

Interactive comment on “Modelling deep convection and its impacts on the tropical tropopause layer” by J. S. Hosking et al.

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Reply to P. Ricaud (Referee)

The authors would like to thank the referee for useful comments and suggestions that helped us to improve the manuscript.

Comments

Par 4, We agree with the referee's comment where he says that it is already known that within zones of low OLR models tend to show high convective activity. In this paper we assess the spatial correlation between low OLR and convective activity to validate the model with monthly mean satellite data. After this we then investigated the seasonal, regional and vertical distributions of convection (using the PDFs) and assess how the

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model represents the TTL – both of which have not been done previously within a global climate model.

Par 5, The referee makes a good point in stating the importance of the diurnal cycle of convection. In this paper the modelled diagnostics (e.g., OLR, convective cloud top and TTL levels) are calculated using all timesteps (20 mins). We realise that we didn't make this clear in the text and have now included an extra sentence (see "All monthly mean diagnostics..."). We have also found that the 6-hourly ECMWF operational analysis data is too temporally coarse to produce meaningful monthly mean OLR fields to compare with our results.

typo: fixed. Thank you!

Interactive comment on Atmos. Chem. Phys. Discuss., 10, 20267, 2010.