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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Intraseasonal variations of upper tropospheric water vapor in Asian monsoon region" *by* R. Zhan et al.

Anonymous Referee #1

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Zhan et al. present a study of tropical upper tropospheric water vapour (UTWV) over the Asian monsoon region based on AIRS data, and complemented with analysis data from ECMWF. They observe that UTWV is correlated with convection, and identify propagating intraseasonal anomalies. They divide the monsoon region into two distinct regions, and discuss results in terms of a 10 day and a 30-60 days oscillation. The presentation and discussion of the results for those regions and oscillation periods is often confusing, and the authors should try to find a way to present the material more clearly (perhaps it would help to discuss the results for each region separately, rather than switching back and forth?). The paper points out differences in results to other studies (e.g. p8074/l23), without writing what the differences are. Readers less familiar with these papers are left wondering. Further, a statement like 'The propa-

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gating features ...of 2003 ... are not identical ... 2004' (p 8081,l10) is too vague: the paper should describe what is different, and why it is considered an aspect worth mentioning. Naturally, the reader begins to wonder what the statistical significance of the described features are (i.e. are they climatologically relevant, or a random observation of one particular year?). Some clarifying statements would be helpful. Also, the paper has awkward sentences that should be improved (e.g. p.8076/l3/4: 'relatively single propagating signature').

My main concern, however, is that the paper does not really arrive at substantial conclusions. That UTWV oscillations on various timescales do occur is hardly new, and neither is its association with deep convection. Sentences like 'We note that the 30-60 day wet periods are closely related to the monsoon activity.' (p8076/l2) are too vague to have meaning. The authors point out that they find disturbances that propagate westward, which differs from the results of other studies that focus on eastward propagating disturbances. This may be interesting and could deserve publication, but the paper does not provide any insight as to why this different behaviour occurs, or why it may be important at all. Further, a short description as to why you observe a lag with height (e.g. p. 8078/l20, Fig. 8) between UTWV and convection would certainly help to improve the relevance of the paper (for example, one might expect convection to transport water upward on timescales of hours, and the subsequent gravitational settling of the ice crystals may also be of order hours to a day or so, and hence it is not immediately trivial to see why you observe a progressive lag with height from about 400 hPa upward). I therefore recommend that the authors should substantially improve the analysis and discussion of the processes responsible for the features they describe.

Interactive comment on Atmos. Chem. Phys. Discuss., 6, 8069, 2006.

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