N42RF ERROR SUMMARY
20241107H1

Flight ID: 20241107H1

| Sensor or System | Number or Name |
|---|---|
| Static Pressure Probe | PSM.2 |
| Dynamic Pressure Probe | PQM.2 |
| Total Temperature Probe | TTM.1 |
| Dewpoint Temp. Probe | TDM.1 |
| Vertical Accelerometer | AccZfilterI-GPS.1 |
| Altimeter | AltGPS.3 |
| INE Selection | 1 |
| Differential Attack Pressure Probe | PDALPHA.1 |
| Differential Sideslip Pressure Probe | PDBETA.1 |
| Dynamic Attack Pressure Probe | PQALPHA.1 |
| Dynamic Sideslip Pressure Probe | PQBETA.1 |

Flight Directory acdata/2024/MET/20241107H1

Local Met Data Takeoff KLAL (0829Z) Landing KLAL (1529Z)

| | |
|---|---|
| Dynamic Corrections | Yes |
| AttackAngleIntercept | 2.32804 |
| AttackAngleSlope | 6.09319 |
| SlipAngleIntercept | 0.25 |
| SlipAngleSlope | 6.641 |
| AttackAngleIntercept2 | 2.06219 |
| AttackAngleSlope2 | 5.99068 |
| SlipAngleIntercept2 | 0.125 |
| SlipAngleSlope2 | 6.9873 |

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Notes:
There were no edits made in the measured parameters used to calculate meteorological and navigational parameters.

Takeoff/Landing data: Data during landing and takeoff are potentially suspect. It is recommended that ground data not be used for scientific analysis.

I.3 for Pitch and Roll, TTM.3, and TDM.3 not operational.
TRadU.1 has erroneous data throughout the flight and should not be used.
PDALPHAref, PDBETAref, PQALPHAref, PQBETAref, and DPJ_WSZ are not provided since _AC file is not produced; all other "C" file parameters checked are from the _A file.
SFMR TB, WS SFMR, and RAIN RATE SFMR data should be used with caution as additional assessment occurs
GPS.4 parameters have a gap in data 14:05-14:09

| Expendable Type | # deployed | # good | # transmitted |
|---|---|---|---|
| Dropsondes | 23 | 23 | 22 |
| Test sondes | 40 | 40 | 0 |
| AXBTs | 0 | 0 | 0 |

| | | | |
|---|---|---|---|
| AXCPs | 0 | 0 | 0 |
| AXCTDs | 0 | 0 | 0 |
| UAS | 0 | 0 | 0 |

Flight Director: KALEN
Phone #: 863-500-3962

ACAT-4 Version = 7.4

# U.S. Department of Commerce / NOAA / OMAO / Aircraft Operations Center - Flight Manifest

| FLIGHT INFORMATION | | | |
|---|---|---|---|
| FLT ID: | 20241107H1 | FLT #: | |
| From: | KLAL | ETD: | 0530L / 0830Z |
| To: | KLAL | ETA: | 1130L / 1630Z |
| Block Time | | Flight Time | |
| Out: | 08:20 | T/O: | 08:29 |
| In: | 15:37 | Land: | 15:29 |
| Total: | 7.3 | Total: | 7.0 |
| Sponsoring Org: | NWS | | |
| Program: | PHX | | |
| Purpose: | HX RAFAEL RESEARCH | | |

| CREW MANIFEST | | |
|---|---|---|
| AC: | COPARE | Other Crew: |
| CP(s): | WOOD | MARKS (HRD) |
| | REEVES | KAISTI (UAS) |
| NAV(s): | DUNFORD/SAUNDERS | BARINGER (HRD) |
| FE(s): | STOKES | RENIER (CIA) |
| | PERICHT | STEINBARGER (HRD) |
| FD(s): | KALEN | DELOACH |
| | | |
| SSA: | RICHARDS | |
| IFT(s): | BRANNIGAN | |
| | | |
| | | |
| MX: | | |
| | | |
| | | |

| MISSION INFORMATION | | | | |
|---|---|---|---|---|
| sUAS | | Dropsondes | | |
| Type | Released | Good | Bad | Sent |
| | | 23 | 0 | 22 |
| Other Expendables | | Dropsonde Charge Codes | | |
| Type | Released | nws | | |
| Skyfora | 40 | AXBTs | | |
| AWSD | 2 | Good | Bad | Sent |
| | | 0 | 0 | 0 |
| Pennies | | 4 CAT3 | | |
| Storm ID: (i.e., AL072012) | | AL182024 | | |
| Mission ID: (i.e., NOAA2 2418A SANDY) | | NOAA2 WA18A RAFAEL | | |

