

Interactive comment on “Long-memory processes in global ozone and temperature variations” by C. Varotsos and D. Kirk-Davidoff

Anonymous Referee #3

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The paper gives interesting insights into the tendency of the atmosphere to develop persistent features of temperature and total ozone changes. It is adding original information to results previously obtained by other authors and briefly discussed in the paper. Significant differences are found for two parameters (one of them (TBT) representing the middle troposphere, the other one (TOZ) mainly representing the stratosphere) with regard to persistence in the lower and middle atmosphere on the one hand and at low and middle to high latitudes on the other hand. It is agreed that reproduction of these features in climate (change) models might be a good test of their performance. Speculations about the origin of deviating behaviour of both parameters are focusing on internal atmospheric processes. It would be interesting to know what the authors think about the effect of forcing through boundary conditions (in this case invariable

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land-sea distribution with variable surface characteristics) regarding persistence of atmospheric properties in the troposphere and the stratosphere. For future studies it is recommended to include at least one other stratospheric parameter in the persistence analysis since this might help to identify causes of persistence more clearly.

Technical corrections: Abstract, last line: ..variations in the ozone layer p. 4326, 3rd line f.b.: .can be obtained p. 4327, 9th line f.a.: .Other scientists .have previously investigated p. 4330, 2nd line in 3.1: both hemispheres Figures general: Better not to use abbreviations like TOZ, TBT without explanation in the legends

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