Rug45
050911I1

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 Ophelia **Experiment name** RAINEX/IFEX
Date 9/11/05 **Aircraft** N43RF **Flight ID** 050911I1

A. Participants:

HRD		AOC	
Function	**Participant**	**Function**	**Participant**
Lead Project Scientist	Rogers	Flight Director	Mayeaux
Radar	Marks/Small	Pilots	Telaset, Silah, Choy
Workstation	Aberson/Dunion	Navigator	Brakeb
Cloud Physics	———	Systems Engineer	Lynch
Photographer/Observer /Guests	Jorgensen, Nolan	Data Technician	San Soucie, Torg
Dropwindsonde	Aberson/Dunion	Electronics Technician	Torg
AXBT/AXCP	Nolan	Other	

B. Take-off and Landing Times and Locations:

Take-Off: 1455 UTC Location: MacDill

Landing: 2345 UTC Location: MacDill

Number of Eye Penetrations: 2

C. Past and Forecast Storm Locations:

Date/Time	Latitude	Longitude	MSLP	Maximum Wind

D. Mission Briefing: RAINEX/IFEX mission into Hurricane Ophelia. Fly initial fig.-4 pattern, ~~leg~~ length, starting on SW side of storm. Drop sondes at turn points, at outer edge of eyewall, ~~and~~ in middle of eyewall, and at center of storm. At completion of fig. 4, set up for coordination with NRL on east side of storm (likely on east): Fly RAINEX rainband pattern, with N3 either on inner ~~or~~ of outer edge of eyewall. Drop sondes at end points, mid point of each downwind leg. Drop BT's at turn points, eyewall drop, and end points of a rainband leg. Try to maintain closest distance to rainband, about 10-15 km. Fly at 12,000 ft., if needed, descend to 8000 ft.

E. —Equipment Status (Up ↑, Down ↓, Not Available —, 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	↑	↑	↑	
Videography	↑	↑	↑	

REMARKS:

Lead Project Scientist Event Log

Date 9/11/05 **Flight** 050911I1 **LPS** Rogers

	Time	Event	Position	Comments
	1455	takeoff	MacDill AFB	takeoff from MacD II, proceeding to IP 100 nm SW of center.
	1526	obs	230 nm from IP, 24° 17' 81° 7'	not much convection on LF yet, but there is convection breaking out b/w 30 & 31 N
	1540	AF fix	170 nm from IP	AF fix 31° 35' 75° 42', zero movement from previous fix
	1610	obs	28 nm SW of IP	storm visible on LF, convection on W side, possible concentric eyewalls, nice bands wrapping around E side, NE, N side
	1615	flight	before IP	Problems w/ LF transmission may be big on it
	1616	pattern	at IP	at IP, turn to track 045
H	1616	drop 1, combo	at IP	FL 32 kt, SF 30 kt, SST 27.7°
	1621	obs	82 nm SW of eye	small eye, about 30-40 land diameter
	1626	obs	60 nm SW of eye	went through outer band, FL winds peaked at 64 kt, now going through 2nd band
	1627	obs	45 nm S W of eye	beautiful banding features present on LF, high reflectivity at beginning of band SSW of storm, this band wraps all the way around E, N, then to NW side of storm
R	1633	drop 2, combo	30 nm SW of eye, outer edge	FL 62 kt, SF 42 kt, SST 23°
R	1636	drop 3	middle of eyewall	FL 50 kt, SF 44 kt

