# Lead Project Scientist

**Storm or Project** NATE **Experiment type** AIPEX
**Flight ID** 20170006H1 **Mission ID** WB16A

## 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 occasionaly 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.

✓ AXBT

## Lead Project Scientist Check List

**Storm or Project** NATE **Experiment name** AIPEX

**Flight ID** 20171006H2 **Mission ID** W816A

**A. Participants:**

| HRD | | AOC | |
|---|---|---|---|
| **Function** | **Participant** | **Function** | **Participant** |
| Lead Project Scientist | ZAWISLAK | Flight Director | HOLMES |
| Radar/Workstation | HOLBACH (GRND: CAMPCHER) | Pilots | KIBBEY ROSSI |
| | | Navigator | FREEMAN GRASSO |
| Cloud Physics | | Systems Engineer | PEEK / LYNCH |
| DWL | KLOTZ | Data Technician | LYNCH |
| Dropwindsonde | SELLWOOD | Electronics Technician | |
| AXBT/AXCP | WADLER (GRSMAS) | Other | |
| Photographer/Observers/Guests | | AVAPS: UNDERWOOD | |

**B. Take-off and Landing Times and Locations:**

Take-Off: 0759 UTC Location: LAL

Landing: 1616 UTC Location: LAL

Number of Eye Penetrations: 0

**C. Past and Forecast Storm Locations:**

| Date/Time | Latitude | Longitude | MSLP | Maximum Wind |
|---|---|---|---|---|
| 06Z / NHC | 16.1 N | 84.8 W | 999 mb | 40 KT |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

87 15

**D. Mission Briefing:**

5 MIN CALIBRATION | STRAIGHT/LEVEL | OVER LAND, NO CLOUDS / NO PRECIP MIGHT BE TOUGH TO GET THE RIGHT SFC CONDITIONS.

SO WE'LL DO AN INITIAL FIG.4 → NTOS, EITHER TO GET VORTEX SURVEY. - THIS WILL BE AT 10KFT, ALTHOUGH TERRAIN CLEARANCE TO THE SOUTH WOULD REQUIRE US TO GO TO 12.5KFT. WE'LL THEN FIND A CLEAR REGION TO THE WEST TO DO CIRCLES. FOR SFMR, 3 AT 35° / 5 AT 45°. THEN EITHER GO HIGH FOR CIRCUMNAV ABOVE 25 KFT UPSHEAR OR DO ANOTHER PASS AT 10KFT WE'LL DO DROPS AFT/SONDES AT TURN, MID, OTF THEN ATTempt 1 FOR SFMR CIRCLES. 15 AVAPS ON BOARD TO GET OUT.

DECIDE BY WAY? AS TO THE FOLLOWING MODULES.

**Storm or Project** NATE **Experiment name** AIPEX

**Flight ID** 20171006 H1 **Mission ID** WB16A NATE

**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:**

DWL COMPUTER DID NOT GET POWER, SO THERE WILL BE NO DATA COLLECTION TODAY W/ IT.

