Million cubic meter scale post-glacial rock block slide on Cadillac Mountain, Acadia National Park

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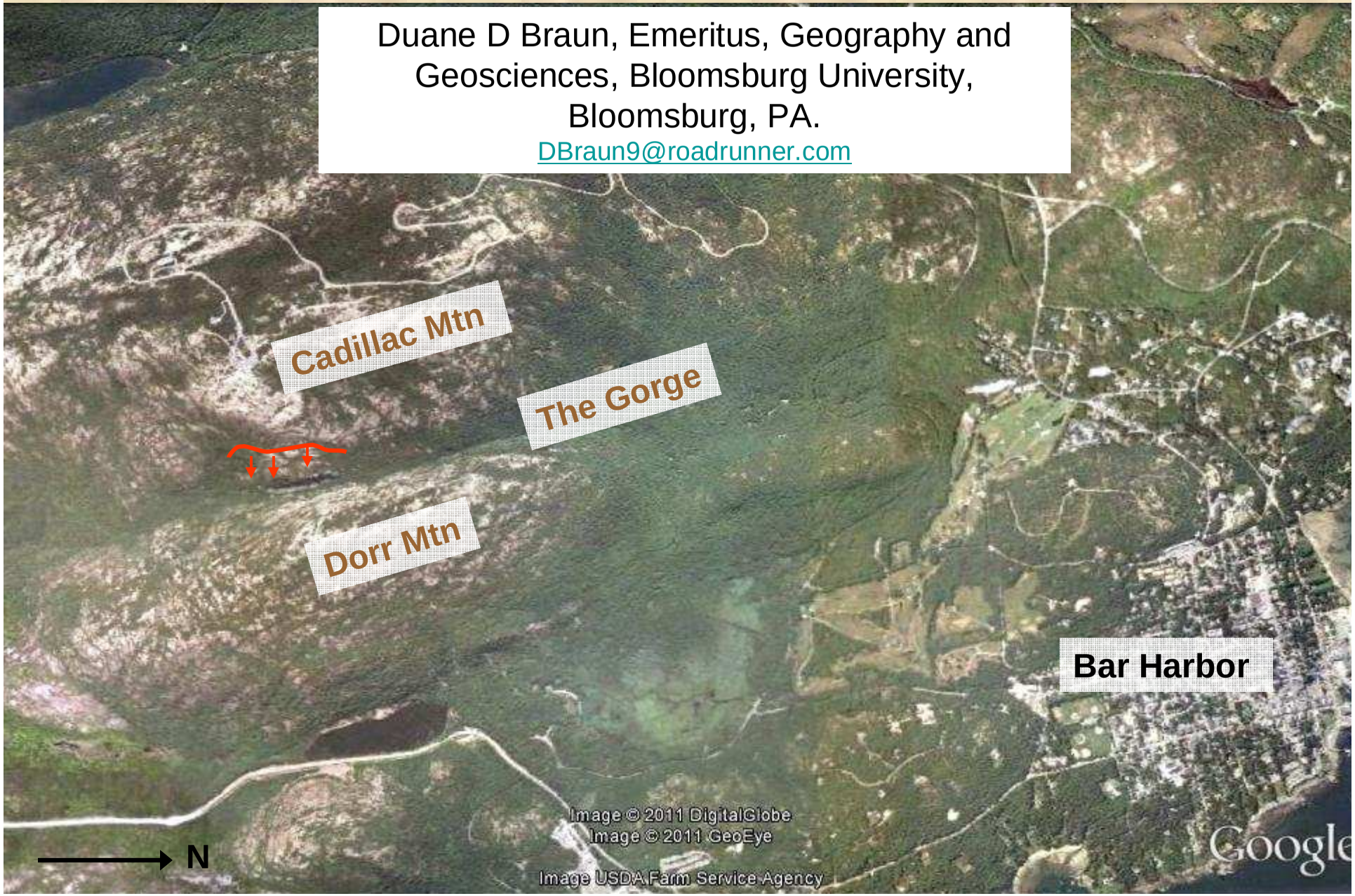
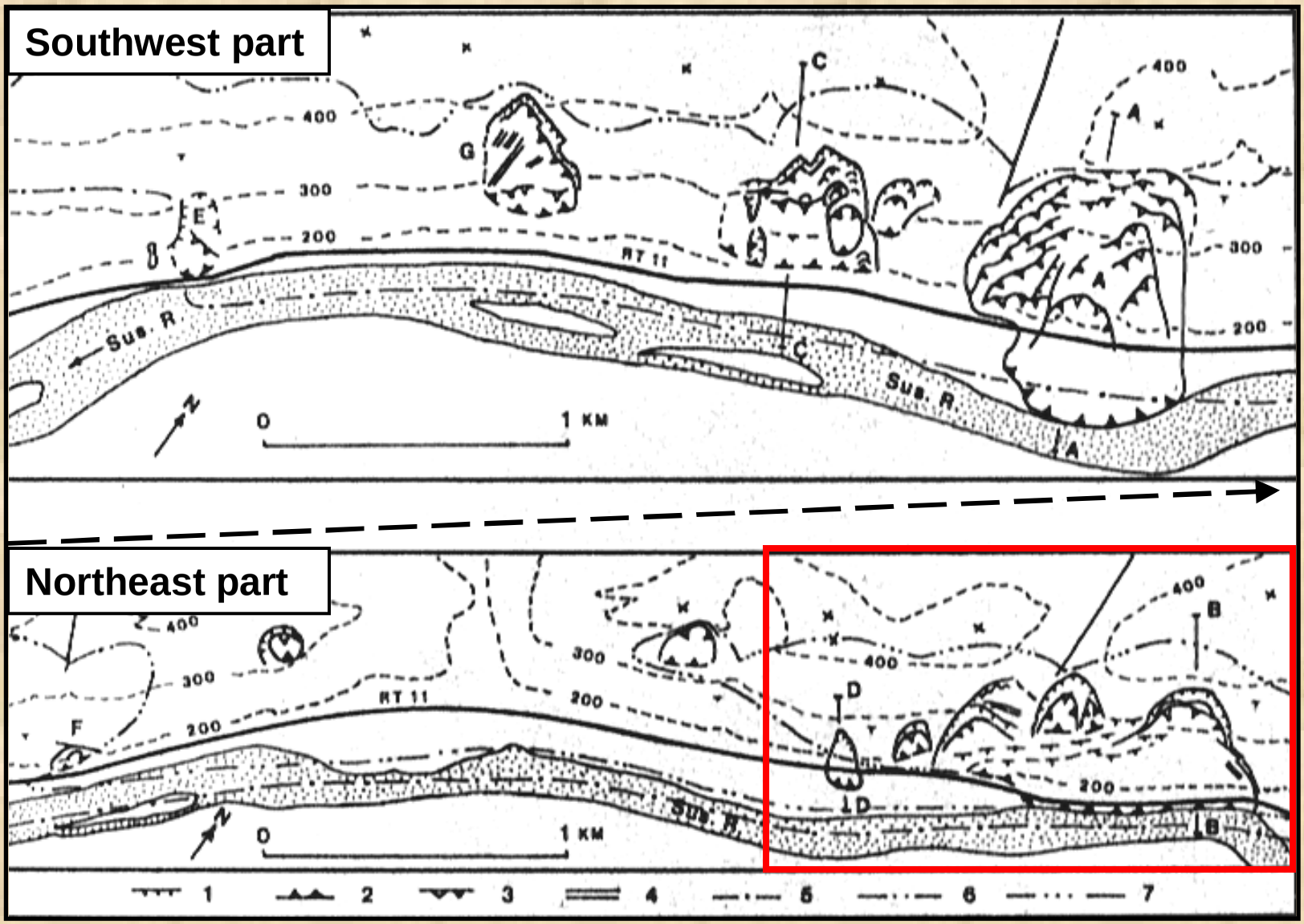
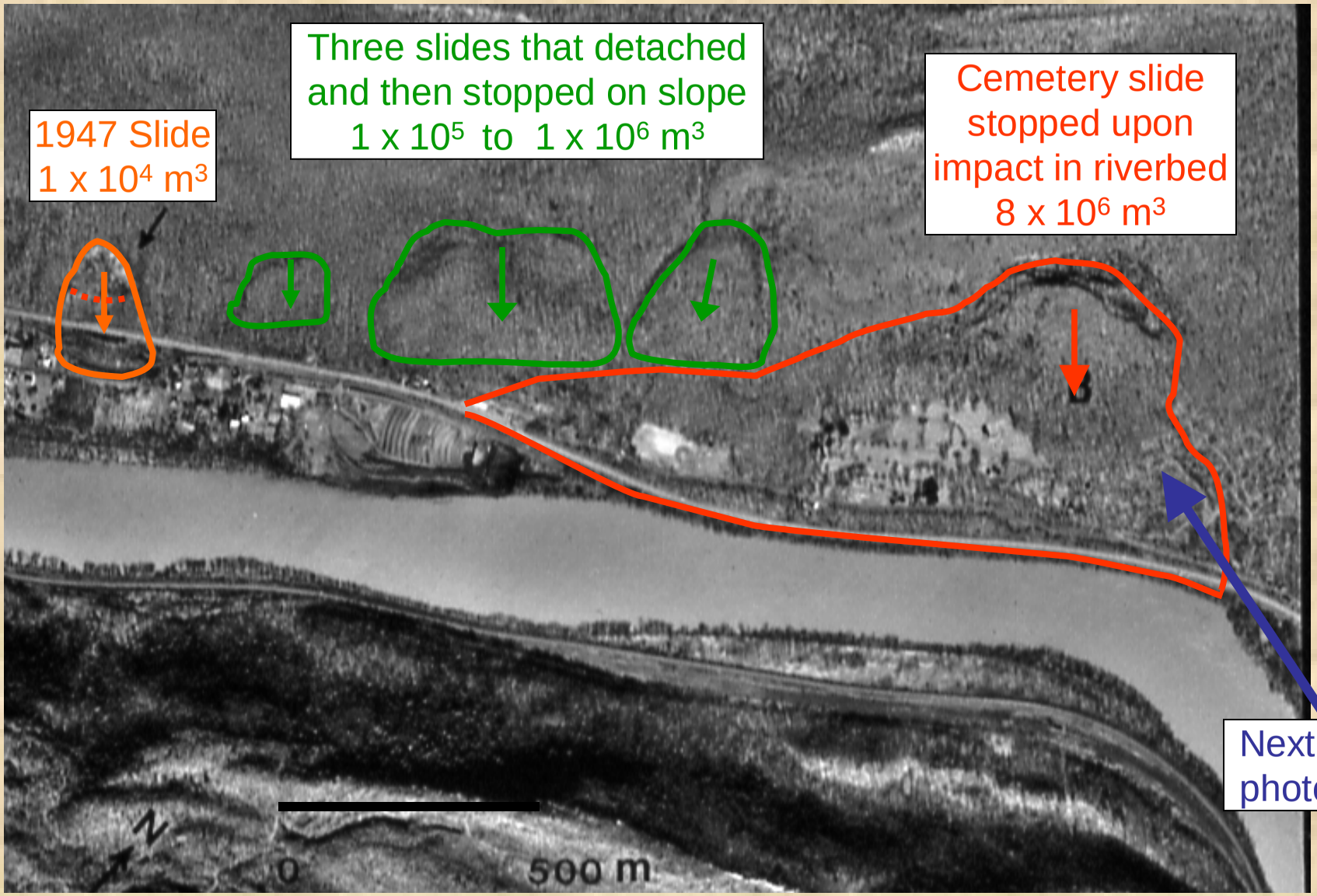


