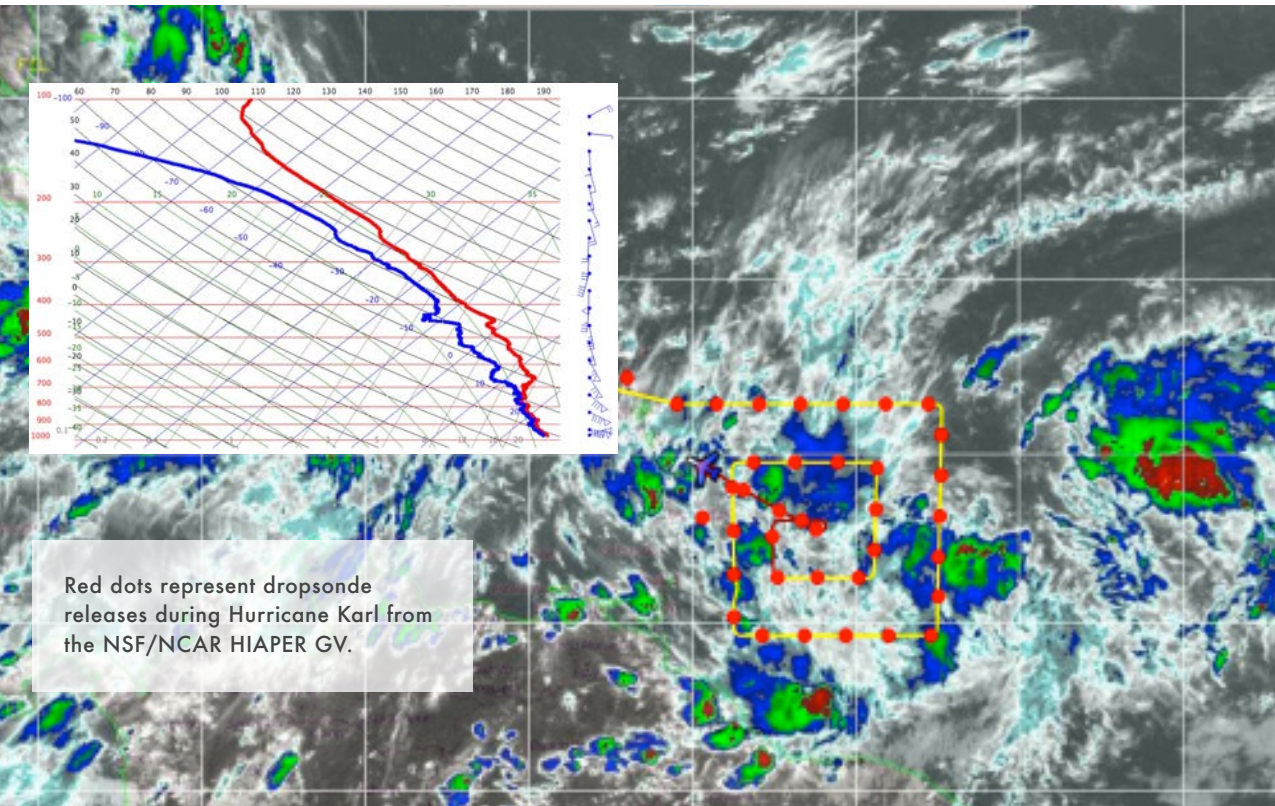


NCAR AVAPS® Dropsonde System

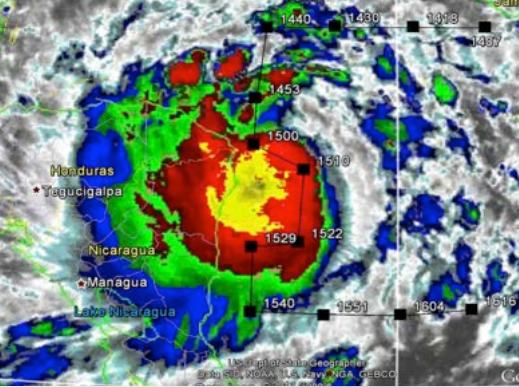
The NCAR AVAPS Dropsonde System is a key atmospheric instrument to measure profiles of temperature, pressure, humidity, wind speed and wind direction with high precision and high vertical resolution. The parachute-borne GPS Dropsonde is launched from an aircraft with measurements taken continuously by in-situ sensors as it descends to the surface.

