EGU21-14237, updated on 19 Sep 2021
https://doi.org/10.5194/egusphere-egu21-14237
EGU General Assembly 2021

Tropospheric ozone based on S5P-BASCOE and extension to the past based on OMI and GOME-2 observation.

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Ozone in the troposphere has mainly two sources, the first one is stratospheric intrusion the second one is chemical reactions following the emissions of primary pollutions such as NOx and VOCS.

We combine TROPOMI total ozone columns with Microwave Limb Sounding ozone profiles assimilated to BASCOE to retrieve tropospheric ozone columns.

Based on a first analysis we observe a decrease of tropospheric ozone during April and May 2020. The lockdown as measure against the Corona pandemic also caused an economic shutdown, and thereby a reduction of primary pollutants mainly NOx. Within the cities centres the lack of NOx caused an increase in tropospheric ozone, due to non linear effects in the ozone NOx chemistry. Outside the cities however a decrease might be expected. Thereby the tropospheric ozone reduction in April May might be caused by the lockdown due to the COVID-19.

However the natural variabilty is high caused by metrological conditions. To redcue the influnece of indiviual metrological situation the timeseries is expanded to the past by using additional sensors like GOME-2 and OMI, combined with the BASCOE reanalysis data set BRAM. The tropospheric columns are haromized using the same time and latitude depended bias added as for harmonizing the total columns. Therby we generated a typical anual mean data set, where the exceptional year of 2020 can be compared to.