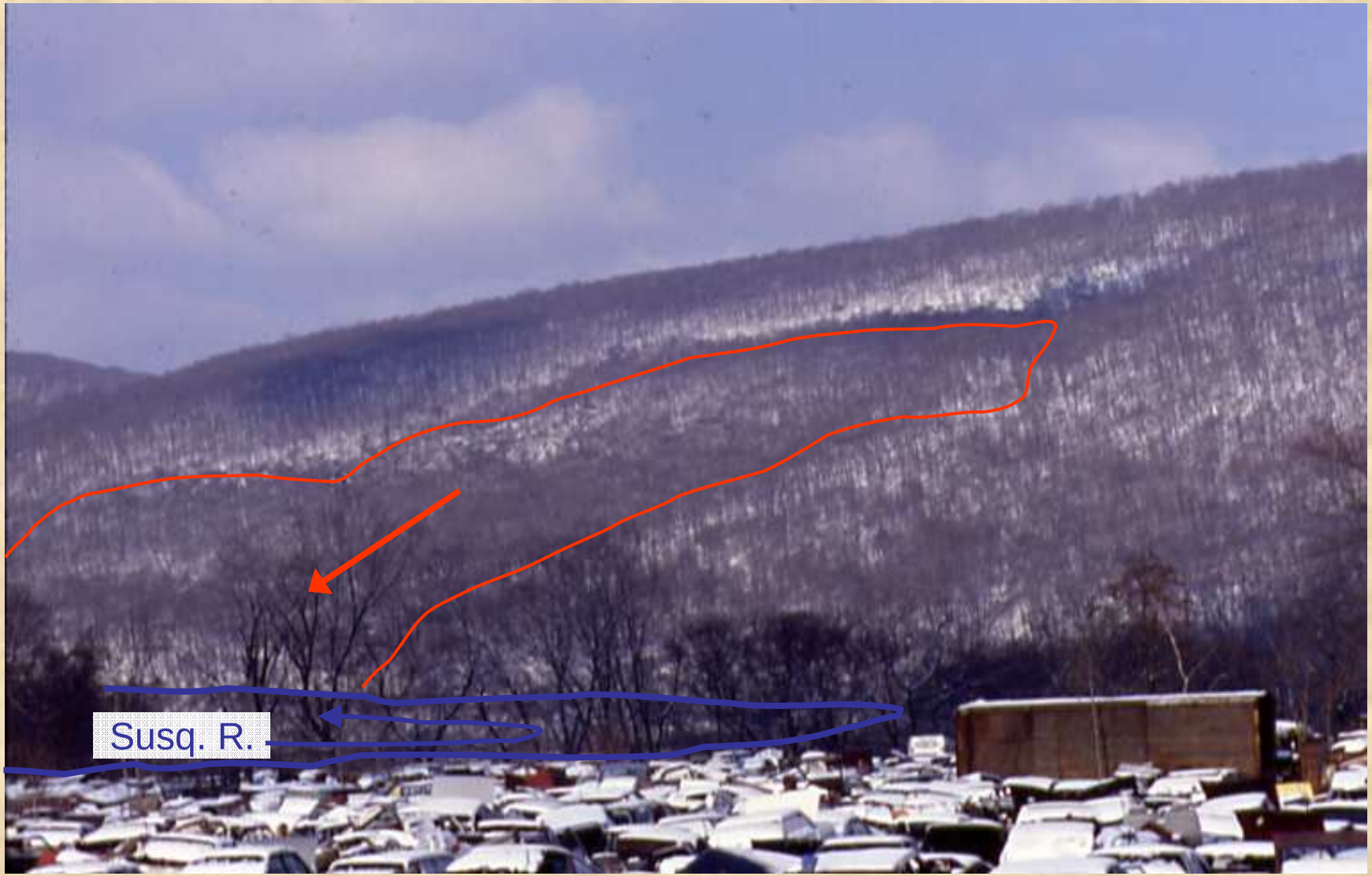
The Nescopeck Mtn., PA, Rock Block Slides
They exemplify the types of rock block slide motion.



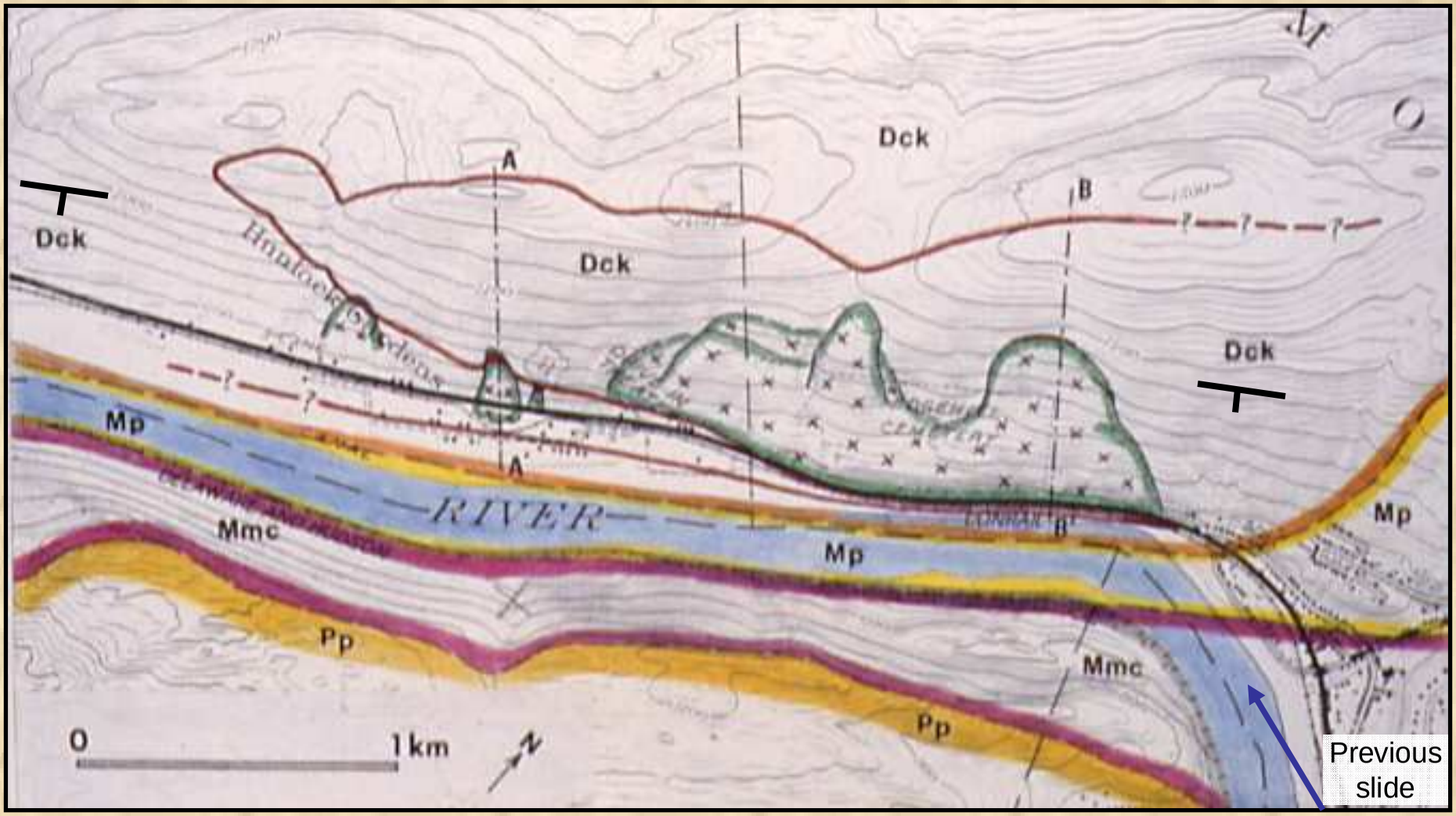
Nescopeck Mtn. slides most similar to the Cadillac Mtn. slide – they open-up headwall fissures and then stop moving



