

NAMMA-Praia, Cape Verde Radiosonde Description

The radiosonde released at Praia, Cape Verde is the Lockheed Martin Sippican MK-IIa unit. This radiosonde uses the Global Positioning System (GPS) to provide accurate 3D position information. Calculation of the GPS heights with temperature and relative humidity provides pressure values. The MK-IIa does not use a pressure sensor. Nonetheless, pressures, temperatures, relative humidity, geopotential heights, and winds are provided by the radiosonde. Data from the MK-IIa are transmitted digitally every second over 403 MHz telemetry link. The temperature sensor is a small metalized bead thermistor that measures between 50°C and -90°C. The sensor's resistance varies with temperature, increasing as temperature decreases. Using information from the NASA Accurate Temperature Measuring (ATM) radiosonde developed at Wallops Flight Facility, the error of the bead thermistor was determined. Although the correction applied operationally is a mean correction, the overall reliability of the temperature measurement is considerably improved over the earlier method (i.e., rod thermistor). The resistive carbon-coated relative humidity sensor, referred to as an hygistor, is an improved version of the older hygistor that was used for many decades. The hygistor is one-half the size of the older polymer strip and is coated with a carbon slurry. The spaces between the carbon molecules increase or decrease with changing relative humidity causing a resistance change. Increasing resistance is representative of decreasing atmospheric moisture. This sensor is stated by the manufacturer to measure between 5 and 100 percent. Wind direction and speed is obtained using the GPS technique. A water-activated 12-Volt battery provides power to the radiosonde.

Radiosondes will be released from Praia's old airport terminal. The planned release schedule is six radiosondes per day, every 4 hours. The balloon to be used is 350 gram and will reach a nominal altitude of 25km. All reduced data are to be made available to the NAMMA community as soon after each radiosonde flight as possible, and the 00UTC and 12UTC data will be transmitted through the NOAA Gateway to be placed on the Global Telecommunications System (GTS). In addition, each radiosonde will be tracked down until it is no longer possible, either below the horizon or battery life ends. The up leg data and the down leg data will be available as separate files.