

Interactive  
Comment

## ***Interactive comment on “Sensitivity studies on the impacts of Tibetan Plateau snowpack pollution on the Asian hydrological cycle and monsoon climate” by Y. Qian et al.***

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In the abstract, 'Contributed by the significant increase of both sensible heat flux associated with the warm skin temperature and latent heat flux associated with increased soil moisture with long memory', i don't agree with the 'increasing of sensible heat flux associated with the warm skin temperature'. A simple equation of sensible heat flux as following:  $H = \rho_{\text{air}} \cdot c_p \cdot C_d \cdot U \cdot (T_s - T_{\text{air}})$ ,  $\rho_{\text{air}}$  is air density,  $c_p$  is the specific heat capacity of air,  $U$  is wind speed,  $T_s$  is skin temperature,  $T_{\text{air}}$  is air temperature. The variation of sensible heat flux is determined by several variables, not only by skin temperature. The wind speed is weakening over the Tibetan Plateau, demonstrated in

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Qinglong You et al.(2010). Actually, according to two recent published papers (listed below), the sensible heat is decreasing.

Guo, X., Yang, K., and Chen, Y.: Weakening sensible heat source over the tibetan plateau revisited: Effects of the land–atmosphere thermal coupling, *Theoretical and Applied Climatology*, 1-12, 10.1007/s00704-010-0328-1, 2010.

Yang, K., Guo, X., and Wu, B.: Recent trends in surface sensible heat flux on the tibetan plateau, *SCIENCE CHINA Earth Sciences*, 1-10, 10.1007/s11430-010-4036-6, 2010.

Qinglong You, Shichang Kang, Wolfgang-Albert Flügel, Nick Pepin, Yuping Yan, Jie Huang. Decreasing wind speed and weakening latitudinal surface pressure gradients in the Tibetan Plateau. *Climate research*, 2010, 42:57-64.Doi:10.3354/cr00864

What's your considerations of the variations of  $T_s - T_{air}$  in the equation?

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Interactive comment on *Atmos. Chem. Phys. Discuss.*, 10, 22855, 2010.

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