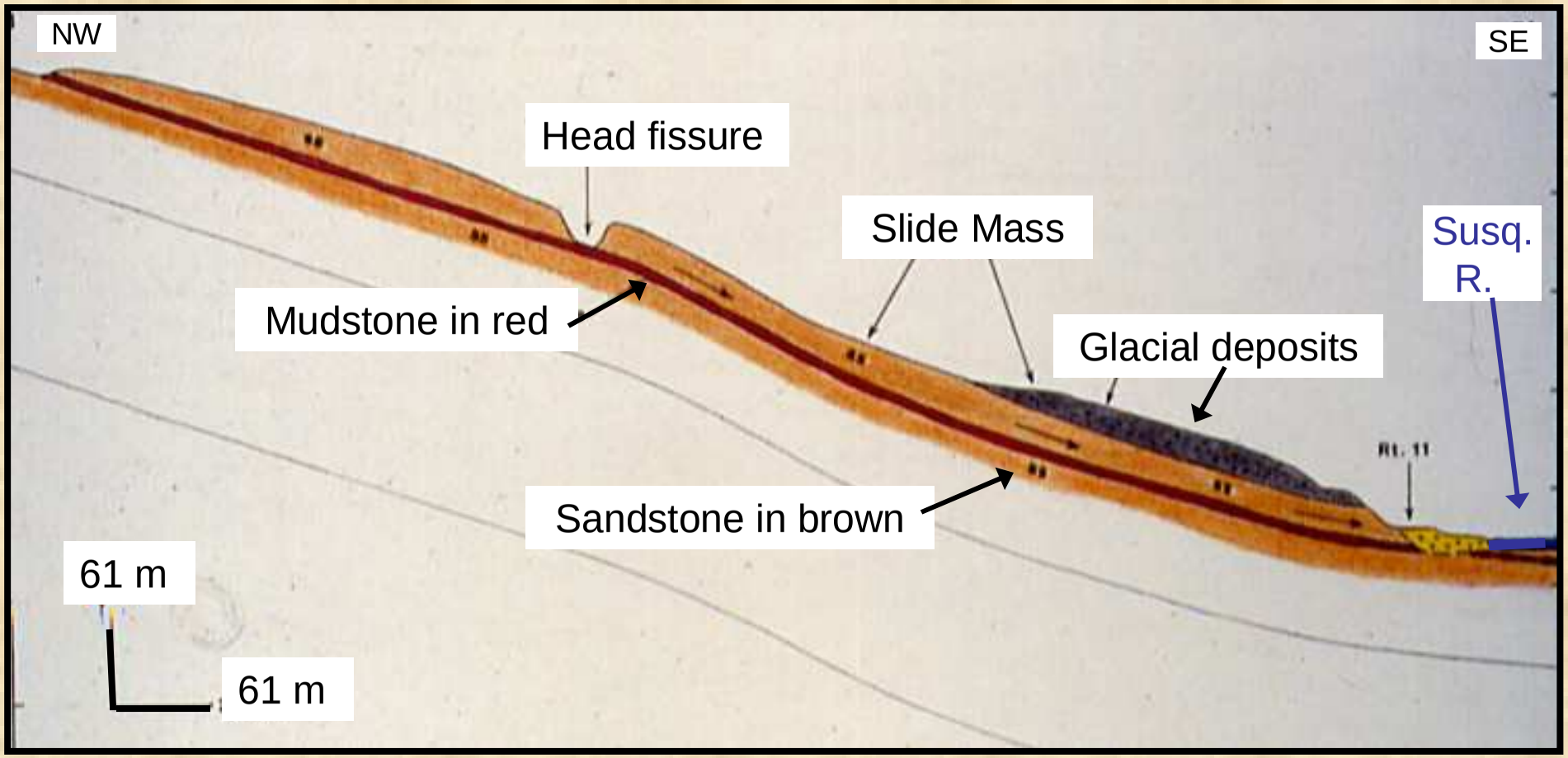
Oblique view of the Cemetery slide headwall



Geologic map showing the trace of the downslope dipping, undercut or daylighted red mudstone slip surface.
Each slide detaches along joints perpendicular to bedding.