30° 24' 77 05' IP

32 47 NW 77 06

32 47 NE 74 18

30 25 74 20

Lead Project Scientist Event Log

Date 9/11/05 **Flight** 050911I1 **LPS** Rogers

	Time	Event	Position	Comments
R	1638	fix, drop 4	31° 39' 75° 58'	extrap SLP 973 mb, GPS 978 mb
R	1642	drop 5	middle of eyewall on NE	FL 70 kt, SF 63 kt
R	1644	drop 6, BT	outer edge of NE eyewall	FL 60 kt, SF 55 kt, SST 25.1 C, MD
	1652	obs	65 nm NE of center	going thru complex of bands on NE side
	1704	turn	100 nm NE of eye	turn to track 271, short downwind leg
H	1705	drop 7, BT	100 nm NE of eye	FL 40 kt, SF 35 kt, no SST
	1708	obs	on downwind leg	high ref. inband to
29.3 NRL 74.8 IP	1715	obs	120 nm NNE of eye	solid band to our south, isolated cells of convection forming north, choppy here
A	1721	drop 8 (Aoc drop)	100 nm NNW of ctr	FL 52 kt, SF 44 kt
	1735	turn	100 nm NW of ctr	turn to track 135
H	1735	drop 9, BT	100 nm NW of ctr	FL 48 kt, SF 42 kt, SST 28.1; deep ML
30 deg 10 min 72 deg 55 min ↓ NRL IP from LF	1747	obs	50 nm NW of eye	enter outer band on NW side, multiple bands spaced about 5-10 nm apart
R	1756	drop 10, BT	15 nm NW of eye	FL 70 kt, SF 50 kt, SST no SST * no drop at middle of eyewall *
R	1800	fix, drop 11	31° 26' 75° 56'	extrap SLP 978, GPS 977
R	1804	drop 12	eyewall (middle)	FL 62 kt, SF 50 kt.
R	1805	drop 13, BT	SE eyewall (outer edge)	FL 58 kt, SF 46 kt, no SST
	1819	pattern	80 nm SE of ctr	setting up for coord. w/ NRL, starting on outside of band
H	1820	drop 14, BT	85 nm SE of ctr	FL 62 kt, SF 32 kt, 27.7°
	1845	pattern	N of center	descend to 10 kft, NRL had icing at 14 kft
R	1903	drop 15, BT	beginning of upwind inbound leg	FL 56 kt, SF 54 kt, SST 26.5°

Lead Project Scientist Event Log

Date 9/11/05 **Flight** 050911I1 **LPS** Rogers

Time	Event	Position	Comments
1935	pattern	on upwind leg of Rainband	cutting short upwind leg, turning at 30° 30′ 75° 18′, turn downwind
			Uncoord. leg w/ NRL
1941	pattern	end of upwind leg	turning to reverse track
R 1945	drop 16, BT	beginning of downwind leg	
R 1946	drop 17 (backup)	backup	FL 58kt, SF 40kt, SST 26.3, 20s MLD
1959	radar	NE of storm	nice banding on N, NE side,
			flying w/in 10-15 km of nice
			band now, LF ref. of 35 dBZ, IB
			ref. of 32-36 dBZ, many
			strat. rain
30 30 R 2003	drop 18	NE of storm, on	FL 48kt, SF 54kt
		inner edge of band	
75 18 2007	pattern	45 nm NNE of storm	following along inner edge
			of band
R 2011	drop 19	50 nm N of storm	FL 48kt, SF 52 kt
2019	obs	50 nm NW of storm	nice double-banded structure
		on NW side of storm	, about a 5 nm separation
R 2023	drop 20	50 nm W of storm	FL 58kt, SF 46 kt
2030	pattern	20 nm SW of eye	End of downwind leg, turn
			reverse track to follow band
			upwind, coordinating w/ NRL
			upwind for a
R 2032	drop 21	20 nm SW of eye	FL 54kt, headwind
2036	pattern	SW of eye	NRL 23 nm left of 43
2044	obs	W of eye	rainband diverges traveling upwind,
		NRL following	outer edge of outer RB,