| AS REQUIRED BY ORM | Y | N |
|---|---|---|
| VOLCANIC ASH | | X |
| SCIENCE MISSION WITHIN BDRY LAYER | | X |
| LACK OF PRECIPITATION | | X |
| RELATIVE HUMIDITY ≥ 80% | X | |
| LARGE AIR-SEA TEMP GRADIENT | | X |
| HIGH SURFACE WINDS | X | |
| LONG FETCH / DURATION OF SFC WND | X | |
| SEA SALT ACCRETION FORECAST | | X |
| SEA SALT ACCRETION OBSERVED | | |

| REMARKS |
|---|
| |

| OBSERVATIONS | | | |
|---|---|---|---|
| Fix Number | Obs Number | Fix Time | SLP |
| 1 | 7 | 1013Z | 971 mb |
| 2 | 14 | 1238Z | 971 mb |
| 3 | 23 | 1409Z | 972 mb |
| 4 | | | |

*Highlighted items must be completed before departure.

# P-3 QC Checklist

| Overall Assessment | Minor instrument issue(s) - minimal mission impact. |
|---|---|

| | |
|---|---|
| Flight ID: | 20241107H1 |
| Flight Director(s): | Kalen |
| Mission: | Tasked/Operational |
| UWZ.d mean: | 0.13 |

| Pressure Comparison | | |
|---|---|---|
| | Pre-flight | Post-flight |
| Aircraft | 1010.9 | 1014.4 |
| Airfield | 1009.5 | 1012.0 |

This form uses:
_A.nc

| SFMR Serial Unit | # | 3 |
|---|---|---|

| Parameters | Raw | | | | Derived, Corrected & Reference | |
|---|---|---|---|---|---|---|
| ✓ Acceleration | ✓ AccAXI.1 | ✓ AccAYI.1 | ✓ AccAZI.1 | ✓ AccZfilter-GPS.1 | ✓ AccZref | |
| | ✓ AccAXI.2 | ✓ AccAYI.2 | ✓ AccAZI.2 | ✓ AccZfilter-GPS.2 | | |
| | ✓ AccAXI-GPS.1 | ✓ AccAYI-GPS.1 | ✓ AccAZI-GPS.1 | | | |
| | ✓ AccAXI-GPS.2 | ✓ AccAYI-GPS.2 | ✓ AccAZI-GPS.2 | | | |
| ✓ Altitude | ✓ AltGPS.1 | ✓ AltI-GPS.1 | ✓ AltPaADDU.1 | ✓ AltRA.1 | ✓ ALTref | ✓ AltRA1.c |
| | ✓ AltGPS.2 | ✓ AltI-GPS.2 | ✓ AltBCADDU.1 | ✓ AltRA.2 | ✓ ALTPA.d | ✓ AltRA2.c |
| | ✓ AltGPS.3 | | | | ✓ ALTGA.d | |
| | ✓ AltGPS.4 | | | | | |
| ✓ Ground Speed | ✓ GsXI-GPS.1 | ✓ GsYI-GPS.1 | ✓ GsZI-GPS.1 | | ✓ GSXref | |
| | ✓ GsXI-GPS.2 | ✓ GsYI-GPS.2 | ✓ GsZI-GPS.2 | | ✓ GSYref | |
| | | | | | ✓ GSZref | |
| ✓ Location | ✓ LatGPS.1 | ✓ LatI-GPS.1 | ✓ LonGPS.1 | ✓ LonI-GPS.1 | ✓ LATref | |
| | ✓ LatGPS.2 | ✓ LatI-GPS.2 | ✓ LonGPS.2 | ✓ LonI-GPS.2 | ✓ LONref | |
| | ✓ LatGPS.3 | | ✓ LonGPS.3 | | | |
| | ✓ LatGPS.4 | | ✓ LonGPS.4 | | | |
| ✓ Pressure Sensors | ✓ PDALPHA.1 | ✓ PQALPHA.1 | ✓ PQM.1 | ✓ PSM.1 | ✓ PQMref | |
| | ✓ PDALPHA.2 | ✓ PQBETA.1 | ✓ PQM.2 | ✓ PSM.2 | ✓ PQ.c | |
| | ✓ PDBETA.1 | | ✓ PQM.3 | ✓ PTM.1 | ✓ PSMref | |
| | ✓ PDBETA.2 | | ✓ PQM.4 | | ✓ PS.c | |
| ✓ Air Speed | ✓ CasADDU.1 | ✓ TasADDU.1 | ✓ IasADDU.1 | | ✓ IAS.d | ✓ TAS.d |
| ✓ Pitch / Roll | ✓ PitchI.1 | ✓ PitchRateI.1 | ✓ RollI.1 | ✓ RollRateI.1 | ✓ PITCHref | |
| | ✓ PitchI.2 | ✓ PitchRateI.2 | ✓ RollI.2 | ✓ RollRateI.2 | ✓ ROLLref | |
| | x PitchI.3 | x PitchRateI.3 | x RollI.3 | x RollRateI.3 | | |
| ✓ Temperature, Dewpoint, Radiometers | ✓ TTM.1 | ✓ TDM.1 | ✓ TRadD.1 | | ✓ TD.c | ✓ TTMref |
| | ✓ TTM.2 | ✓ TDM.2 | ✓ TRadS.1 | | ✓ TDMref | ✓ TA.d |
| | x TTM.3 | x TDM.3 | x TRadU.1 | | ✓ HUM | |
| ✓ Wind and Pressure | | x CH 1 TB | x CH 4 TB | | ✓ UWZ.d | ✓ WS.d |
| x SFMR | SFMR | x CH 2 TB | x CH 5 TB | | ✓ PSURF | ✓ WD.d |
| | | x CH 3 TB | x CH 6 TB | | x WS SFMR | x RAIN RATE SFMR |

