

Interactive comment on “Reexamining the barrier effect of Tibetan Plateau on the South Asian summer monsoon” by G.-S. Chen et al.

Anonymous Referee #2

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The influence of the Tibetan Plateau on the Asian monsoon has been a hot topic for a long time. This manuscript (MS No.: cp-2013-127) reexamined the effect of Tibetan Plateau on the South Asian summer monsoon with three numerical experiments and further tested the hypothesis of the barrier “blocking” mechanism of the Tibetan Plateau. These experiments overall are meaningful for our understanding of the effect of Tibetan Plateau in evolution of the Asian monsoon. However, the analysis of results generally seems too simple to convince readers. There is lack of analysis of the physical mechanisms in explaining simulated some phenomena. A few Specific comments are as follows. 1), From the difference in surface wind for JJA between FULL_TP and NO_TP (Fig. 2a, P.7), the southwest monsoon significantly strengthens from East African coast to Indian Subcontinent. However, JJA precipitation decreases significantly over western Arabian Sea and south Asia. This inconsistency is hard to

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understand. From the existing knowledge, it is unreasonable that the simulated Indian monsoon precipitation decreases with uplift of the Tibetan Plateau. 2), On the discussion of barrier effect (P.8, P.11), the arguments seem to be insufficient. Some new references, which are closely related to this topic and had published a few months before this manuscript was submitted, have not been cited in this manuscript. For example, Boos and Kuang, 2013: Sensitivity of the South Asian monsoon to elevated and non-elevated heating, *Sci Rep*, 3, 119; Tang et al. 2013: Asynchronous responses of East Asian and Indian summer monsoons to mountain uplift shown by regional climate modelling experiments, *Clim Dyn*, 40, 1531–1549.

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