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Occurrence of discontinuities in the total ozone from ERA-5 reanalyse

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The aim of this presentation is to search for the occurrence of discontinuities in the total ozone data from the ERA-5 reanalyse, with the help of the Pettitt, Buishand and the Standard homogeneity tests. This occurrence is important for trend analyses, because the presence of discontinuities influences the values of trends and their significance. Discontinuities arise from the changing in the assimilation procedure, introducing new observation to the reanalyse, and changing of data quality. We search for their spatial, temporal and geographical occurrence. There are dates which the occurrence of discontinuities is expected in: 2004- transition from SBUV to EOS Aura data and 2015- the 4.2 MLS data were started to use instead of version 2.2. We search for discontinuities in the following classes of extremity: 1st, 10th, 25th, 50th, 75th, 90th and 99th percentile as well as the mean. Generally speaking, the discontinuities are occurred approximately from 30 to 60 % of all grid cells. The results are slightly test dependent and the Pettitt test is not able to detect the discontinuities in 2015. The best performance in discontinuity detection in this year was obtained for the Standard homogeneity test. Ozone data with high occurrence of the discontinuities is not suitable for trend analyses.