.
10. Prepare written mission summary using **Mission Summary** form (due to Field Program Director a week after the flight).

Lead Project Scientist Check List

Storm or Project Helene **Experiment name** SALEX
Date 9/20/06 **Aircraft** N42RF **Flight ID** 20050920H1

A. Participants:

HRD		AOC	
Function	**Participant**	**Function**	**Participant**
Lead Project Scientist	Rogers	Flight Director	Mayeaux
Radar	Leighton	Pilots	Strong, Giammanco
Workstation	M.Black, Leighton	Navigator	Bishop
Cloud Physics	—	Systems Engineer	McMillan
Photographer/Observer /Guests	—	Data Technician	Olvey, Rasco
Dropwindsonde	M.Black	Electronics Technician	McMillan, Olvey, Rasco
AXBT/AXCP	—	Other	

B. Take-off and Landing Times and Locations:

Take-Off: 140634 UTC Location: TBPB

Landing: _____ UTC Location: TBPB

Number of Eye Penetrations: 2

C. Past and Forecast Storm Locations:

Date/Time	Latitude	Longitude	MSLP	Maximum Wind
20/09 Z	25.3	55.4		
20/18	26.4	56.3		
21/06	28.6	56.9		
21/18	31.0	56.7		
22/06	33.9	55.0		

D. Mission Briefing:

2-plane (1 P-3, 1 G-IV) SALEX mission into Helene, which is Cat-2 at moment. IP at a point ~200nm SW of storm. Fly SW-NE leg to center, then outbound leg to north, downwind to point NW of center, then inbound SE to center, outbound to point SE of center, RTB. Fly at 16,000 ft or higher. Drop at all turn points, mid points of legs, plus each center. Possible eyewall drop, and target any areas of dry air. Drop 4 GPS's at center and north and west of center.

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

Equipment	Pre-Flight	In-Flight	Post-Flight	# DATs / Cds /Expendables/ Printouts
Radar/LF	↑	TA↑, LF↓		
Doppler Radar/TA	↑	↑	↑	
Cloud Physics	—	—	—	
Data System	↑	↑	↑	
GPS sondes	↑	↑	↑	
AXBT/AXCP	↑	↑	↑	
Ozone instrument	↑	↑	↑	
Workstation	↑	↑	↑	
Videography	↑	↑	↑	

REMARKS:

Lead Project Scientist Event Log

Date 9/20/06 **Flight** 060920H1 **LPS** Rogers

Time	Event	Position	Comments
140634	takeoff	TBPB	takeoff from TBPB
161045	drop 1	100 nm from IP	before IP, RH ~20%, ws ~35kt
162505	drop 2	61 nm from IP	2nd drop, FL RH ~20%, ws 740kt, depth of dry layer extends lower
163928	IP	205 nm SW of eye	at IP, dry above 550, moist below
164045	drop 3	200 nm SW of eye	
164756	obs	168 nm SW eye	cirrus canopy, no clouds below
165022	drop 4	157 nm SW eye	FL RH 75%,
1645	climb		climb to 17,000 ft
164903	obs	160 nm SW eye	RH jumped from 40% to 75%
1654	obs	140 nm SW eye	going toward eye, FL, SF 64kt
1657	obs	127 nm SW eye	in RB, FL winds 72kt, SF 64kt
165820	drop 5	125 nm SW eye	drop just inside SW RB
1700	obs	113 nm SW eye	FL winds have shown two peaks, one at 1648 (64kt) and one at 165730 (72kt); no real peaks in SFMR winds; SFMR winds stronger than FL winds; SF 72kt, FL 56kt
171041	drop 6	66 nm SW eye	drop after outer eyewall, FL 56kt, SF 56kt

26.4 SST

Lead Project Scientist Event Log

Date 9/20/06 **Flight** 060920H1 **LPS** Rogers

Time	Event	Position	Comments
171238	obs	eye.	gone thru SW eyewall, weak winds, peak FL winds 56 kt, SF 50 kt, outer eyewall definitely taking over
171740	drop 7	center drop, BT	960 mb GPS, 25.83, 56.71, SST 26.4
172529	obs	NE eyewall	broad wind field
173300	drop 8	70 nm NE eye	
1736	obs	84 nm NE eye	FL winds > SF here, 72 kt FL 52 kt SF, in contrast to winds on SW side, which had SF > FL for a portion of inbound leg
174510	drop 9	124 nm NE eye	FL 64 kt, SF 52 kt
175810	obs	182 nm NE eye	broad cirrus canopy, scattered low-level Cu
180303	drop 10	204 nm NE eye	well outside of
181418	drop 11	254 nm NE eye	drop in dry slot on NE side dry slot diagnosed from sat TPW
181710	turn, drop 12	266 nm NE eye	drop at turn pt, just on edge of dry slot
182437	drop 13	NE quad.	
183358	drop 14, BT	N of storm	
184355	drop 15	NNW of storm, about 250 nm from center	just outside RB on WW side
190000	turn	NW of storm 290 nm	turn to track 148, into storm
190210	drop 16, BT	at NW turn point	27.55 T

