



Merged SAGE II, Ozone_cci and OMPS ozone profiles dataset and evaluation of ozone trends in the stratosphere

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We present a merged dataset of ozone profiles from several satellite instruments: SAGE II on ERBS, GOMOS, SCIAMACHY and MIPAS on Envisat, OSIRIS on Odin, ACE-FTS on SCISAT, and OMPS on Suomi-NPP. The merged dataset is created in the framework of European Space Agency Climate Change Initiative (Ozone_cci) with the aim of analyzing stratospheric ozone trends. For the merged dataset, we used the latest versions of the original ozone datasets. The datasets from the individual instruments have been extensively validated and inter-compared; only those datasets, which are in good agreement and do not exhibit significant drifts with respect to collocated ground-based observations and with respect to each other, are used for merging. The long-term SAGE-CCI-OMPS dataset is created by computation and merging of deseasonalized anomalies from individual instruments.

The merged SAGE-CCI-OMPS dataset consists of deseasonalized anomalies of ozone in 10 deglatitude bands from 90S to 90N and from 10 to 50 km in steps of 1 km covering the period from October 1984 to July 2016. This newly created dataset is used for evaluating ozone trends in the stratosphere through multiple linear regression. Negative ozone trends in the upper stratosphere are observed before 1997 and positive trends are found after 1997. The upper stratospheric trends are statistically significant at mid-latitudes and indicate ozone recovery, as expected from the decrease of stratospheric halogens that started in the middle of the 1990s and stratospheric cooling.