Bomin
Sun
IMSG at NOAA/NESDIS/STAR
Tony Reale, NOAA/NESDIS/STAR
Poster
Balloon-borne radiosonde observations have played a critical role in upper air climate change detection, numerical weather prediction (NWP) data assimilation and forecasting, and satellite data calibration/validation (cal/val). Vaisala RS92, the dominant radiosonde type in the past twenty to thirty years in the global operational upper air network, is being gradually replaced by Vaisala RS41. Understanding the measurement accuracy of this newly emerging radiosonde type is of great interest to climate, NWP, and satellite communities. Managing the transition of Vaisala RS92 to RS41 is among the highest priority of the GCOS Global Reference Air Network (GRUAN).

This work assesses the accuracy of Vaisala RS41 and the potential impact of the RS92 to RS41 transition on the long-term record using multiple datasets as the targets. Datasets include the UCAR Constellation Observing System for Meteorology, Ionosphere, and Climate (COSMIC) GPS radio occultation (RO) data, the EUMETSAT Radio Occultation Meteorology (ROM) Satellite Facility Application (SAF) Global Navigation Satellite System (GNSS) Receiver for Atmospheric Sounding (GRAS) data, and NWP forecast background (analysis). Global collocations of conventional radiosonde and satellite (including the targets mentioned above) are routinely compiled using the NOAA Products Validation System (NPROVS) operated at the NOAA Center for Satellite Applications and Research (STAR). In addition, these datasets are supplemented using special sets of Vaisala RS41 and RS92 dual launches from special campaigns over about ten sites around the world which are also collocated with the target satellites (via NPROVS). Together, these datasets provide an overall global and specific site by site assessment of the radiosonde characteristic performance. Uncertainties in using the target datasets as the truth in the assessment are discussed.
OSTS session
Regional and Global CAL/VAL for Assembling a Climate Data Record
Download to PDF