30 Red Hd Goods
22.5N
60.0

27.0 59.5
drops

291 nm

30 55 W

30 03 N
59 33 W

Lead Project Scientist Event Log

* add LC to BT values

Date 9/20/06 **Flight** 060920H1 **LPS** Rogers

Time	Event	Position	Comments
191718	drop 17	225 nm NW eye	FL wind ~~52~~ kt, ~~SF 40 kt~~
192420	obs	195 nm NW eye	choppy here, FL 64 kt SF 32 kt
193517	drop 18, BT	145 nm NW eye	just b4 rainband, at midpt. of leg, FL 80kt, SF 50 kt, 26.7 SST
194920	obs	91 nm NW eye	FL winds showed peak of 84 kt at 193458 UTC, not in SF through
195007	drop 19	87 nm NW eye	FL 64 kt, SF 50 kt
200320	NW eyewall		peak FL 70kt, SF 65 kt
200440	drop 20	center, 26.14°N 56.83°W	
201347	obs	41 nm SE eye	FL winds much stronger than SF winds here
201745	drop 21	57 nm SE eye	FL 68kt, SF 45 kt
202616	drop 22	93 nm SE eye	FL 64 kt, SF 64 kt
2021	pattern	75 nm SE eye	climb to 20 kft
203327	drop 23	128 nm SE eye	FL 64 kt, SF 35 kt, in dry air again on SE side
203839	drop 24	154 nm SE eye	FL 56 kt, SF 32 kt
204015	turn	165 nm SE eye	turn to head toward base
204815	drop 25	165 nm SE eye	
205953	drop 26	SSE of storm	extra drops in dry air on ferry home
211301	drop 27	260 nm SSE of storm	last drop
2321	landing	TBPB	Land at TBPB

Mission Summary
Storm name
YYMMDDA# Aircraft 42RF

Scientific Crew (4 RF)

Lead Project Scientist Rogers
Radar Scientist Leighton / Black
Cloud Physics Scientist ——
Dropwindsonde Scientist Black / Leighton
Boundary-Layer Scientist ——
Workstation Scientist Black / Leighton
Observers ——

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

see mission briefing in pt. D

Mission Synopsis: (include plot of actual flight track)

executed track, except changed outbound str-N leg to track NNE. Dropped sondes uniformly all through pattern, at 1/4 points on all legs. Added sondes on NE side in conjunction w/ slot of dry air seen in TPW imagery. Cut short leg on SE side to avoid RB. Dropped extra sondes on ferry back in dry air SSE of storm.

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

Yes. Storm was considerably weaker today than 2 days ago (last SALEX mission). Shear had increased and evidence of dry air all around storm. RH's <60% on NE & NW side of storm w/in 120 nm, <60% on SW side w/in 90 nm. FL/SF wind ratios were <1 on SW side, ~1 on NW side, and >1 on SE & NE sides, suggesting shear b/w FL & surface. Despite FL+SF measurement peaks of 60 +65 kt, respectively, NHC kept storm at 90 kt based on 1st eye drop. Did relative weakening b/c of shear directly or dry air due to shear making vortex more vulnerable? This dataset may be able to answer that.

Problems:(list all problems)

Almost all sondes worked well, 1 BT did not drop. LF radar was not working.

Expendables used in mission:

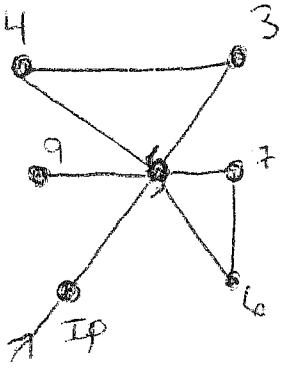
GPS sondes : 27
AXBTs : 3
Sonobuoys: ——

09Z = 22.3 49.6
18Z = 23.1 50.4
] 0.8 deg N/W per 9hr

2006 09 20 HI

Helene 5am

- initial motion 340/6
- pt 2 = 23.0 50.3 (~1645)
  pt 5 = 23.1 50.4 (~1945)
  pt 8 = 23.1 50.4 (~1945)



53.2 to center

(220nm) IP = 20.5

2 → 3 = NE 130nm

3 → 4 = due W 250nm

(197nm) 4 → Center ≅

Ctr → 6 = 130nM

6 → 7 = due N to storm latitude (~6

7 → Ctr

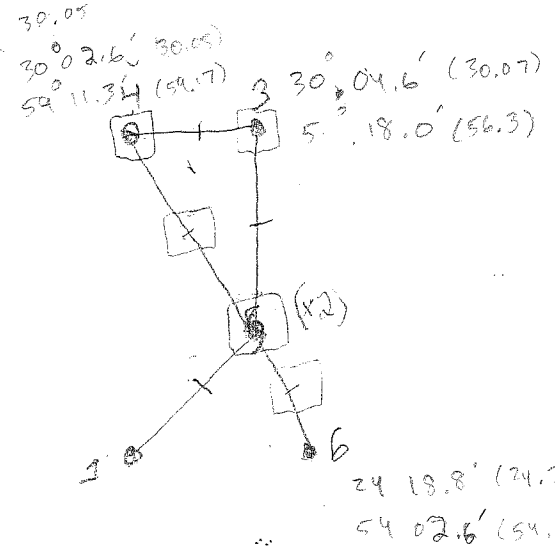
Ctr → 9 = 140nm (~23.1N 52.5W)