Trying to see if NRL will come to the outer edge of the inner RB

Lead Project Scientist Event Log

Date 9/11/05 **Flight** 050911I1 **LPS** Rogers

	Time	Event	Position	Comments
	2110	turn	160nm NE of eye	end of upwind leg, reverse track to catch up with NRL
R	2113	drop 22	160 NM NE of eye, beginning of downwind leg	FL 52kt.
	2124	obs	50 nm NW of eye	FL 90kt
R	2129	drop 23	50 nm W of eye	FL 58kt
R	2143	drop 24	50nm S of eye	FL 54 kt
	2157	turn	SW of eye	reverse track, coordinated w/ NRL idoing downwind leg around to E side of storm
R	2155	drop 25	S of eye, at beginning of downwind leg w/ NRL	FL 52kt
	2125	radar	SE of eye	eye open on S side, primary band wrapping form SE to S to SW to W to NW to N to NE; that is the band we've been targeting this entire mission
R	2207	drop 26	SE of eye, end of downwind leg coordination	FL 60 kt
	2209	pattern	E of eye	end of downwind leg, trading due west into eye, peak FL winds 60 kt, SF 45kt
	2213	fix	31°14' 76°05'	extrap SLP 974, heading home now
	2345	land	MacDill	land at MacDill

21 R
4 H
1 A

Mission Summary

Storm name

YYMMDDA# Aircraft 43 RF

Scientific Crew (43RF)

Lead Project Scientist Rogers
Radar Scientist Marks
Cloud Physics Scientist —
Dropwindsonde Scientist Aberson / Dunion
Boundary-Layer Scientist —
Workstation Scientist Aberson / Dunion
Observers —

Mission Briefing: (include sketch of proposed flight track or page #) RAINEX/IFEX mission into Ophelia. (See previous page for briefing).

Mission Synopsis: (include plot of actual flight track) Flew fig. 4 at 12 kft., LF was not transmitting for much of this pattern. Set up for coord. w/ NRL. Storm was steady intensity, but constantly-changing structure. Eyewall was generally open on S and SE side. Multiple RB's wrapping around SE, E, NE, N, around to S side, but particularly in the N quad. After fig. 4, flew series of upwind and downwind legs along inner edge of PRB extending from S around clockwise to E side. Finished on the SE side of storm, inside inner band, tracked into center and home.

Evaluation: (did the experiment meet the proposed objectives?) Experiment went well. Flew fig. 4 initially, then set up on E side for PRB work. Initial cordination was confusing, but established good coord. once nav's started communicating directly. Flew several upwind/downwind legs on same PRB. Several of these were very well-coord., providing quad-Doppler coverage. Should be a good dataset for a system with multiple bands and rapidly-evolving features, even though it remains a Cat-1 storm primarily b/c of cool water and wak-to-moderate shear.