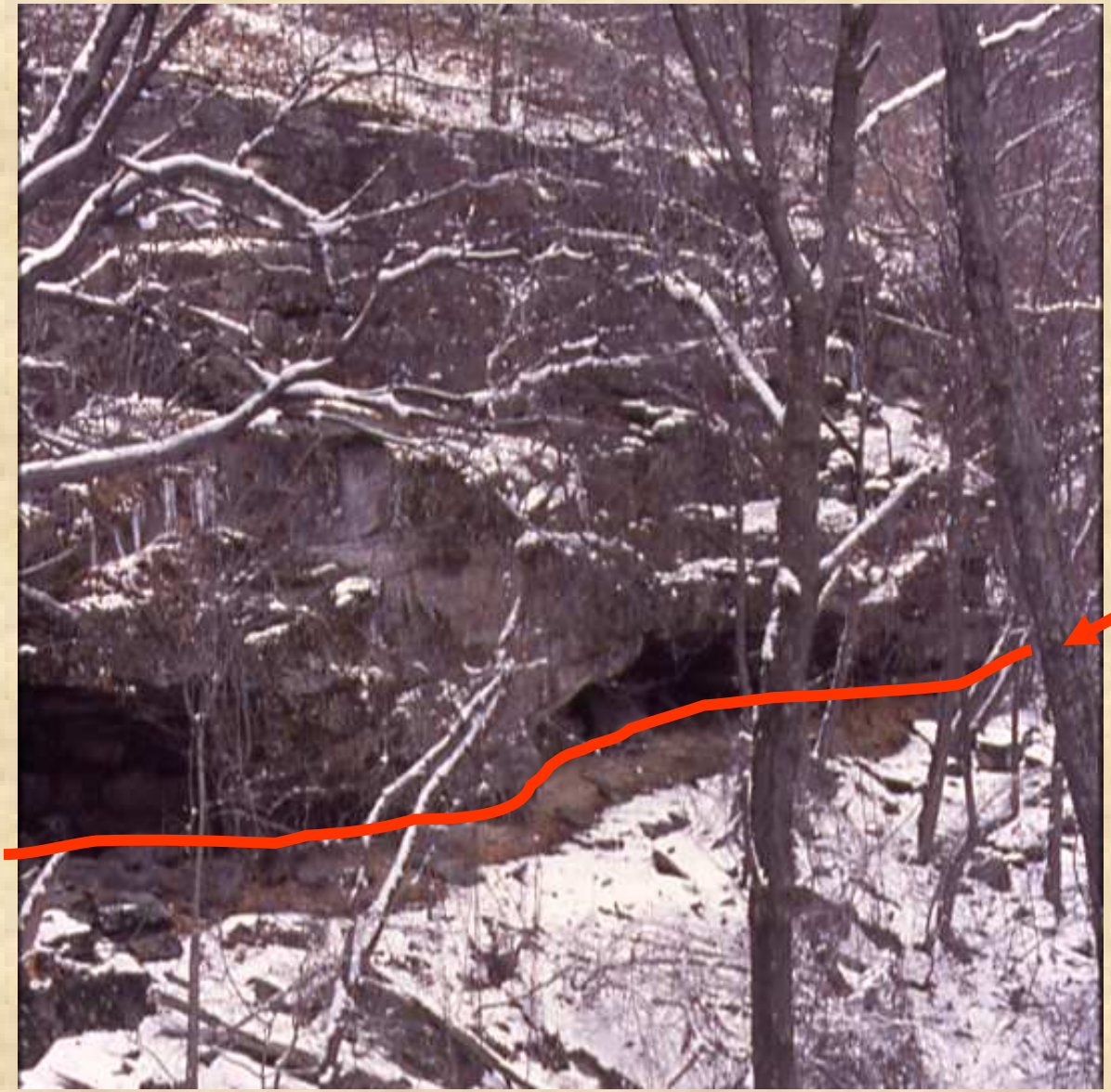


Side view or cross section of the “Cemetery” slide



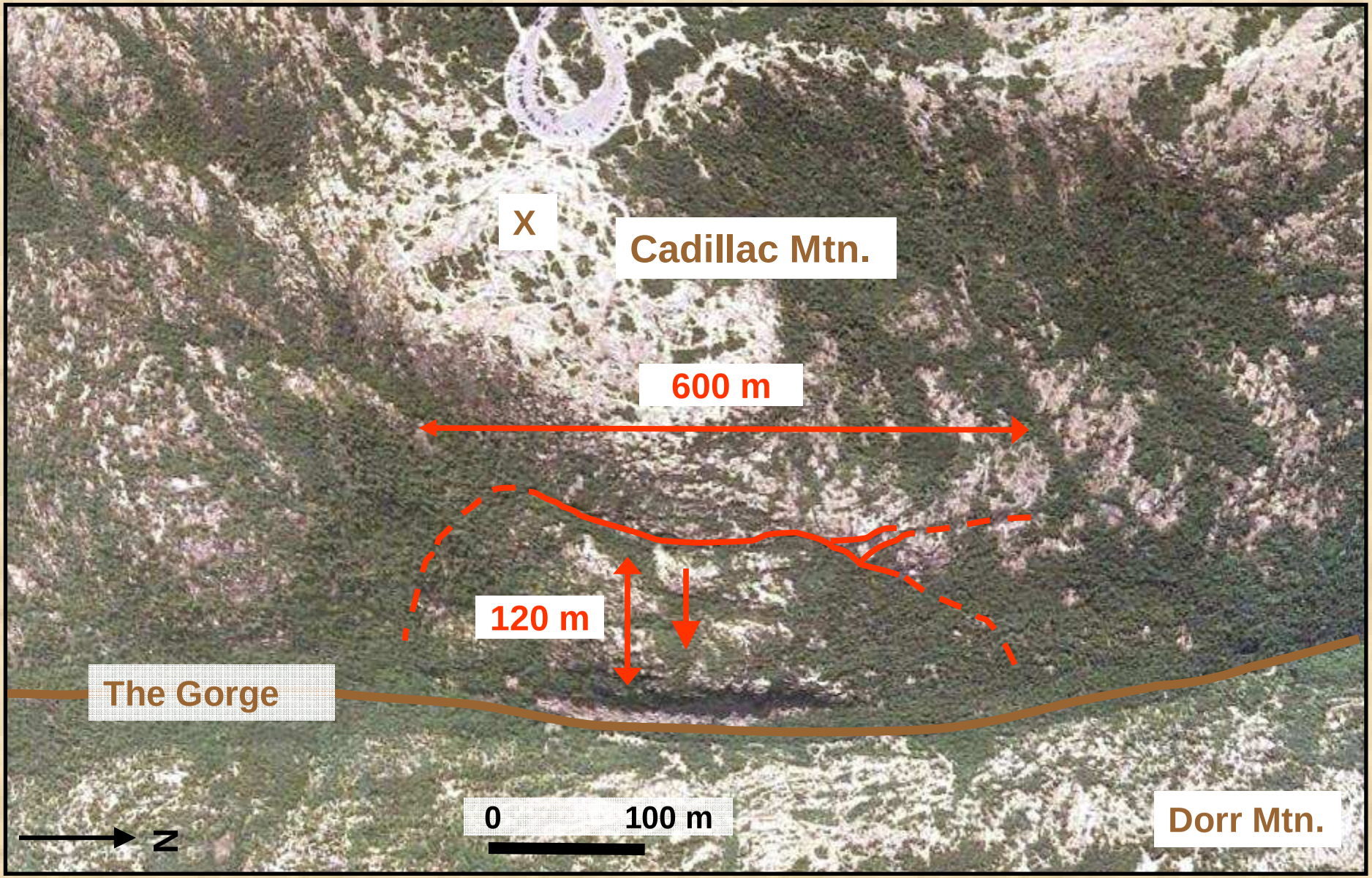
Fissure at the upslope head of the Cemetery slide

Detachment headwall of the Cemetery slide

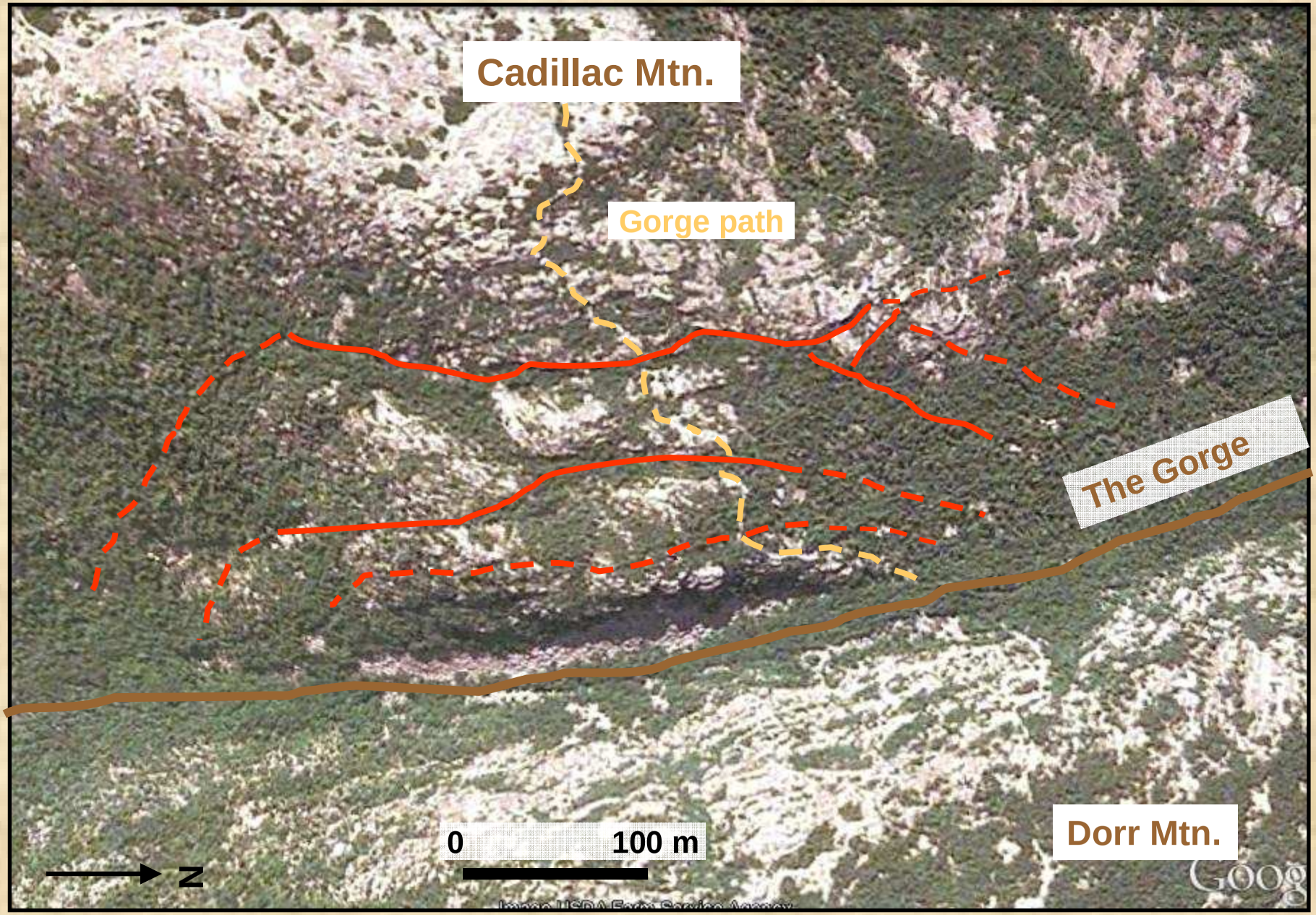


Slide plane at the contact with red mudstone and overlying gray sandstone

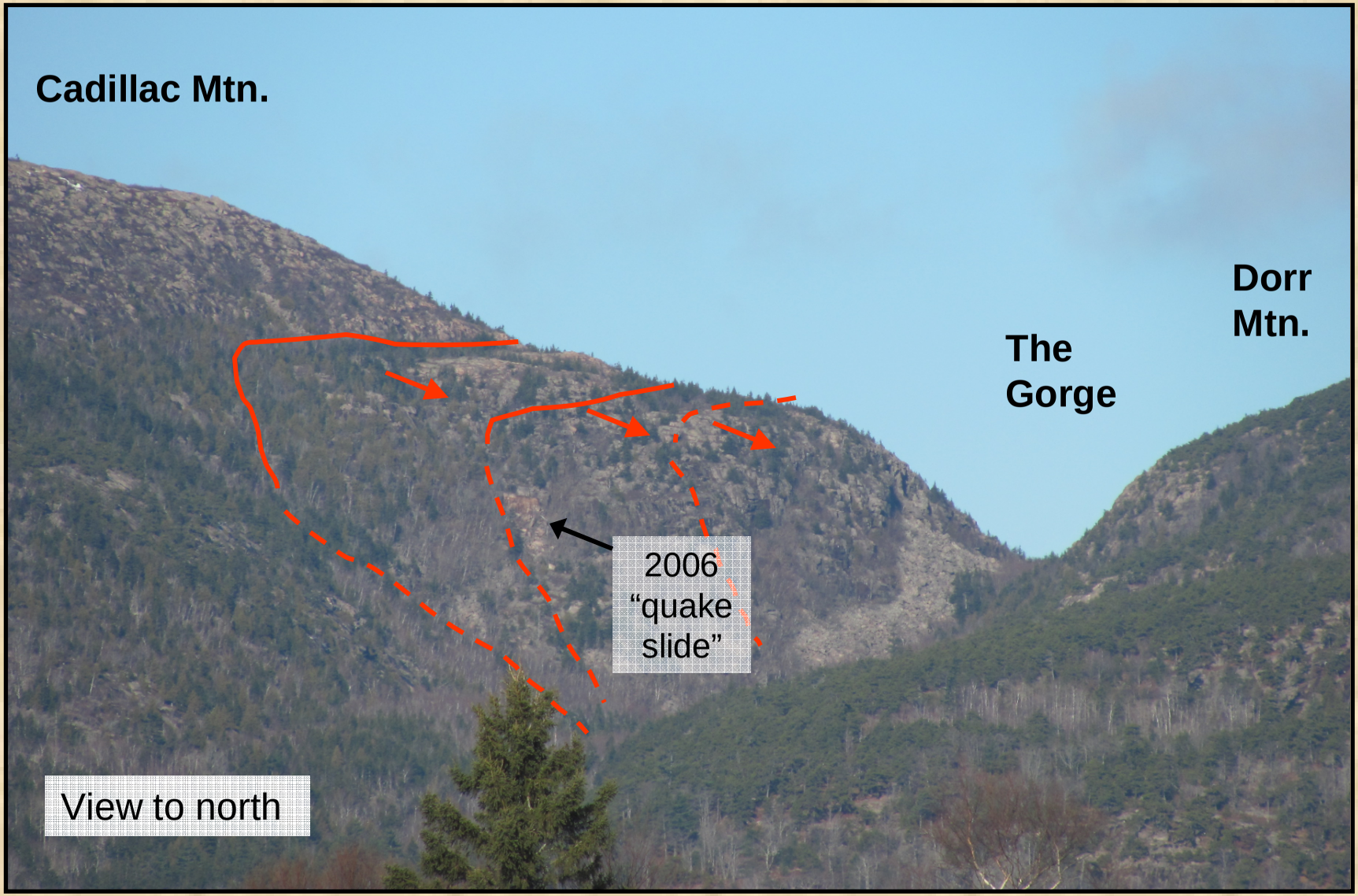
Overview of the Cadillac Mtn. rock block slide area
Cliff face at toe of slide is in dark shadow.



