

Earth Surf. Dynam. Discuss., community comment CC1  
<https://doi.org/10.5194/esurf-2021-53-CC1>, 2021  
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## **Comment on esurf-2021-53**

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Community comment on "Modeling Supraglacial Ponding and Drainage Dynamics: Responses to Glacier Surface Topography and Debris Flux Conditions" by Da Huo and Michael P. Bishop, Earth Surf. Dynam. Discuss.,  
<https://doi.org/10.5194/esurf-2021-53-CC1>, 2021

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The authors developed an integrated numerical model to study the dynamics and feedbacks between glacier surface topography, sediment transport, and meltwater ponding. I would suggest the authors clarify the scale/scope of the ice, sediment, and waterbody simulations. For example, did you model the glacier at a valley scale by accounting for debris transport to the glacier surface from the hillslopes? Will ice flow alter the locations and distribution of the ponds over the studied ablation season?

This study focuses on processes on the glacier surface and identified the important roles of supraglacial ponds, topography, and debris flux in enhancing the glacier's nonlinear response to radiative forcing. As the authors mentioned, many of the supraglacial water bodies have connected to englacial channels and I want to ask the authors to what degree do you think the englacial drainage channels would influence your results (i.e., the rate and magnitude of water ponding)? And what is the justification for neglecting the englacial component in this study?