| FLID_Mission_Documents.pdf: |
|---|
| ✓ Error Summary |
| ✓ Crew Manifest |
| ✓ QC Checklist |
| ✓ Dropwindsonde Log(s) - AVAPS and FD, if completed |
| ✓ Flight Track |

| QC Key: | |
|---|---|
| Valid | ✓ |
| Errors (see NOTES) | X |
| Sensor Inoperative | inop |

**NOTES:**

I.3 for Pitch and Roll, TTM.3, and TDM.3 not operational.

TRadU.1 has erroneous data throughout the flight and should not be used.

PDALPHAref, PDBETAref, PQALPHAref, PQBETAref, and DPJ_WSZ are not provided since _AC file is not produced; all other "C" file parameters checked are from the _A file.

SFMR TB, WS SFMR, and RAIN RATE SFMR data should be used with caution as additional assessment occurs

GPS.4 parameters have a gap in data 14:05-14:09

# Dropwindsonde Scientist Log

| **Storm:** | RAFAEL | **Flight ID:** | 20241107H1 | **Mission ID:** | WA18A | **Takeoff:** | | **Landing:** | |
|---|---|---|---|---|---|---|---|---|---|

| **Dropsonde Scientist(s):** | Kaplan | **AVAPS Operator:** | |
|---|---|---|---|

**Pre-flight**

✓ Discuss the pattern with the Lead Project Scientist (LPS) and ensure that enough dropsondes are onboard.
✓ Complete the appropriate pre-flight set-up of your workstation and ASPEN (see Dropsonde Processing Guide).

**In-flight**

✓ Ensure the Flight Director is aware of upcoming drops and whether a backup is requested in case of failure.
✓ Ensure the AVAPS operator has determined that the dropsonde is (or is not) transmitting a good signal.
✓ Prioritize processing of center drops and report MSLP and surface wind speed and direction to the Flight Director.
✓ Fill in the Dropwindsonde Scientist log as drops are released and processed.
✓ Copy completed ASPEN files (e.g., FRD, netCDF, Skew-t, WMO txt, BUFR) into the "FRD" folder on the workstation desktop for automated transmission to the ground for archival.

**Once "science is complete"...**

✓ Make synoptic map plots in ASPEN and copy them to the "FRD" folder on the workstation desktop for automated transmission to the ground for archival.
✓ Ensure ASPEN files have been sent to the ground by locating and verifying all files in the "FLIGHTID" folder within the "FRD" folder on the workstation desktop.
✓ Archive ASPEN_DATA and RAW_DATA into a folder named with the FLIGHTID within the "Season Dropsonde Archive" folder on the workstation desktop and upload the same directories into StormName/FLIGHTID/Dropsonde/ folder on Drive.
✓ Download this Dropwindsonde Scientist Log as "PDF" and upload completed PDF and Google Doc to the StormName/FLIGHTID/Dropsonde/ folder within the "Mission Reports" directory in the HFP Google Drive.