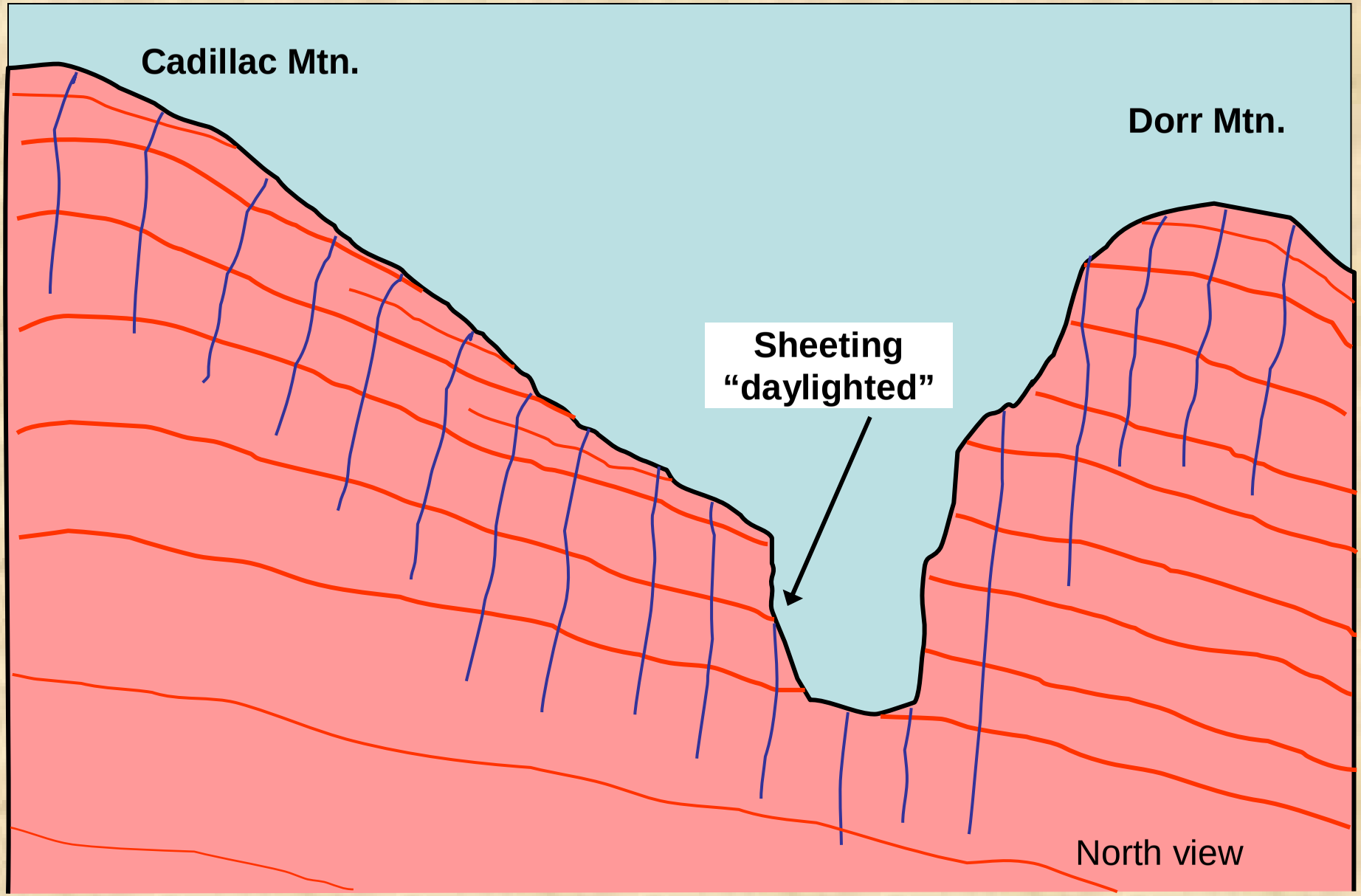
Closer view of the Cadillac Mtn. rock block slide



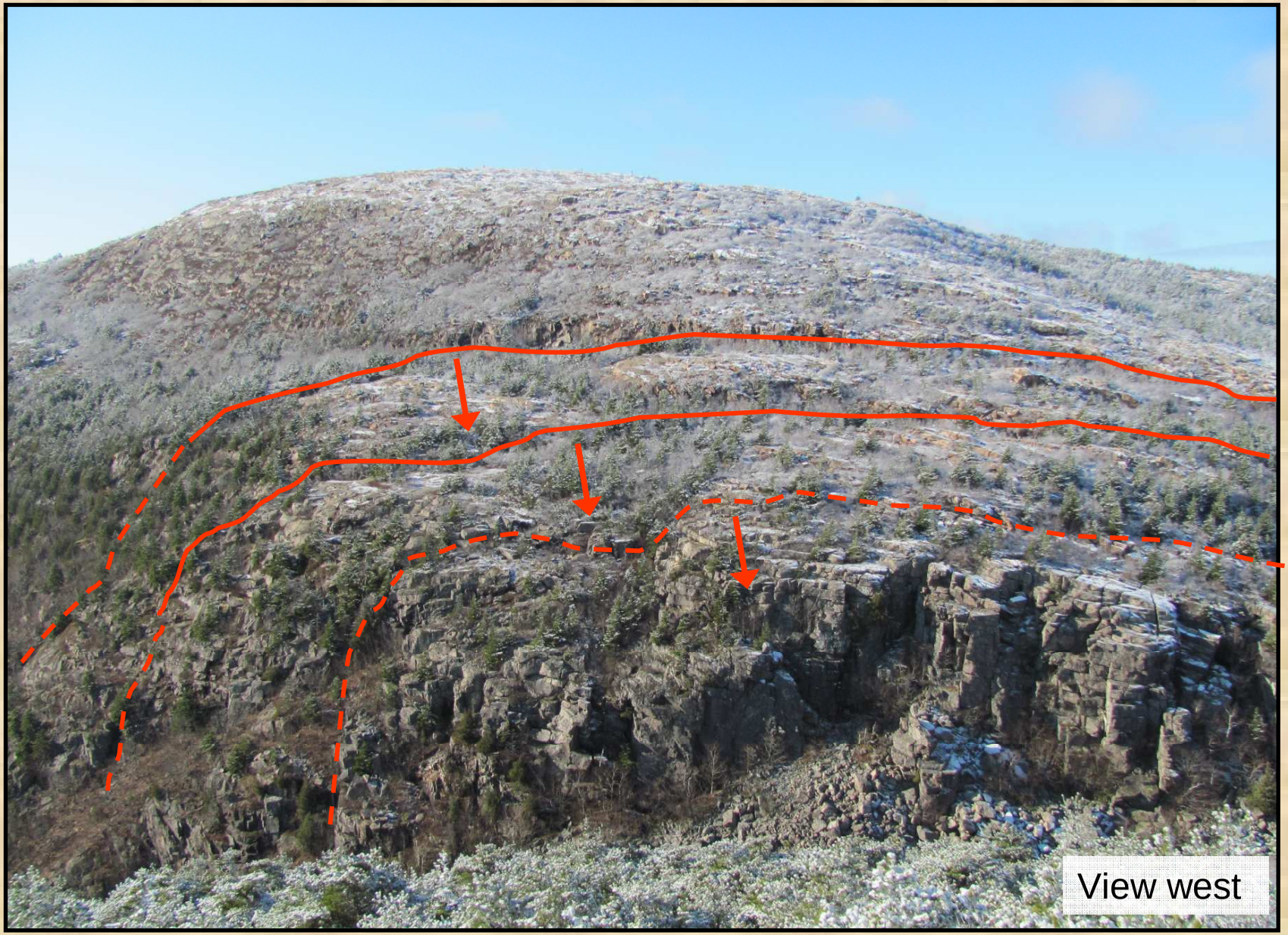
Profile view of the Gorge and the Cadillac Mtn. rock block slide



