

Airborne Instrumentation Updates



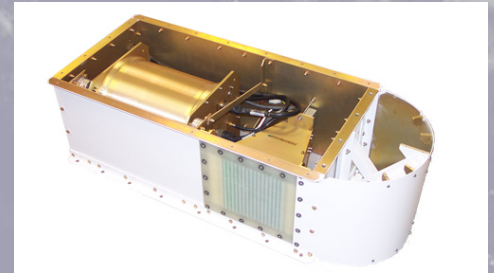
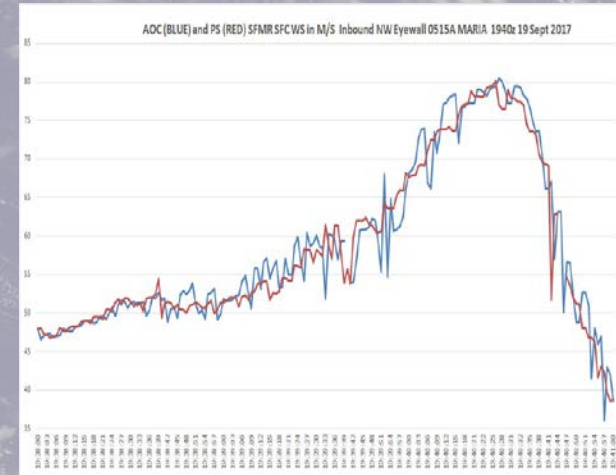
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Stepped Frequency Microwave Radiometer

- Reducing the occurrence of missing lines of SFMR data in HDOBs in the eyewall of intense hurricanes due to attitude constraints
 - Short term - minimize roll (center hunt) until inside surface RMW (SOP)
 - Long term - relax Pitch constraint to +10 to -5 deg and incorporate Fresnel equation for emissivity correction (ProSensing code change)
- Reducing the uncertainty of SFMR winds in relatively shallow water
 - Incorporate an ocean depth data base (augmenting simple land blanking) such as the NOAA ETOPO to flag measurements with depths of 10-30 meters and exclude ocean depths less than 10 meters



Expendables

- RD41 Dropsonde
 - Has enhanced sensor used in the latest version of the Vaisala radiosonde with improved RH and Temp response and accuracy. Boundary level Winds performance is also improved.
 - 50 sondes to be tested this Spring by AOC and 53rd WRS
 - Production version to be dropped in parallel this summer
 - Reduced manufacturing complexity
- Multipurpose Atmospheric/Underwater Expendable Dropsonde (MASED)
 - Aircraft launched ocean temperature probe; up to 5 soundings to 200 m depth at programmable intervals; data relay via Iridium
 - SBIR II complete; single unit fabricated; TRL 4-5
 - AOC looking to purchase 10-20 test units for aircraft launch



Radar



Multimode Radar (MMR) replacement for LF Radar

- Surface roughness, SAR, ISAR, StripSAR in addition to Wx
- CfRadial data format
- Installation scheduled for May 2018
- AOC will modify L/F capture software for new system

G-IV Tail Doppler Radar

- Blended navigation unit for real-time accurate wind correction
- Conversion to Solid State transmitters in 2019



Developmental Efforts/Ideas

- Active Phased Array Radar (APAR) - Potential solution for aircraft without TDR mount; some limited NOAA funding; active NCAR effort
- Wide Swath Radar Altimeter (WSRA) – continued use of prototype unit on P-3; could migrate
- Pod-based Dual-pol Vertically-scanning Radar – no program, no funding, but sounds like something that would help the Models and could mount on a C-130J



Data and Messages

- New Vortex Message format ready to go – message generation software tested with data from TS to Cat 5
- Dropsonde data can be sent in BUFR format, in addition to TempDrop
- All AOC data available at:
<https://www.ncdc.noaa.gov/has/HAS.FileAppRouter?datasetname=642002&subqueryby=STATION&applname=&outdest=FILE>