Atmospheric soundings from dropsondes enable targeted measurements in and around severe weather systems such as hurricanes, mesoscale convective systems, and winter storms, as well as over remote areas where traditional radiosonde systems are not available. Data from dropsondes during hurricane reconnaissance flights are the primary means to measure the real-time strength of a hurricane, and are critical in forecasting the hurricane track and intensity.



AVAILABLE
FACILITY





DIMENSIONS

Standard Dropsonde (RD41)

Licensed to Vaisala for manufacturing

- » Length: 16 in
- » Diameter: 2.75 in
- » Weight: 350 g

NCAR Research Dropsonde (NRD41)

Currently manufactured by NCAR

- » Length: 12 in
- » Diameter: 1.75 in
- » Weight: 165 g

NCAR GPS DROPSONDE

- » Research-quality sensors, individually calibrated (Vaisala RSS421 PTH sensor module)
- » Deployed from over 20 research aircraft
- » In-situ thermodynamic measurements every 0.5 seconds (PTH)
- » Wind speed and direction measured every 0.25 seconds
- » Fall time from 40,000 feet (e.g., from the NSF/NCAR HIAPER Gulfstream V) ~14 minutes
- » Fall speed 22 m/s at 40,000 feet and 11 m/s at sea level
- » Vertical resolution at surface, PTH ~5 meters and wind ~2.5 meters
- » Square-cone parachute for high-stability for accurate wind measurements
- » Telemetry range 300 km minimum

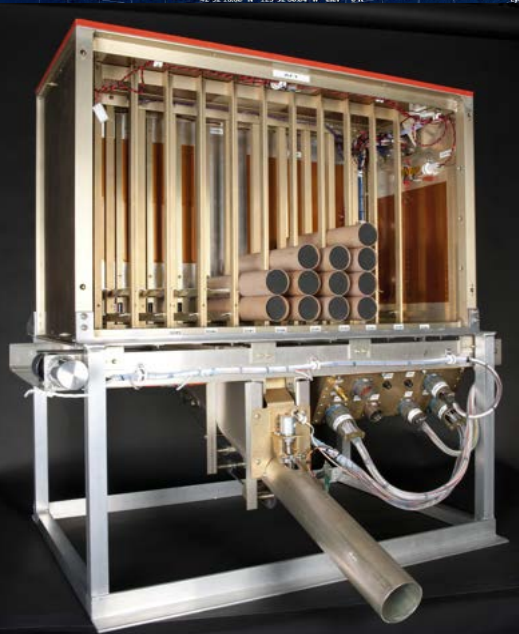
AVAPS AIRCRAFT DATA SYSTEM

The aircraft system includes a launch tube, telemetry chassis, computer, and GPS/UHF aircraft antennas.

- » Fully automated launcher on the NSF/NCAR HIAPER Gulfstream V & manual launcher on the NSF/NCAR C-130
- » Operated by one person on the NSF/NCAR HIAPER Gulfstream V or remotely from the ground
- » Supports up to 8 dropsondes in the air simultaneously
- » Rapid drops at one minute intervals for the first eight sondes, or sustained drops at 2.5 minutes
- » Real-time data plotting during dropsonde descent

ASPEN (ATMOSPHERIC SOUNDING PROCESSING ENVIRONMENT)

- » Visualization and quality control of dropsonde soundings
- » Creates X-Y plots and skew-T plots
- » Analyzes sounding and creates WMO BUFR messages
- » Creates synoptic maps at standard pressure levels
- » Easy to operate



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www.eol.ucar.edu/requestfacilities



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