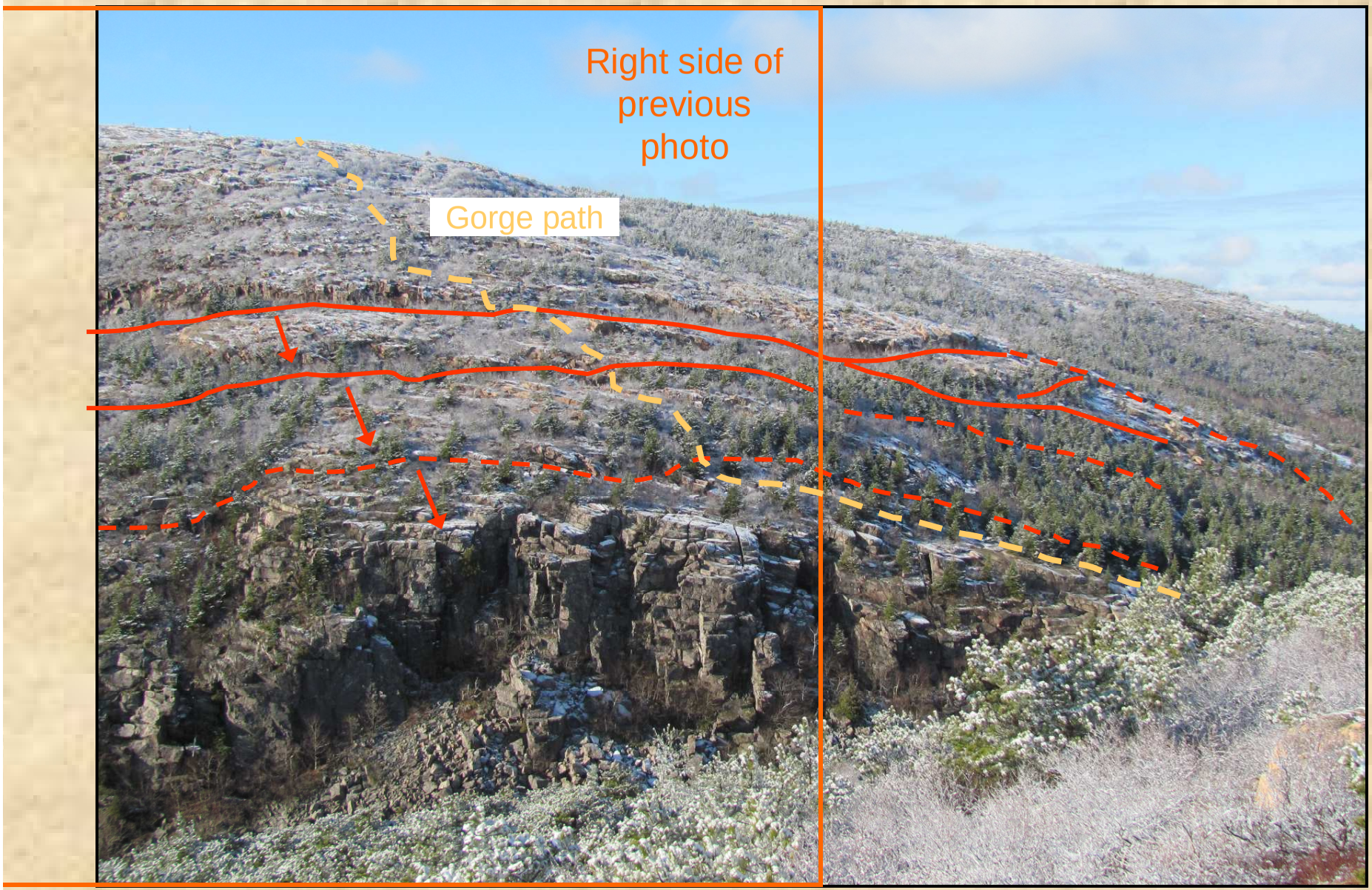
Overall schematic cross-section of the sheeting fractures and the near vertical fractures



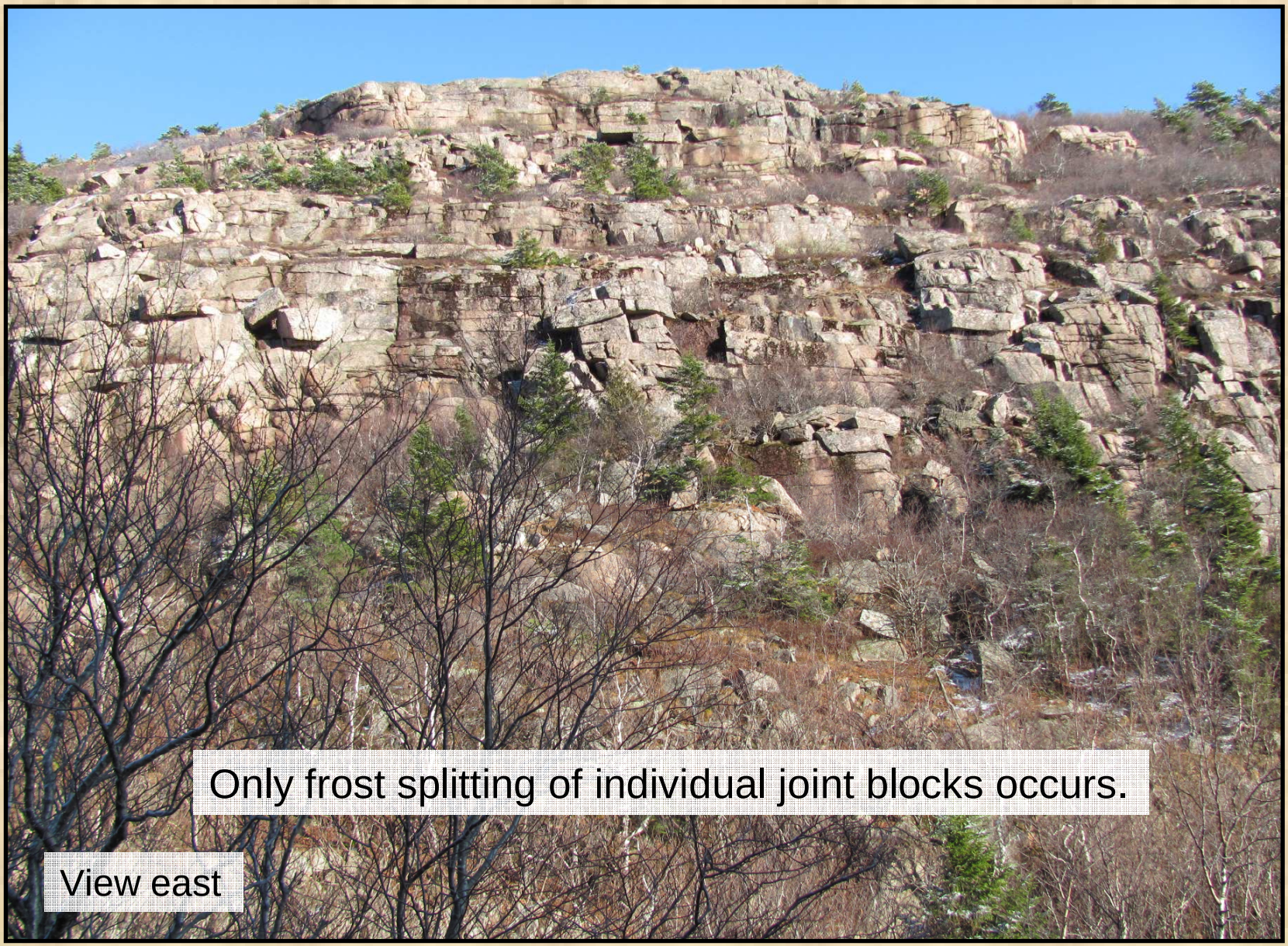
Oblique view of Cadillac Mtn. slide from Dorr Mtn.
"daylighted" sheeting and vertical joints well shown