**Storm: <<RAFAEL>>** **Flight ID: <<241107H1>>** **Mission ID: << WA18A**

| Drop # | Sonde ID | Time UTC | Lat (°N/S) | Lon (°E/W) | Sfc Pressure (mb) | Lowest Wind Direction/Speed (deg/kt) | Lowest Wind Height (m) | AXBT SST (°C) | Eye, Eyewall, Rainband, etc. | Ob # |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 233650326 | 0921 | 25.89 | 85.78 | 1008.4 | 37/22 | 10 | | | 1 |
| End of drop at 204.75 Lots of extra post splash data removed. | | | | | | | | | | |
| 2 | 235144618 | 0928 | 25.48 | 86.03 | 1008.3 | 37/26 | 10 | | | 2 |
| | | | | | | | | | | |
| 3 | 243150062 | 0940 | 24.88 | 85.46 | 1004 | 30/28 | 10 | | | 3 |
| | | | | | | | | | | |
| 4 | 230351456 | 1009 | 24.3 | 84.91 | 985 | 349/66kt | 10 | | RMW | 4 |
| | | | | | | | | | | |
| 5 | 235154011 | 1013 | 24.26 | 84.63 | 970.5 | 149/14 | 10 | | center | 5 |
| | | | | | | | | | | |
| 6 | 233640815 | 1026 | 23.70 | 84.01 | 1000.4 | 180/44 | 10 | | | 6 |
| | | | | | | | | | | |
| 7 | 234830545 | 1036 | 23.28 | 83.56 | 1003.8 | 151/30 | 10 | | | 7 |
| | | | | | | | | | | |
| 8 | 235154179 | 1108 | 25.60 | 83.50 | 1009.1 | 89/24 | 10 | | | 8 |
| | | | | | | | | | | |
| 9 | 235144632 | 1119 | 25.05 | 84.13 | 1003 | 88/38 | 10 | | | 9 |

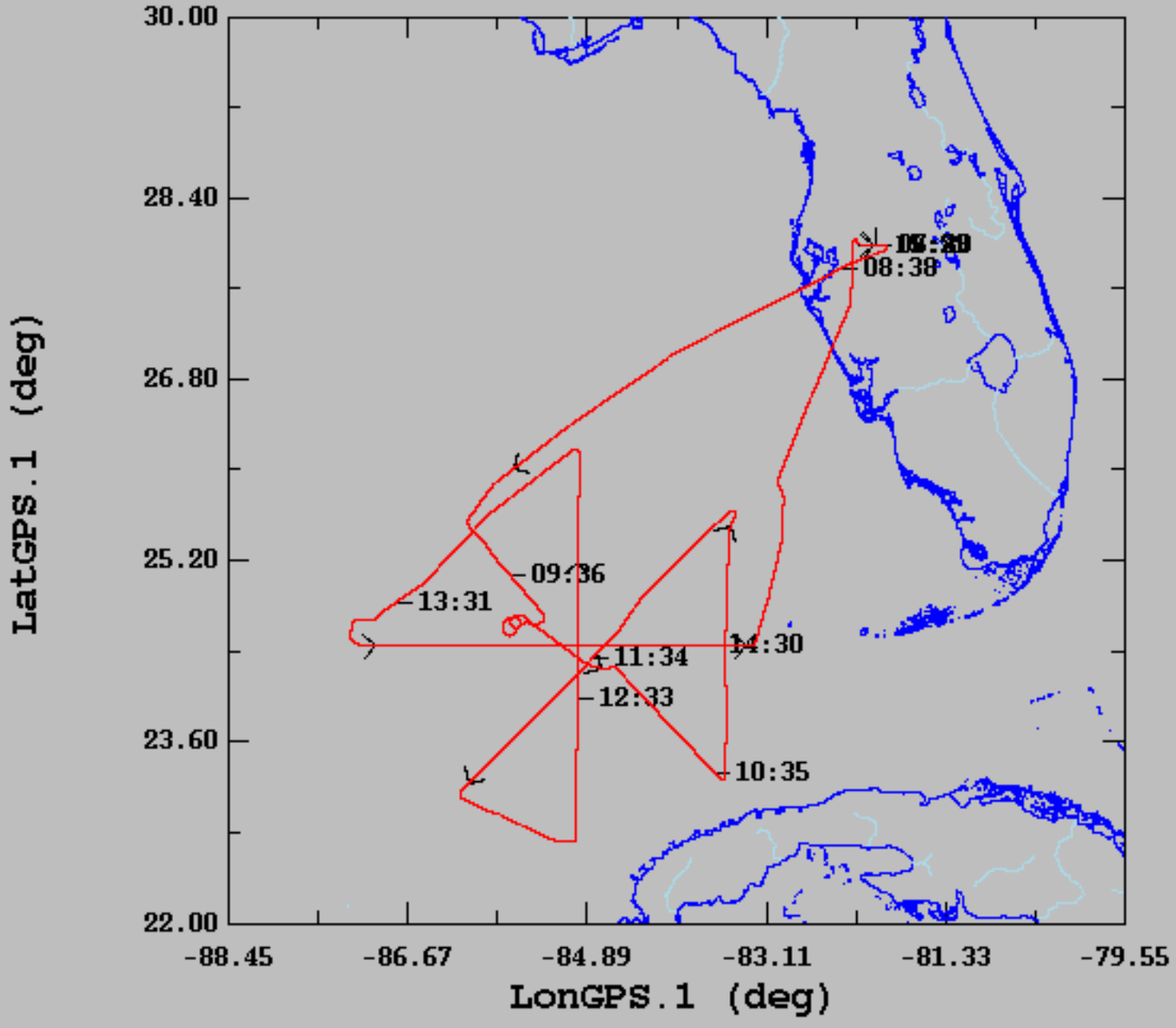
| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| 10 | 235154025 | 1134 | 24.34 | 84.82 | 970.5 | 142/17 | 10 | | center | 10 |