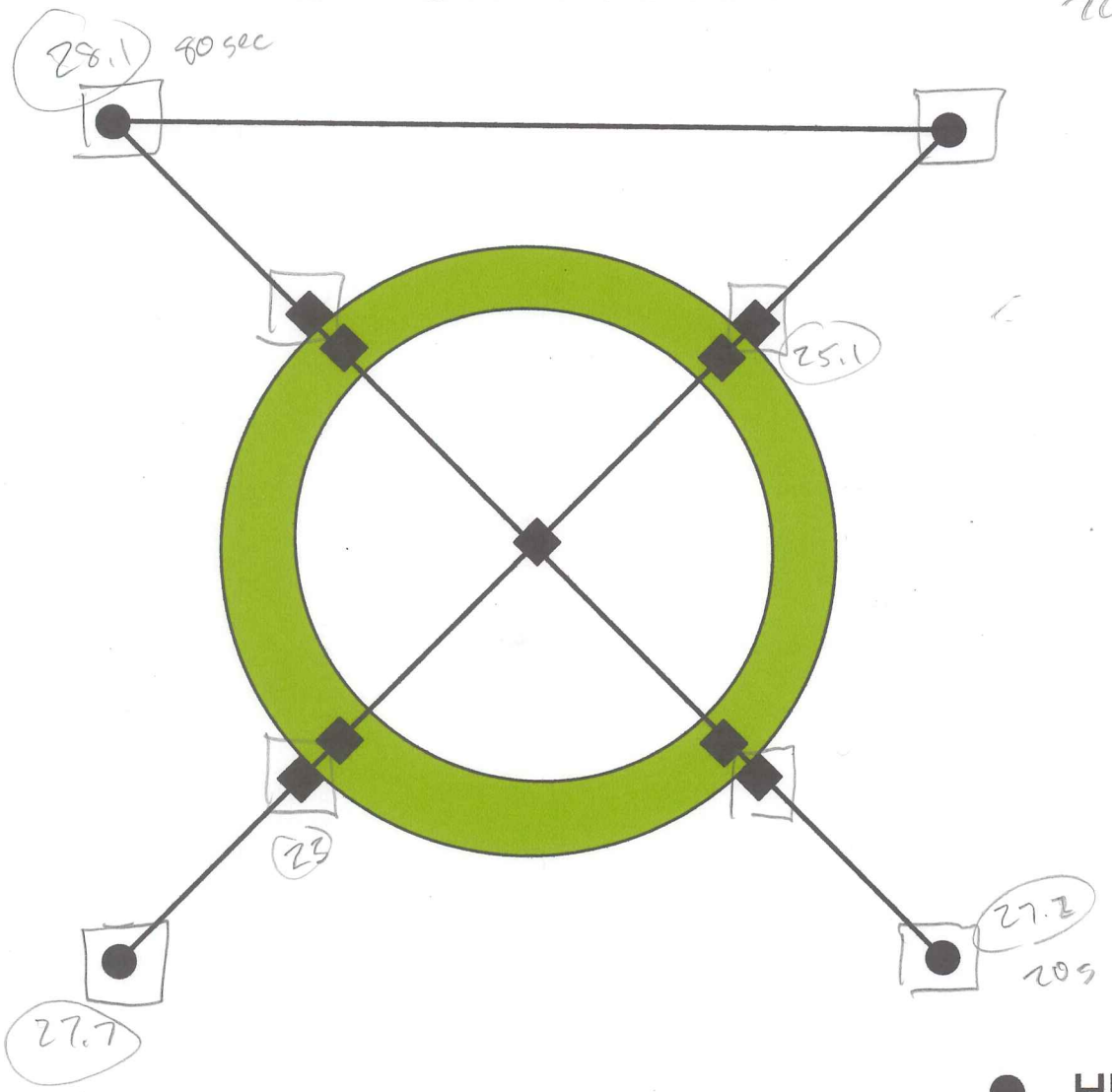
Problems:(list all problems)

No major problems. 24 of 26 sondes worked well. 7 of 10 BT's worked. SFMR compared favorably w/ drops and visually. Cloud physics worked well.

Expendables used in mission:

