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Type: Talk

Sensitivity of interannual and long-term changes in stratospheric ozone to predictor time series and trend model

Several natural as well as anthropogenic factors affect stratospheric ozone concentrations at different timescales. Disentangling these processes in statistical analyses can be a challenge due to the representativeness of predictor time series, the lagged response of ozone and the possible non-orthogonality of proxies. Another challenge is the proper statistical modelling of non-linear long-term ozone changes. In support of ongoing activities in APARC/LOTUS to improve the baseline time series analysis method, we present an investigation of whether and how different methodological approaches influence the regression results inferred from merged satellite ozone profile time series (SAGE-CCI-OMPS+, SWOOSH, and GOZCARDS). Predictors include the Quasi-biennial Oscillation (QBO), the 11-year Solar Cycle, El Niño Southern Oscillation (ENSO), and aerosols (AOD). We have used a pressure-latitude gridded lag matrix to try to infer the geographical structure of the ozone response to the delayed ENSO time-series. We also investigate how trend values and their uncertainty are affected by the lag.

Topic

Atmospheric composition (Earth and planets), chemistry and transport

Authors: NATH, Oindrila (BIRA-IASB); HUBERT, Daan (BIRA-IASB)

Co-authors: MINGANTI, Daniele (BIRA-IASB); KEPPENS, Arno (BIRA-IASB); DAVIS, Sean (NOAA); FROIDEVAUX, Lucien; SOFIEVA, Viktoria (Finnish Meteorological Institute); LAMBERT, Jean-Christopher (BIRA-IASB)

Presenter: HUBERT, Daan (BIRA-IASB)