## Lead Project Scientist Event Log

Date 10/06/17 Flight ID 20171006H1 LPS ZAWISLAK

| Time | Event | Position | Comments | |
|---|---|---|---|---|
| 0759 Z | T/O | | | |
| 0821 Z | | IN TRANSIT | NATE IS OFFSHORE. SEEMS TO BE DEEP CONVECTION DEVELOPING | |
| | | | ALL AROUND THE CTR., SO WE'LL | |
| | | | SEE IF THE CIRCUMNAV WILL | |
| | | | BE POSSIBLE. IF THE CONVECTION | |
| | | | CONTINUES AROUND THE CTR, WE | |
| | | | COULD SEE THIS THING | |
| | | | ORGANIZE A BIT AND INTENSIFY | |
| | | | SOME TODAY BEFORE GOING | |
| | | | INTO HIGHER VWSHEAR. | |
| 0855 Z | | IN TRANSIT. | CAN GO OVER HONDURAS | |
| | | | BUT WE'LL BE AT IRF ALT | |
| | | | TO BE CLEAR OF TERRAIN | |
| | | | SO THAT'S A BIT HIGH SO | |
| | | | WE'LL STICK W/ LOWER | |
| | | | ENTRY FOR THE LEG AND | |
| | | | TREAT THE WAYPOINT LOCATION | |
| | | | AS THE END POINT. | |
| | | | THAT WILL GIVE US AN EXTRA BT, | |
| | | | WHICH WILL FOLD IN | |
| | | | CONVECTIVE DOWNDRAFT AREA | |
| | | | OR ENVIRON. FIND SOME HIGHER | |
| | | | WINDS. NO AVBT ON 2ND CTR. | |
| 1000Z | | DESCEND TO IP | VERY DEEP CONVECTION TO S OF | |
| | | | CTR. SOME DEVELOPMENT NORTH | |
| | | | GONNA HAVE TO DO OUR BEST TO | |
| | | | GET ON THE RIGHT LONG. TO GO. | |
| | | | BEST GUESS, SINCE NOTHING ON UP THERE. | |
| 1008 Z | IP | 18°56' / 85°11' | ARRIVE AT IP 1 TRK 090° RADIAL. 1ST COMBO | SONDE #1 BT #1 |
| 1011 Z | | 18°42' / 85°11' | REQUIRED BACKUP TO IP. | SONDE #2 BT #2 |
| 1021 Z | DROP POINT | 17°39' / 85°12' | MIDPOINT INBOUND | SONDE #3 BT #3 |
| | | | GOING TO MISS THE CTR ON | |
| | | | WEST SIDE. WE DID 130° | |
| | | | TURNOUT AND THEN JUST WEST | |
| | | | OF THE CTR PUSHED A BIT CLOSER, | |
| | | | ABOUT 30 NM TO OUR EAST. | |
| | | | SOME LIGHT BANDING AROUND | |
| | | | THE CTR. | |
| | | | PASSING SW OF CTR. GET A "CTR" | |
| | | | DROP. | |
| 1035Z | "CTR" | 17°10' / 84°45' | "I CTR" DROP | SONDE #4 BT #3 |
| | | 17°36 N / 85°9'W | | |
| | | 84 36' | HEWER PRECIP TO SOUTH. BETTER | |
| | | | COVERAGE, LOWER dBZ. | |

ACCORDING TO LR JUST TO OUR WEST.

# Lead Project Scientist Event Log

Date 10/6/17 Flight ID 20171006H1 LPS ZAWISLAK

| Time | Event | Position | Comments | |
|---|---|---|---|---|
| 1049Z | MIDPOINT OUT | 16°19'/84°38' | MIDPOINT OF OUTBOUND ON 180°. | SONDE #5 BT #4 |
| | | | IT ALMOST LOOKS LIKE THE SHEAR IS FROM THE NE | |
| | | | CONTINUE SOUTH ANOTHER 20-30 NMI TO CUBIT TIRED | |
| | | | TURN DOWNWIND FOR WP # 3 | |
| 1054Z | TURN AT WP #2 | 15°58'N/84°35' | TURN TOWARDS DOWNWIND TO WP # 3 | |
| 1109Z | MID OF DOWNWIND | 16°49'N/83°56' | MIDPOINT DROP ADDED TO DOWNWIND | SONDE #6 BT #5 |
| | | | ON EAST SIDE OF STORM. GETTING 50 KT WINDS AT FL. | |
| 1124Z | | 17°40'/83°26' | JUST PULSATING CUMULUS FAST, VERY UNABLE HERE TO EAST | |
| | | | 34 KT WINDS SFMR WE HERE ~90 NMI FROM CTR TO COAST | |
| 1126Z | WP # 3 | 17°49'/83°23' | WP # 3 | |
| 1127Z | | | WP #3 DROP AFTER TURN. JUST INFLOW CLOUD. NOTHING | SONDE #7 BT # 6 |
| | | | FLW THERE/US, UNTIL CIRRUS ABOVE. | |
| | | | LOOKS LIKE A DRY SLOT HERE THEORETICALLY WHERE DOWNSHEAR | |
| | | | SO IS THIS SUBSIDENCE FROM UPPER AIR WE'RE BEING WRAPPED? | |
| | | | OR JUST A DRY SLOT? | |
| | INBOUND | | SO FAR PEAK WIND 86 KT SFMR 57 KT FL. | |
| | | | SEE SOME NICE WAVE ACTION AND ABOUT 10° CLICK OFF OUR | |
| | | | NOW SOME DEEP CONGESTUS BUILDING UPWARD | |
| | INBOUND WITH TO CTR | 17°54'/83°53' | SOME TOWERING AHEAD 70 NM TO EAST OF CTR. A LOT | |
| | | | GOT UP TO 38K FT FL. 57 KT 75 NMI OUT | |
| | | | GOING THROUGH RAIN AT OUR ALTITUDE. RAINING CONGESTUS. | |
| | | | DEEP SIDE → GROWING TOWER. | |
| 1140Z | MIDPOINT DROP | INBOUND TO CTR 17°52'/84°20' | MIDPOINT SONDE TO CTR #2 MOSTLY SCATTERED CLOUD BELOW, | SONDE #8 BT #7 |
| | | | THOUGH SOME CLOUD AT OUR ALTITUDE | |
| 1145Z | "CTR" | 17°52'/84°45' | "CTR" JUST TO OUR SOUTH | SONDE #9 BT # 8 |
| | | | TARGETING THE MID DROP TO BE JUST AFTER THAT, NEAR | |
| | | [redacted]/ | CONVECTION. COLDER BE SOME COLD POOLING NEAR IT FROM CONVECTION - END OF USL REGION | |
| 1156Z | "MIDPOINT" OUTBOUND. | 17°51'N/85°33'W | "MIDPOINT" ON OUTBOUND. TRY TO GET IT CLOSER TO CONVECTION WHERE SURGE MIGHT BE BEING | SONDE 10 BT 9 |
| | 17 42'/84 41° ESTIMATE CTR #2 | | STILL RAINING AT DROP | |