GPS sondes : 26 total (21 RAINEX, 4 HRD, TAOC)
AXBTs : 10
Sonobuoys: 0

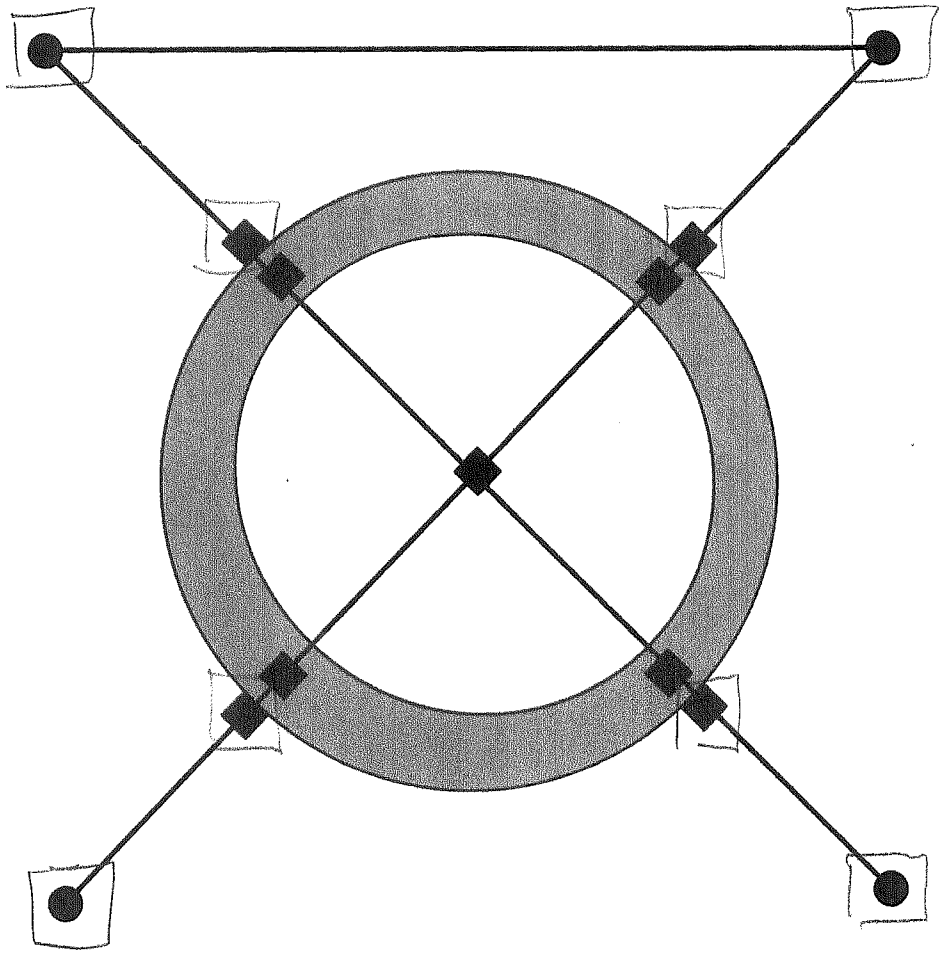
N43RF figure-4 drop pattern



Note: 100 nm leg length

Option 1: strong storm

N43RF figure-4 drop pattern



● HRD drop

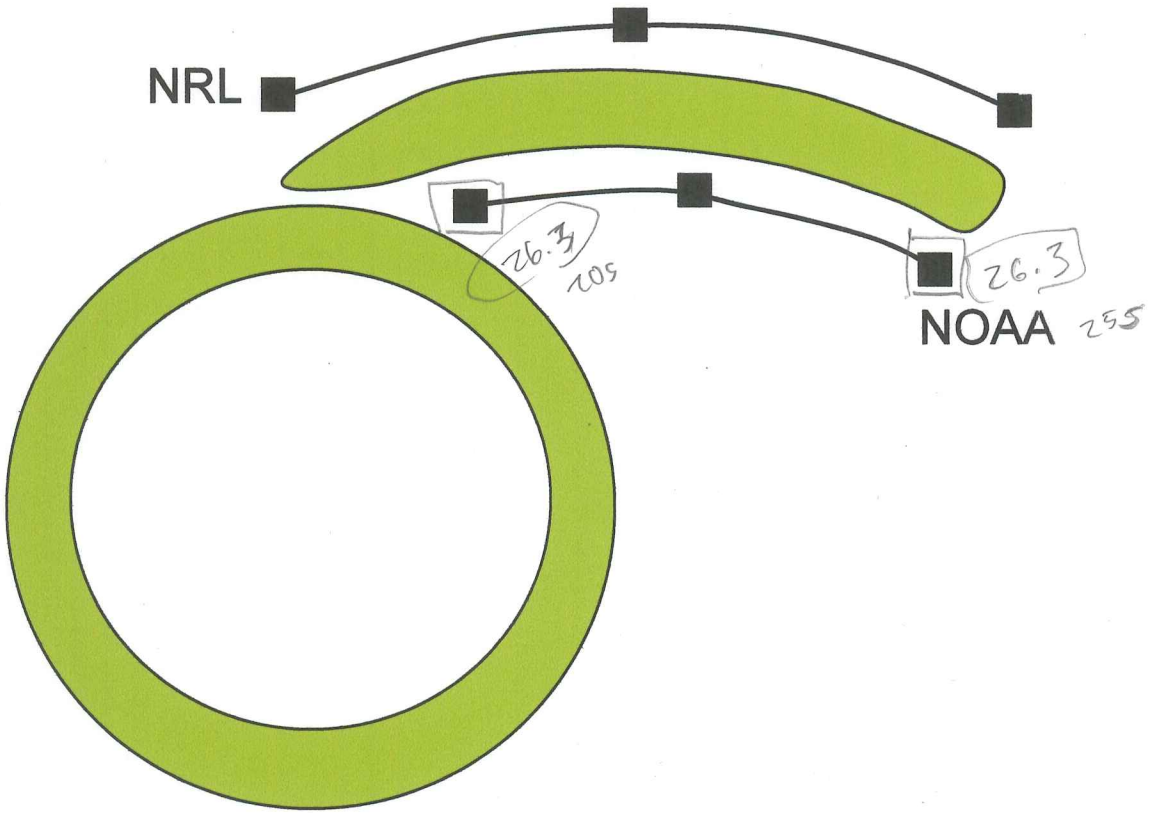
■ RAINEX drop

