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Discussions

Interactive comment on "**Impact of typhoons on the composition of the upper troposphere within the Asian summer monsoon anticyclone: the SWOP campaign in Lhasa 2013**" *by* Dan Li et al.

Anonymous Referee #2

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Comments on the manuscript entitled, 'Impact of typhoons on the composition of the upper troposphere within the Asian summer monsoon anticyclone : the SWOP campaign in Lhasa 2013', by Li et al. submitted for plausible publication in Atmos. Chem. Phys.

This paper deals with the effects of typhoons on ozone and water vapour distribution in the upper troposphere at Lhasa. The authors have presented a detail analysis of the data obtained during the SWOP campaign, i.e. ozonesonde, Frost-point-hygrometer, space borne lidar along with back-trajectory estimation and reanalysis data. This study is very important, in principle, since detail knowledge of water vapour and ozone budget in the upper tropospheric plays a vital role in global warming. The paper is well written

and contains significant data and original materials. I recommend for publication in ACP with minor revision.

My specific comments are following under : (1) P1/L11 : What is rotational subsidence ? (2) P2/L24 : "Strong tropical cyclones in the..........". This sentence is not necessary in the manuscript. (3) P5/L1-3 : "The trajectories..........." The sentence is not clear. Please rephrase it. (4) P7/L32 : remove "total ozone profile" with "mean ozone profile" and following the same throughout the manuscript. (5) P8/L35-P9/L1 : "During uplift process.........." Provide a reference. (6) Fig.8 : What indicate the white contours ? It should be mentioned in the text as well as in the figure caption. I am hard to find any discussion about it. White contours can be removed if necessary discussion is not included in the manuscript. (7) Fig.8 : Authors are discussing about the deep convective clouds, then lidar backscattering from CALIPSO cannot be used. CALIPSO is good for thin /cirrus cloud. CloudSat data could be helpful for estimation of penetration height of convective clouds. Fig.8 can be omitted. Alternative, brightness temperature or OLR can be useful to estimate (indirect) the penetration height of convective cloud. (8) Fig.9 : Figure caption meaning is not clear. In this fig. legends : "OzoneâĂŤobs, ozoneâĂŤtyphoons, ozoneâĂŤno typhoons" need to be explain properly in the text. (9) Fig.10 : (Figure caption) : "The relative humidity ......". Is it "2013" or "August 2013"? (10) Table 1: Burst altitude of balloon can be omitted in the table. (11) Additional analysis of vertical velocity (altitude-time cross-section over Lhasa) using reanalysis data will be helpful to identify the updrafts and down drafts over the campaign site.