

## Centuries of Data: the U.S. Dobson Station Network Reevaluated

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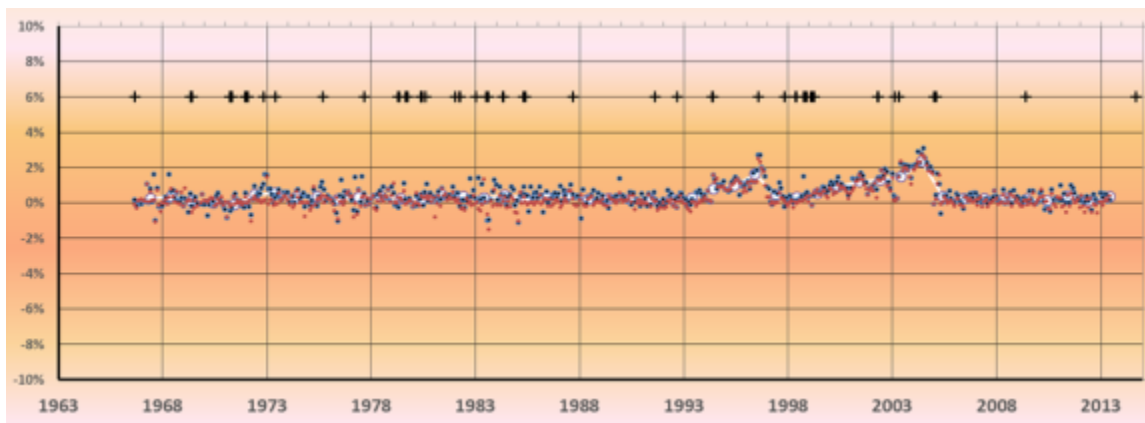
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The United States government has operated Dobson Ozone Spectrophotometers at various sites, starting during the International Geophysical Year (July 1, 1957 to December 31, 1958). An effort for long-term monitoring of the total column content (thickness of the ozone layer) of the atmosphere was started in the early 1960s at several sites, creating an ESRL/GMD Dobson stratospheric ozone monitoring network that eventually grew to 16 stations, 15 of which are still operational. Recent modernization of the Dobson ozone data processing presented a challenge of identifying potential changes in the re-processed ESRL/GMD ozone record. To evaluate significance of this change, the entire data record of the long-term observations for each station was reprocessed in the new software, and compared to the original data record archived in the World Ozone and UV Data Center (WOUDC) in Toronto, Canada. The history of the individual stations, the instruments used, the method of reduction of observations on the zenith sky to total column ozone and the calibration procedures were re-evaluated using data quality control tools built into the new software. At the completion of the evaluation (expected in 2016), the new data sets will be archived in the WOUDC, and the entire data record will become available to the scientific community for further evaluation.

The procedures of the Dobson data reprocessing and results of the re-analysis with regards to the archived record will be presented in this poster for 15 ESRL/GMD stations. A validation of the updates to the record will be performed by referencing the updated Dobson ozone station record to several satellite total ozone record sampled spatially and temporally to represent total column for the same geographical location as the Dobson station.



**Figure 1.** Displayed as an example is the difference between the existing 1966 - 2013 Archive data set for Boulder, and the new data set from Windobson (WD) processing as monthly averages. The blue points are monthly averages using all observations, the red are from Direct Sun (DS) observations only. The Plus symbols are calibration of instrument changes. The differences are discussed in the text.