

# Stratospheric Temperature Corrections and Improvement of Total Column Ozone Records in the NOAA Dobson Ozone Spectrophotometer Network

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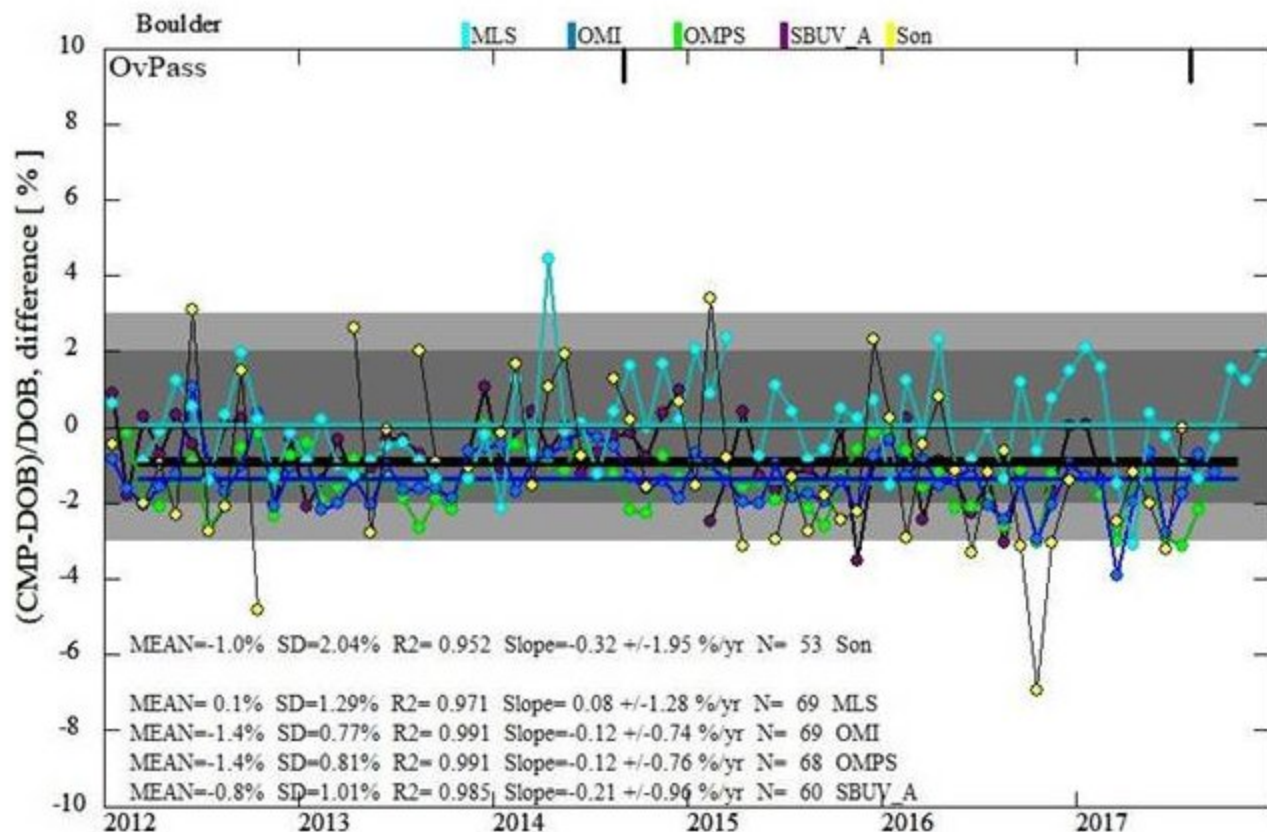
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The Dobson Spectrophotometer network for monitoring of long-term stratospheric ozone was established in the early 1960s and currently includes 16 stations. The network record has been reprocessed with updated quality control software (Evans et al. 2017). The official algorithm for ozone retrieval from Dobson measurements includes static absorption coefficients derived using Bass and Paur (1985) ozone cross-sections. We estimated the impact of using different ozone absorption coefficients (Brion–Daumont–Malicet [DBM] and Institute of Experimental Physics [IUP]) and derived temperature corrections based on climatology from McPeters and Labow (2011).

In this study, we investigate the impact of temperature corrections on the reduction of seasonal biases found between Dobson (ADDS) and satellite (Aura Microwave Limb Sounder [MLS], Aura Ozone Monitoring Instrument (OMI), Suomi National Polar-orbiting Partnership Ozone-Mapping Profile Suite [Suomi NPP OMPS], and Solar Backscatter Ultraviolet Merged Ozone Data [SBUV MOD]) observations selected for the station overpass criteria. We achieve 2% reduction in seasonal biases and overall improvement in long-term agreement between the ESRL/GMD Dobson network and satellite total ozone records.



**Figure 1.** Difference of the total column ozone with Dobson (ADDS matched), overpass satellites (MLS, OMI, OMPS, SBUV), and ozonesonde.