

Comparison of ozone trends from sondes and satellites data

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The main goal of the ESA project CCI-Ozone is the reprocessing of the ozone measurements series from the various instruments on-board satellites. An important effort have been deployed over the last 5 years to select the best retrieval algorithms and correct as far as possible any bias in the original data to produce homogenized data sets valid for climate analysis purposes.

At the final stage of this project, the short to middle term quality of the final products is evaluated by direct comparison with ground based data sets mostly from ozone sounding up to the middle stratosphere. The long term stability of the delivered products can be best evaluated by the analysis of the trends. However, the relatively short live time from the satellites instruments in regards to the climate change timescale requires to closely control the results of the trend analysis when model with multiple proxies terms are used.

In the present analysis, first the direct comparison of the mean ozone profiles from the sondes data and from the MIPAS, MLS, SCIAMACHI and SMR instruments will be presented. Then, the Payerne long terms sounding series are used to optimize the trend model in particular the selection of the prevalent proxies and to determine their respective contribution depending on the altitude. Then, the trend model with limited degree of freedom is applied to the CCI-Ozone reprocessed data sets mentioned above. The trend profiles of the different instruments is compared to the results from Payerne and other selected ground based stations from the NDACC and SHADOZ networks.