

Out of the SHADOZ: Impacts and Uncertainties of Ozonesonde Reprocessing

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The SHADOZ (Southern Hemisphere ADditional OZonesondes) network is a NASA/GSFC project in collaboration with NOAA/ESRL/GMD, and international partners from Asia, Africa and Europe to archive long-term electrochemical concentration cell (ECC) ozonesonde records from tropical stations since 1998. There are currently over 6000 ozonesonde profiles in the SHADOZ database, with 14 stations having records for at least 10 years. Like many long-term sounding projects, SHADOZ is characterized by variations in operating procedures, instrumentation, and data processing. These contribute to measurement uncertainty and may limit the reliability of deriving ozone profile trends from the soundings. Recent advances in reprocessing methods and post processing software, such as Skysonde (a NOAA/GMD product), have led to a comprehensive reprocessing of SHADOZ ozonesonde data records. We present an evaluation of the first reprocessing of ozone profile records from the Watukosek-Java, Indonesia and Hanoi, Vietnam stations in the SHADOZ archive. The NOAA/GMD operational guidelines and Strato software system has been employed for the entire data record at Java and the first half of Hanoi's record before switching to a Vaisala system. Methods for homogenizing these long-term ozone records are discussed and preliminary estimates of ozone uncertainty are shown. Satellite overpass data from Aura Ozone Monitoring Instrument (OMI) and Microwave Limb Sounder (MLS) are used as reference measurements to study the impact of reprocessing at the Java and Hanoi stations.

SHADOZ Sites: <https://tropo.gsfc.nasa.gov/shadoz>



Figure 1. Map of SHADOZ stations.