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Interactive comment on "Impacts of absorbing aerosol deposition on snowpack and hydrologic cycle in the Rocky Mountain region based on variable-resolution CESM (VR-CESM) simulations" *by* Chenglai Wu et al.

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I have a minor comment about snow albedo calculations. The authors used the SNICAR model (embedded in CLM) to calculate snow albedo contaminated by aerosols. The default SNICAR setup assumes aerosol-snow external mixing and spherical snow grains. If it is true in this study, I suggest that the authors explicitly state the assumptions here. Moreover, a number of recent studies (e.g., Flanner et al., 2012; Liou et al., 2014; Dang et al., 2016; He et al., 2014, 2017) have shown that both snow grain shape and aerosol-snow internal mixing play critical roles in snow albedo calcula-

tions. Specifically, nonspherical snow grains reduces snow albedo reductions caused by light-absorbing aerosols compared with spherical snow grains, while aerosol-snow internal mixing significantly enhances snow albedo reductions relative to external mixing. It will be helpful if the authors could include these recent studies and add some discussions on this aspect and potential impacts on their current model results.

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