□ AXBT drop

Note: 100 nm leg length

Option 1: strong storm

Rainband drop pattern

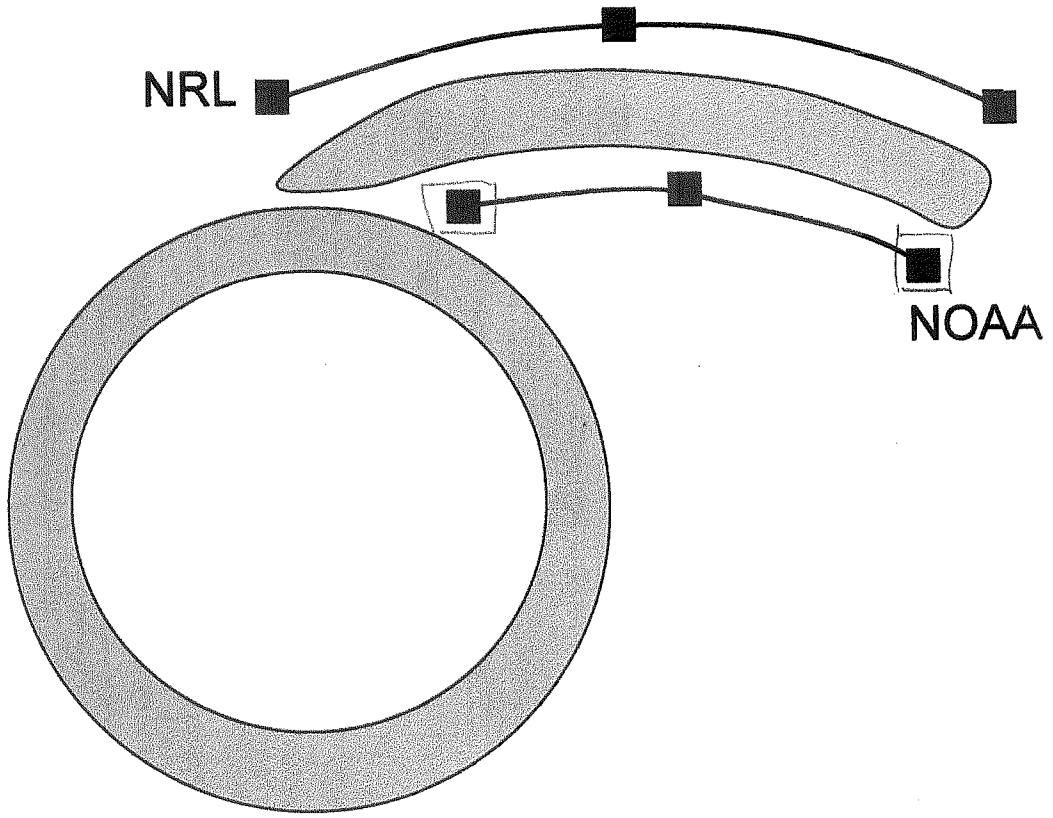


Option 1: strong storm

■ RAINEX drop

□ AXBT drop

Rainband drop pattern



Option 1: strong storm

■ RAINEX drop

□ AXBT drop

Hurricane Ophelia 050911i