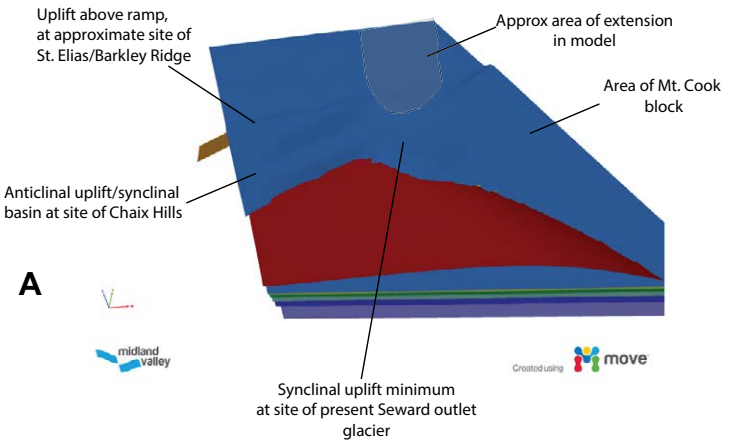

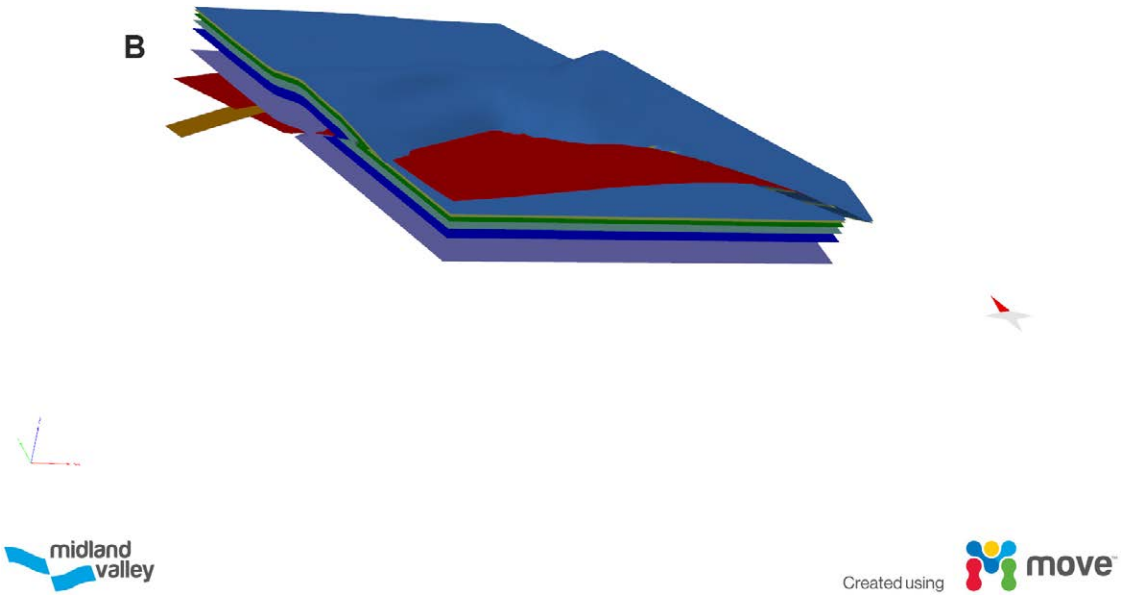

Figure 9. Three-dimensional kinematic model of the middlebuster structure in the St. Elias syntaxis. (A) is a static figure with labels illustrating uplift patterns predicted by the model. (B) is a 3D PDF that shows the full geometry of the model. The model geometry is oriented to geographic coordinates illustrated in the lower left corner of the figure (+east axis is red, +north axis is green, and up is blue). The multicolored, flat surfaces at the front of the 3D diagram are markers used to show deformation in the model. These can be turned on and off in (B) to understand the scale of the figure and the color scheme for the surfaces. The two brown rectangles with the tags "Patch" and "Patch_001" are the two fault surfaces inferred from the 1979 St Elias Earthquake. That red surface with the tag "Fault Mesh Surface" is the fault used in the kinematic model. Click here for the 3D file of Figure 9B. You will need Adobe Acrobat or Adobe Reader DC or later to view and rotate this file. If reading the full-text version of this paper, please download article PDF to view 3D file in these programs.

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illustrated in Figure 8. In addition, the model provides an explanation for a previously enigmatic geomorphic observation for this region: the location of the Seward Glacier outlet. That is, the location of this glacial stream cuts directly across the structural grain with no obvious structures controlling its location. Our model suggests the location of this divide is not coincidental, but it is a natural consequence of the kinematics and dynamics of the corner. As the topography developed, ice would have spilled naturally over the topographic low between two emergent highlands to form the glacial outlet stream of the modern Seward Glacier. Furthermore, this model also predicts localized extension to the north and east of the axis of the "middlebuster," which is consistent with sub-ice structural interpretations beneath the Seward Glacier (Bruhn et al., 2012).

midland valley

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