## Lead Project Scientist Event Log

Date _____ Flight ID_____ LPS _____

| Time | Event | Position | Comments | |
|---|---|---|---|---|
| 1205Z | OUTBOUND TO WP #4 | | DOESN'T LOOK LIKE WE'RE GOING TO GET THE WIND UP THIS SIDE. | |
| | | | | |
| 1209Z | WP #4 | 17°51' / 86°35' | NO CIRCLES WP ON THIS SIDE. | SONDE #11 BT # 10 |
| | | | JUST DON'T HAVE THE WINDS ~ 10-11 MS WINDS | |
| | | | ON THIS DOWNWIND, AND SUBSEQUENT INBOUND, WE'LL | |
| | | | BE PRETTY CLOSE TO THE SHIPS SHEAR VECTOR | |
| | | | WE'LL TRY TO GET WINDS ON THE EAST / NORTHEAST SIDE. | |
| | | | JUST TOO MUCH CLOUD AT 25 KFT TO DO CIRCUMNAV. | |
| | | | → CONTEMPLATING TRYING TO GET ANOTHER FIG. 4 ROTATED | |
| | | | ALTHOUGH QUITE ABBREVIATED. ~5 NM IN/OUT LEGS | |
| 1228Z | | | YEAH, THE 5 NM OUT / DOWNWIND, SOME ON 315° / MOM COMBY | |
| | | | INBOUND THEN CTR OUT TO WX FOR CIRCLES. | |
| 1231Z | WP #5 (NEW) TO SW 225° | 16°34' / 85° 40' | DRUM TO SW CLEAR BELOW A/C | SONDE # 12 BT 11 |
| 1245Z | MIDPOINT ON 225° TO CTR | / | MIDPOINT → JUST CUT THROUGH CONVECTION | SONDE # 13 RELEASE |
| | | | NEARING CTR AGAIN → GETTING CLEARER AIR BEHIND. ANVIL | |
| | | | ABOVE, SCATTERED CLOUDS BELOW | |
| 1257Z | " CTR " 3 | 18°0' / 84°30' | MISSED TO BE A BIT. DESPITE STAYING ON 35°. SO RECIEVED | SONDE #14 BT 12 |
| | | | CUMBO HERE FOR "CTR 3" EL WINDS STARTED UP. | |
| 1303Z | OUTBOUND TO WP #6 | | OUT ON 035° ~ 30 NM. 40 KT SFMR WIND | |
| | | | CONVECTION DEVELOPMENT IN / MORE VISUAL ON THE LEFT WINDOW, PERHAPS TRYING TO FLARE IN? | |
| | | | SAW A MAX 46 KT SFMR. | |
| | | | LF INDICATES CTR 3 AS ~ 84.67 18.08 | |
| 1307Z | WP #6 TO NE | 18°40' / 84° 1' | END, WP #6 TURN DOWN TO 315 ROUTE | SONDE #15 BT 13 |
| | | | SCATTERED / FEW CLOUDS BELOW | |
| 1317Z | DOWNWIND TO WP #7 | 18°44' / 84° 46' | SOME MID CONVECTIVE CLOUDS, SHALLOW MOIST. LAYER | |
| | | | LOOKS LOT OF BRIGHT. LOOKS LIKE IT WILL TO OVERCAST | |
| | | | A BIT JET. DRY INTRUSION. BUT IT MIGHT BE DOING THAT | SONDE 16 BT 14 |
| 1325Z | WP #7 INBOUND 315° | 18°44' / 84°57' | TURN AT WP #7 FOR FINAL LEG (4) LEGS | |