17Z = 26.3N 56.2W
18Z = 26.4 56.3W
19Z = 26.5 56.4

9Z = 25.3N 55.4W

Wed Sep 20

□ = AXBT



IP = 24.0 59.0 [2.5hr] - 200nm

IP → 2 (center #1) 26.3 56.2

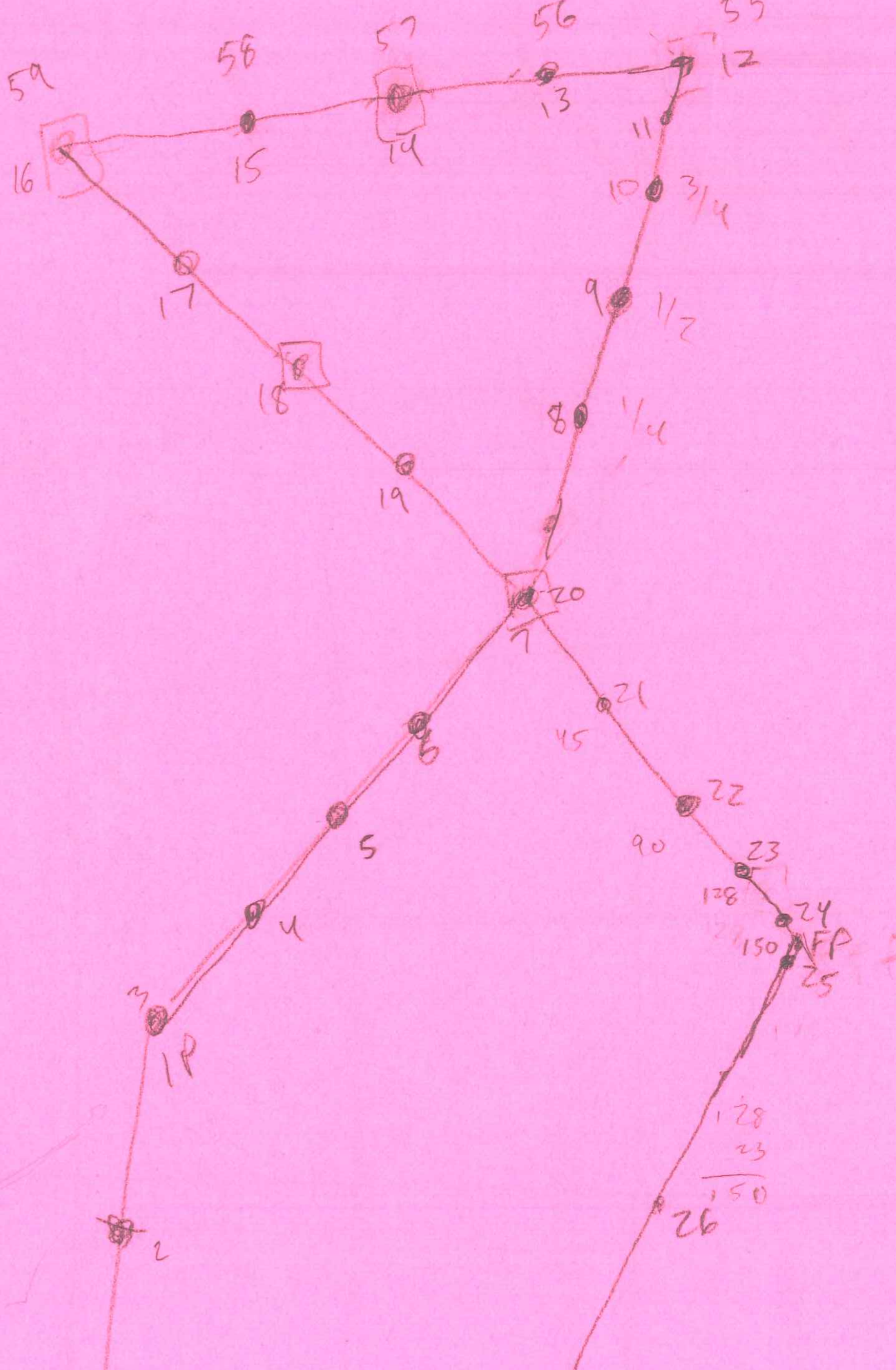
2 → 3 220 nM 30.1 56.3

3 → 4 150nM 30.1 59.2

4 → 5 (center #2) 26.5 56.4 (~250nm)

5 → 6 175nM (135°) 24.3 54.0

~ 6.5 hr


59
58
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56
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3/4
17
9
1/2
18
8
1/4
19
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7
21
45
6
22
5
90
23
128
24
150
FP
25
4
3
1P
128
23
150
26
2
27
1

20060920H1