Atmos. Chem. Phys. Discuss., 13, C13336–C13337, 2014
www.atmos-chem-phys-discuss.net/13/C13336/2014/

Atmospheric Chemistry and Physics Discussions

Interactive comment on "Environmental influences on the intensity changes of tropical cyclones over the Western North Pacific" *by* Shoujuan Shu et al.

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Received and published: 12 April 2014

We thank the reviewer for the very thorough review of our manuscript and for the insightful comments. With respect to the general comments on the novelty of our study in light of Riemer and Montgomery's recent studies, we believe this study is quite complementary and unique in that this is the first observational study based on best track estimate, global reanalysis and satellite retrievals of moisture that confirms some of the hypotheses of Riemer and Montgomery (RM, 2010, 2013) on the impact of directional shear with respect to environmental moisture distribution, while the RM studies are based on idealized TC simulations under limited variations in the large-scale environment. Through compositing analyses of a large number of observed events, this

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is also the first systematic study to document the close relationship between dry air associated with subtropical high and intensity changes of TCs over the WNP. The influence of the Saharan air layer (SAL) on the growth of TCs over Atlantic basin has been studied over the past few decades.

Nevertheless, according to per comments from both reviewers, we have done some additional analyses which include(1) dividing the intensifying/decaying events based on their relative locations to the WNPSH, (2) examining the shear-induced downdrafts flux low theta_e air into the inflow layer of TC, and (3) comparing the maximum potential intensity between the two groups (intensifying versus weakening events). Also, we made all the minor fixes and improvements as the two anonymous referees suggested in our revised manuscript.

Our point-to-point responses to your comments are in the supplemental PDF file.

Please also note the supplement to this comment:
http://www.atmos-chem-phys-discuss.net/13/C13336/2014/acpd-13-C13336-2014-supplement.pdf

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Interactive comment on Atmos. Chem. Phys. Discuss., 13, 31815, 2013.