CTR 4 WAS ~ 84.7 / 18.4

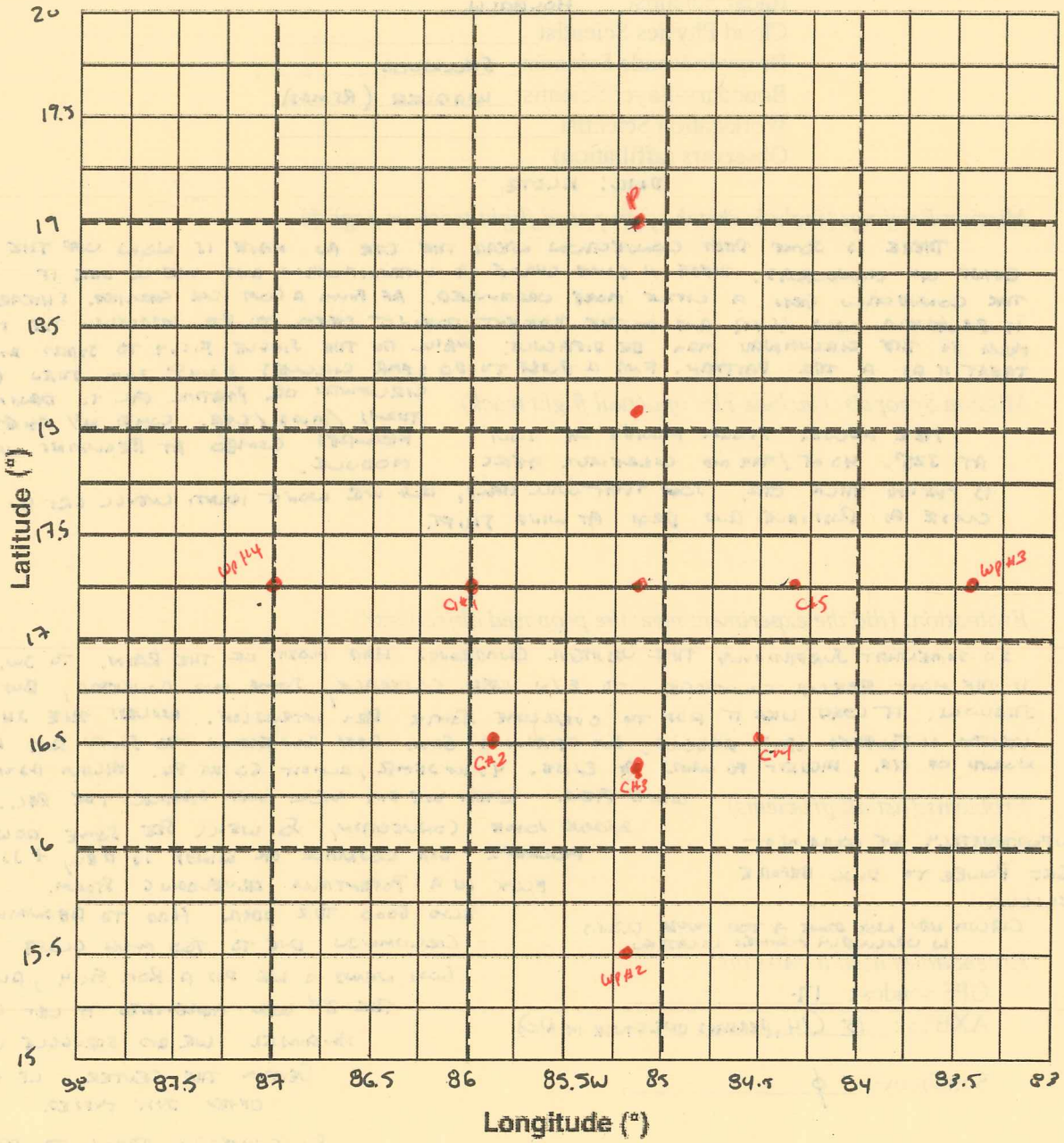
LOOKS LIKE THE CTR HAS JUMPED NORTH? HARD TO TELL STILL SHALLOW / JET, MORE MID CLOUD JUST NW