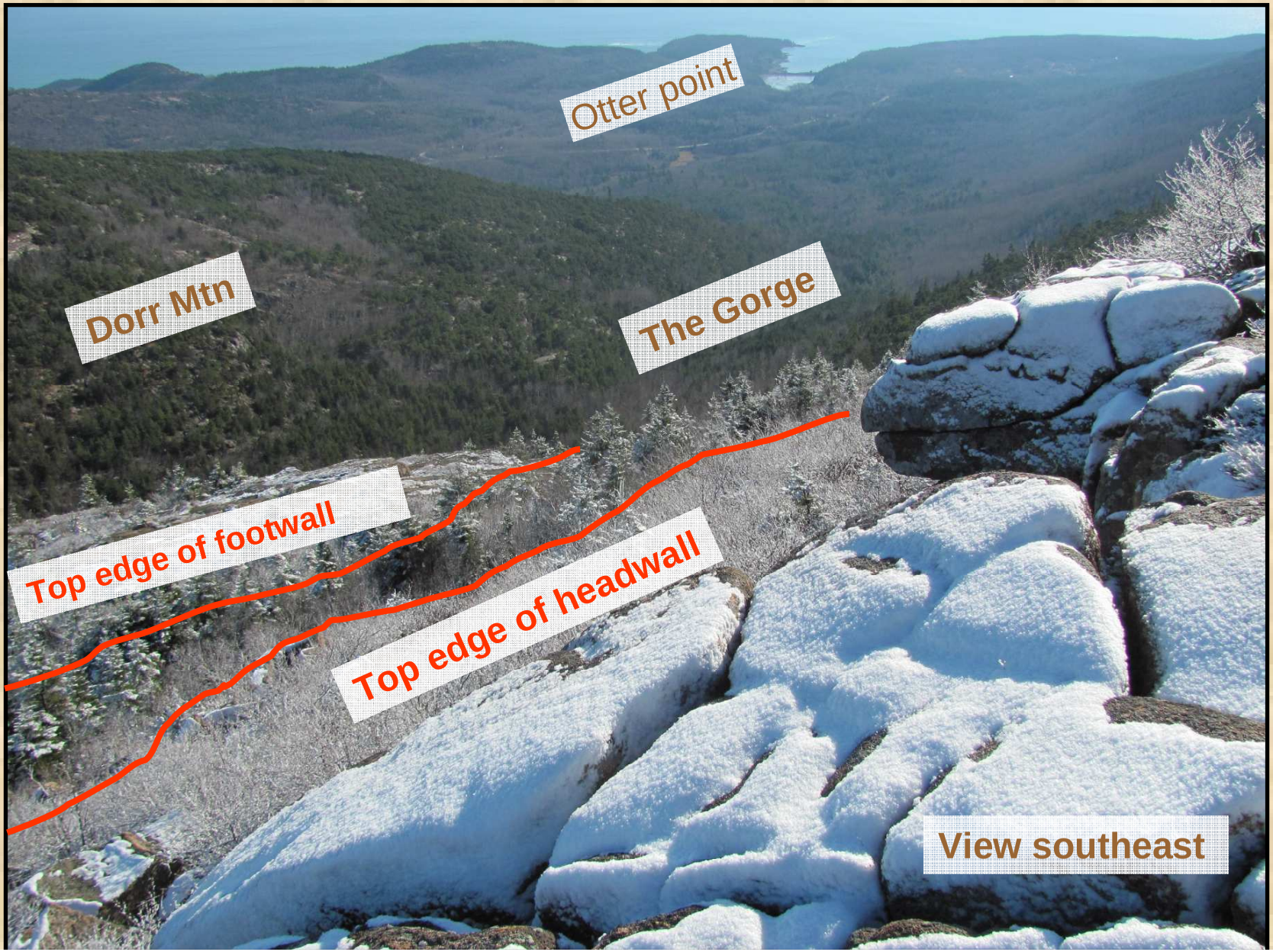
Oblique view of north end of Cadillac Mtn. slide from Dorr Mtn. Gently downslope dipping sheeting and vertical joints well shown



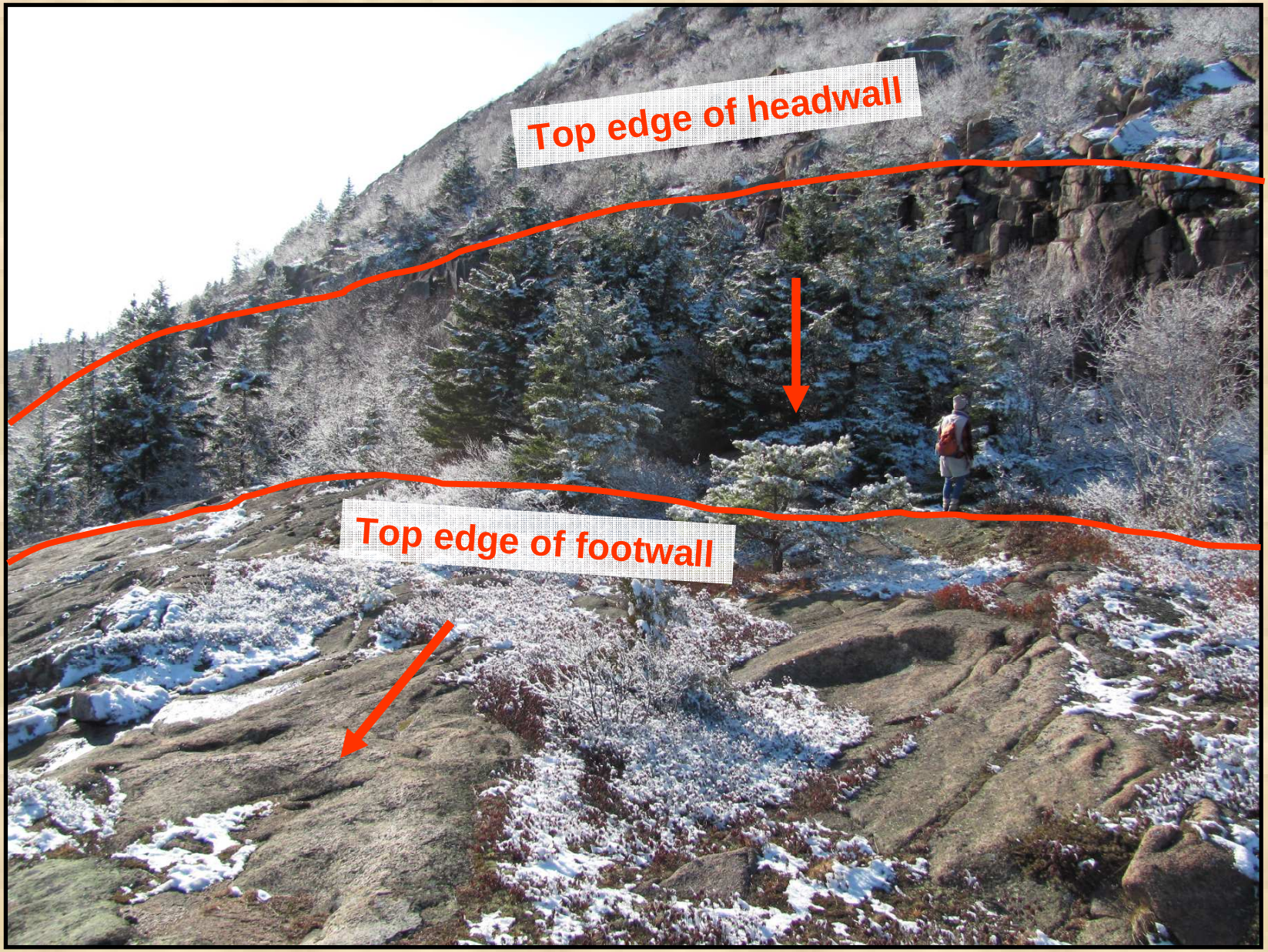
West side Dorr Mtn. – sheeting dips gently into the slope making the slope stable with regard to rock block slides



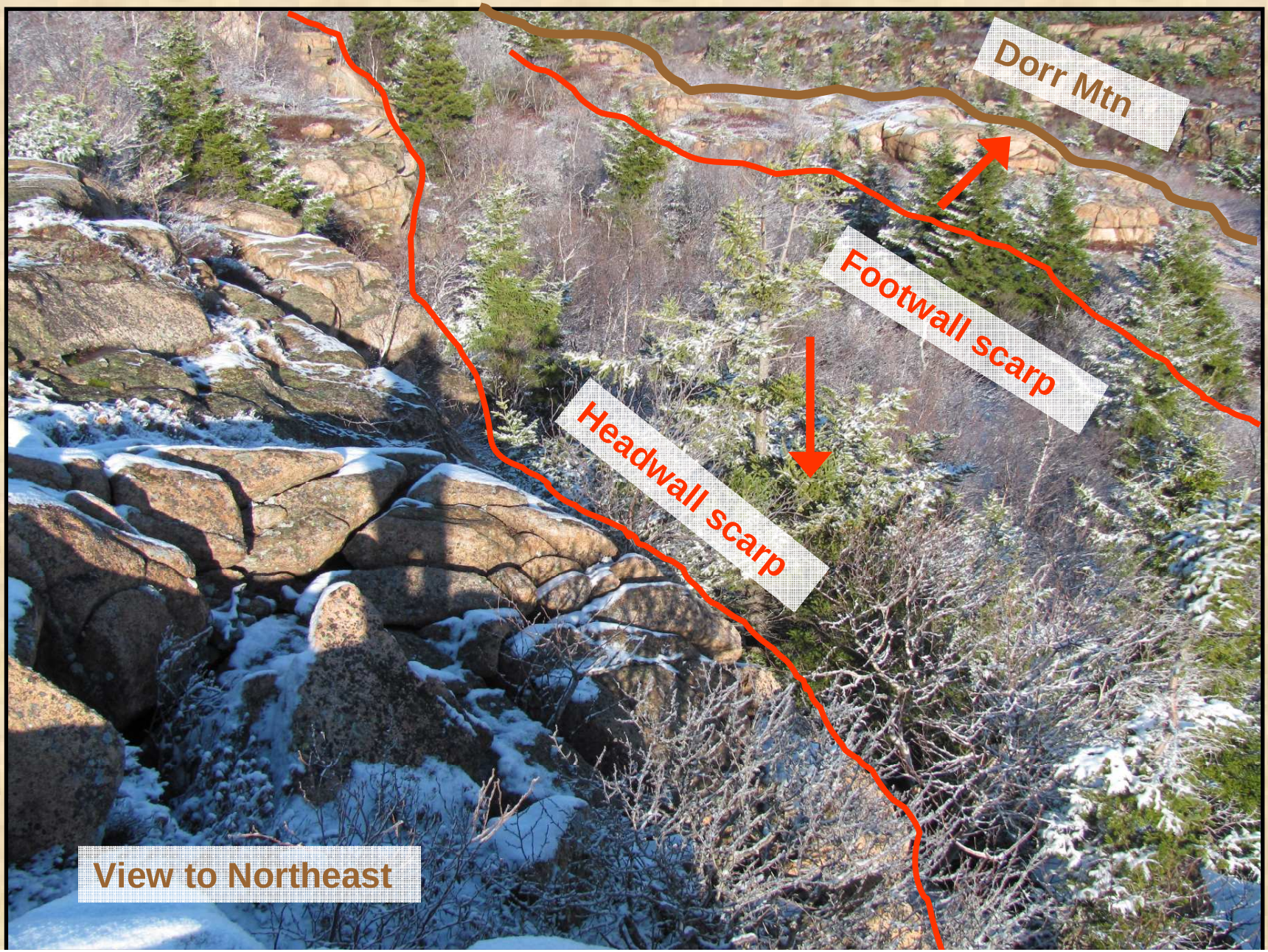
Looking over the upper slide graben and across the Gorge to Dorr Mtn and Otter point



