

## [Comprehensive Data Quality Control Techniques for High Vertical Resolution Dropsonde and Radiosonde Data: From Collection to Archival and Distribution](#) [1]

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**Abstract:** Dropsondes and radiosondes collect high-vertical-resolution profiles of the atmosphere. One of the primary applications of dropsonde data is use in studying and helping predict the path and intensity of hurricanes. The dropsondes are deployed from aircraft and, as they descend, they collect pressure, temperature and humidity at a half-second rate, and GPS winds at a quarter-second rate. Radiosondes are used to collect high-resolution measurements of the atmosphere, from the ground to approximately 30 kilometers. Carried by a large helium-filled balloon, they ascend upward through the atmosphere measuring pressure, temperature, relative humidity, and GPS winds at a one-second rate.

Advancements in atmospheric research, technology and data assimilation techniques have contributed to driving the need for higher quality, higher resolution radiosonde and dropsonde data. These data most notably represent a valuable resource for initializing numerical prediction models, calibrating and validating satellite retrieval techniques for atmospheric profiles, and for climatological research. The Sounding Group, within the In-Situ Sensing Facility (ISF), at the National Center for Atmospheric Research (NCAR) has developed an extensive, multi-step process of quality control (QC). Traditionally, QC has included individual examination of raw data profiles, processing of data through the Atmospheric Sounding Processing Environment (ASPEN) software, evaluating the data products using a variety of visualization tools and statistical methods, and applying corrections when necessary.

Recently, additional error detection and correction methods have been implemented to further improve data quality. New procedures for statistical analysis of data quality have been developed for real-time use, and corrections for various data issues have been adopted during post-project data processing. These routine measures enable us to identify, characterize, and correct significant errors that could potentially impact research, and they ensure that the highest quality of data are made available to the research community for scientific applications.

**Collaboration Area:** [Data Preservation](#) [3]

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