# Homogenization of the Dobson Umkehr serie of Arosa, Switzerland.

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The Dobson 051 Umkehr time series (Arosa dataset) show several breaks [Petropavlovskikh et al., 2001], which can be attributed to instrumental causes. In the present study, two major breaks will be considered: the change from manual Dobson 015 to automated Dobson 051 in January 1988 as primary instruments and the replacement of the chopper-motor damaged by a lightning stroke coupled to a probable misalignment of the shaft-encoder in August 1992.

Both 1988 and 1992 N-values steps are solar zenith angle dependant and are therefore affecting the retrieved ozone content. Fortunately, parallel measurements of D015 and D051 are available over the time period 1988-9 and these have been used to estimate the bias between the two instruments. A SZA and season dependant linear transfer function has then been calculated and applied to the N dataset before 1988, the last epoch being considered to be the most accurate in the measurement series. The 1992 step has been corrected by reprocessing the encoded R-values, respectively the N-values, from 8/1992 up to 8/2003, date of the last Dobson intercomparaison. The layers ozone contents have been retrieved from the original and recalculated N-values using the REVUE (Umk2000.for) version of the Dobson inversion algorithm.

The updated N-values dataset will be presented together with the influence of the step corrections on the layers ozone contents and the observed ozone trend at different levels. The main influence is observed for the upper stratosphere where a change of +1.5%/dec is obtained compared to the original trend values based on annual means observations. The necessity of correcting other minor discontinuities (detected by Easterling & Peterson homogeneity test) will be discussed regarding the sensitivity of the annual observed trend profile to the corrections.