

Interactive comment on “Classification of tropospheric ozone profiles over Johannesburg based on MOZAIC aircraft data” by R. D. Diab et al.

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Responses to Referee #1

The Twinspan cluster analysis technique is a divisive rather than an agglomerative clustering method. As such the entire group of profiles is dichotomously divided into a hierarchy of smaller and smaller clusters. It is the agglomerative clustering methods in which groups are formed on the basis of various criteria such as centroid, nearest neighbour etc. This is clarified in the revised draft.

Attempts were made to undertake a cluster analysis on the water vapour profiles but no meaningful results were obtained. The water vapour profiles are generally very variable. Even within the groups defined on the basis of the magnitude and altitude of ozone, there was no consistency or detectable patterns in water vapour variations.

All other suggestions have been included in the revised draft.

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Responses to Referee #2

1. The location from which trajectories have been calculated is Johannesburg. It is recognised that the aircraft location will differ, however, as was stated in the Data and Methodology section this difference has been ignored. The likely influence of location on back trajectories is balanced by the fact that general indications of source regions were sought and the analysis was based on multiple back trajectories in a particular group and not a single case study. 4. It is felt that the addition of a figure showing an alternative set of frequency distributions based on molecules of ozone per cm³ will complicate a paper that already includes many figures, particularly as the existing frequency distributions showed meaningful results. The idea is a good one and will certainly be investigated in future.

All other suggestions have been included in the revised draft.

Interactive comment on Atmos. Chem. Phys. Discuss., 3, 705, 2003.

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