

Interactive comment on “Black carbon in snow in the upper Himalayan Khumbu Valley, Nepal: observations and modeling of the impact on snow albedo, melting, and radiative forcing” by H.-W. Jacobi et al.

Anonymous Referee #2

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Black carbon and other light-absorbing constituents are extremely concerned by the communities for possibly enhance the melting of Himalayan glaciers and the consequent water-crisis issues, described by the modelling hypothesis. This work presents the in situ black carbon concentrations in the snow and atmospheric samples from the highly elevated Himalayan sites, and therefore the impacts of black carbon on the reduction of snow albedo and melting, associated with the modelling data. This is an interesting approach to combine the sampling and simulating together and to interpret the impact of black carbon on snow. The authors shall address some important issues

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raised before it can be accepted for publication.

My major concern is that the model Crocus seems to fail to simulate the snow albedo, seeing Figure 4 and Figure 5. In Figure 4, the differences between the observed and simulated albedos are very large under standard and different BC concentrations. In Figure 5, the model seems to be not able to correctly describe the albedo decay with BC involved, and even in the area around 1/2/2005, the figure does not clearly clarify the observed albedo and simulated albedo with BC, which should be amplified and further described after comparisons. If the model does fail to simulate the snow albedo, all the discussions regarding the impact of BC on albedo will make no senses, which should be carefully addressed.

Interactive comment on The Cryosphere Discuss., 8, 5035, 2014.

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