**Storm: <<RAFAEL>>** **Flight ID: <<241107H1>>** **Mission ID: << WA18A**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Set end of drop at 182.25 s | | | | | | | | | | |
| 11 | 235154027 | 1146 | 23.78 | 85.43 | 1001.1 | 310/34 | 10 | | | 11 |
| Set end of drop at 200.5 s | | | | | | | | | | |
| 12 | 232210228 | 1158 | 23.18 | 86.11 | 1005.9 | 325/23 | 10 | | | 12 |
| Data gap 202.75 to 204.25. Set end time @204.5. Aspen would not compute heights at first. Post-splash data. | | | | | | | | | | |
| 13 | 232320194 | 1215 | 22.76 | 84.99 | 1005.5 | 243/18 | 10 | | | 13 |
| | | | | | | | | | | |
| 14 | 235154102 | 1227 | 23.6 | 84.98 | 999.6 | 251/41 | 10 | | | 15 |
| End of drop at 198.75 lots of post-splash data. Aspen initially wouldn't compute heights and all heights were set missing. After choosing an earlier end time ASPEN then computed heights. This happened again (ASPEN initially set heights missing until a new earlier drop time was chosen) on either drop 16 or 17. | | | | | | | | | | |
| 15 | 235144631 | 1238 | 24.36 | 84.98 | 971.3 | 209/10 | 10 | center | | 16 |
| End of drop at 186.0 | | | | | | | | | | |
| 16 | 235154183 | 1252 | 25.31 | 84.96 | 1004.1 | 67/47 | 10 | | | 17 |
| | | | | | | | | | | |
| 17 | 232210227 | 1304 | 26.13 | 84.95 | 1008.5 | 85/40 | 10 | | | 18 |
| | | | | | | | | | | |
| 18 | 235154101 | 1317 | 25.62 | 85.82 | 1008.6 | 45/35 | 10 | | | 19 |
| | | | | | | | | | | |
| 19 | 235144617 | 1341 | 24.45 | 87.12 | 1007.0 | 16/31 | 10 | | | 20 |
| Post splash warning, however, heights computed initially this time. Set end time to 198.75 and then recomputed heights though. | | | | | | | | | | |
| 20 | 235144595 | 1355 | 24.45 | 86.16 | 1004.1 | 352/35 | 10 | | | 21 |
| End of drop @205.25 | | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 21 | 230351549 | 1409 | 24.46 | 85.11 | 971.8 | 139/10 | 10 | center | 22 |
| Set end of drop@ 176.75 | | | | | | | | | |
| 22 | 235144638 | 1422 | 24.45 | 84.23 | 1003.6 | 136/40 | 10 | | 24 |
| Set end of drop at 199.25 | | | | | | | | | |
| 23 | 235154115 | 1436 | 24.45 | 83.29 | 1009.1 | 136/26kt | 10 | LAST REPORT | 25 |
| Set end of drop @216.25. | | | | | | | | | |
| | | | | | | | | | |
| Notes: TAG numbering appears to have been a problem again on this flight. AOC's website archive shows 23 WMO messages were sent off the plane which is consistent with the 23 drops that were made during the flight. However, 3 VDM's were also sent off the aircraft (these also appear in AOC's website archive) so there should have been 26 total obs messages (23 drops +VDMs) yet the last obs number. was 25. Carcah was a bit confused given this so the FD concluded that only 22 of the 23 drops were sent off the plane since they were certain that they had sent 3 VDMs. | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

11/07/2024, 06:40:42-15:29:11




| | mean | sigma | min | max |
|---|---|---|---|---|
| LatGPS.1 (deg), 1 s/sec | 25.65 | 1.65 | 22.72 | 28.04 |
| LonGPS.1 (deg), 1 s/sec | -84.06 | 1.53 | -87.24 | -81.90 |