1340Z BEGIN CIRCLES

1343Z CIRCLE MANEUVER 18°34' / 84°6' SONDE 17 BT NOT GOING YET

## Observer's Flight Track Worksheet

Date 10/6/17 Flight 20171006H1 Observer _____



# Mission Summary

## Storm name

YYMMDDA# Aircraft 42 RF

Scientific Crew (4 RF)

Lead Project Scientist ZAWISLAK

Radar Scientist HOLBACH

Cloud Physics Scientist

Dropwindsonde Scientist SELLWOOD

Boundary-Layer Scientist WADLER (REMAS)

Workstation Scientist

Observers (affiliation)

DWL: KLOTZ

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

THERE IS SOME DEEP CONVECTION NEAR THE CTR AS NATE IS NOW OFF THE COAST OF HONDURAS. THERE IS SOME CHANCE OF INTENSIFICATION AND WE'LL SEE IF THE CONVECTION GETS A LITTLE MORE ORGANIZED. AF FORM A CLOSED CIR EARLIER. SHEAR IS RELATIVELY LOW (5 KT) AND AT THE MOMENT DOESN'T SEEM TO BE IMPACTING THE STORM MUCH SO THE CIRCUMNAV MAY BE DIFFICULT. WE'LL DO THE SINGLE FIG. 4 TO START AT 10KFT TREAT IT AS A TDR PATTERN. FIND A PLACE TO DO SFMR CIRCLES. 30/45° BANK THEN EITHER THE CIRCUMNAV OR PARTIAL FIG 4. DROPS AT TURNS / MIDS / CTR. COMBO W/ FIX BT. SFMR REQUIRES COMBO AT BEGINNING OF THE MODULE.

*Mission Synopsis: (include plot of actual flight track)*

SEE ABOVE. STORM MOVING AT 10KT AT 325°. 45 KT / 999 MB CURRENTLY AFRC IS FIXING THEIR CTR, SOON THAT WILL HAPPEN, BUT WE WON'T WAIT. WE'LL GET AS CLOSE AS POSSIBLE AND DROP AT WIND SHIFT.

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

SO SOMEWHAT SURPRISINGLY THE NORTHEAST QUADRANT HAD MOST OF THE RAIN. TO SW, S IS THE MOST PRECIP COVERAGE. TO E/N LESS COVERAGE, SOME MID CONGESTUS, BUT MOSTLY SHALLOW. IT LOOK LIKE IT HAS TO OVERCOME SOME DRY INTRUSION. UNLESS THE SHEAR VECTOR IS FLIPPED 180° AROUND. BUT CERTAINLY GOOD DEEP CONVECTION TO SOUTH AND DEVELOPING NORTH OF CTR. HIGHEST FL WINDS TO E/NE. 45 KT SFMR, ALMOST 60 KT FL. HIGHLY ASYMMETRIC WIND FIELD. WHAT WE DID WELL WAS SAMPLE THE PBL. GOT AROUND SOME CONVECTION, SO WE'LL SEE SOME DOWNDRAFTS PERHAPS. GOOD COVERAGE OF WINDS IN PBL, + JET FOR FIRST IN A POTENTIAL DEVELOPING STORM.

ALSO GOOD TDR DATA. HAD TO ABANDON THE CIRCUMNAV DUE TO TOO MUCH CLOUDS. BUT GOOD NEWS IS WE DID A FIG. 4, ALTHOUGH THE 2ND WAS ABBREVIATED TO GET 4 TDR ANALYSES. WE DID STRUGGLE WITH GETTING THE CENTER. LF V. FL WIND. OFTEN JUST MISSED.

SO CONVECTION TRYING TO ORGANIZE BUT DOES HAVE TO OVERCOME SOME DRY AIR TO THE EAST

*Problems:(list all problems)*

UNFORTUNATELY WE COULD NOT GET POWER TO DWL BEFORE FLIGHT.

CIRCUMNAV NOT DONE → TOO MUCH CLOUD IN ORIGINALLY PLANNED LOCATION

*Expendables used in mission:*

GPS sondes : 17

AXBTs : 15 (14, PERHAPS ONE STUCK IN A/C)

Sonobuoys: 0