

Interactive comment on “Scaling behaviour of the global tropopause” by C. Varotsos et al.

Anonymous Referee #2

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In their paper "Scaling behaviour of the global tropopause", Varotsos and Tسانis estimate the long-lag correlations of the mean tropopause height for a range of zonal mean bands, including the global mean. They show that long-range correlation decreases with increasing latitude.

I find this analysis very opaque to physical interpretation. There is no real attempt to discuss the nature of the fluctuations that result in the differing statistics (i.e. are they dominated by annular mode variability? ENSO? QBO?). At a minimum, the paper should should the time series upon which the analysis was performed.

The paper lacks any theory for what the pattern of long-range correlation decrease ought to be. The authors speculate about a comparison with model data, but don't pursue this possibility, despite the ready availability of hundreds of years of coupled climate model runs, whose output could be compared with the observed record used

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by the authors. It would be simple, for instance, to use a hundred year run of a couple climate model to test whether zonal mean differences in the long-range memory of tropopause height are actually a persistent feature of model climate, as opposed to an accident of the particular time period under analysis.

Without these elements the reader has no way to interpret the scientific significance of the results, and I cannot recommend the paper for publication in ACP.

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 17891, 2008.

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