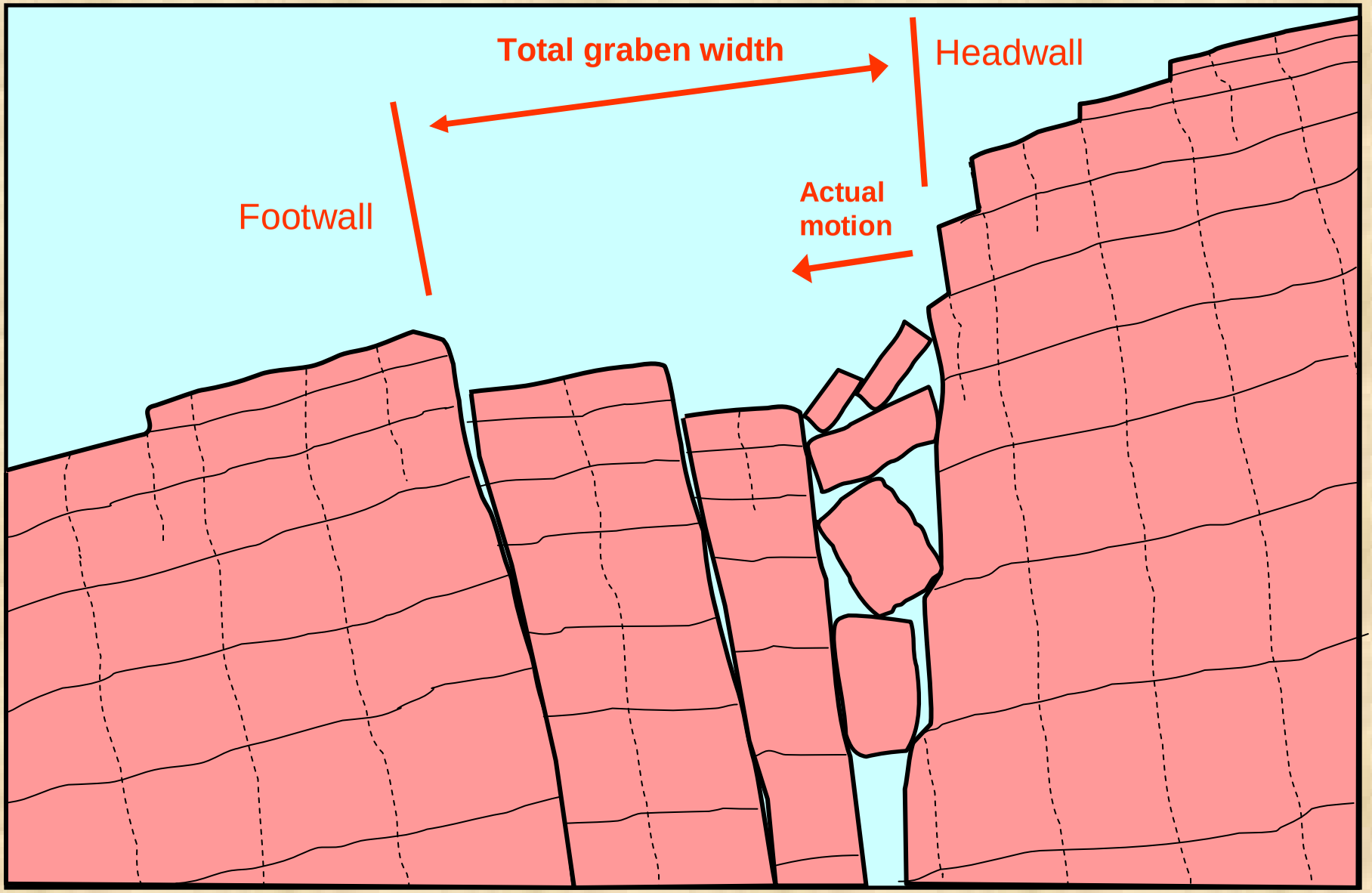
Upper graben 6 – 8 m wide, 5 – 8 m high headwall



Intermediate graben 10 – 13 m wide, 5 – 6 m high headwall



Schematic cross section of a block slide graben



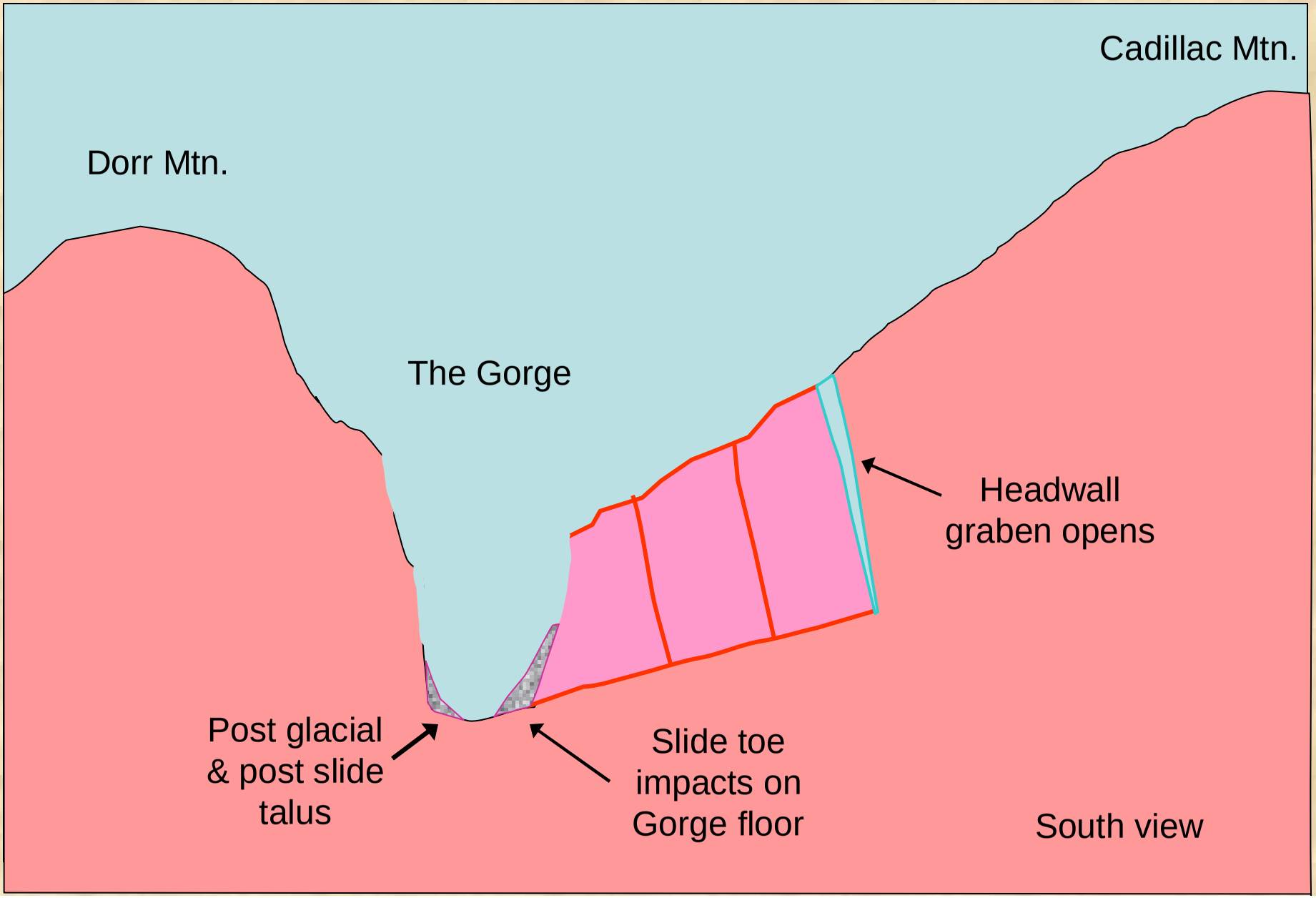
The Gorge from the cliff top of the slide toe
Snow highlighted large joint block talus at slide toe
Sunlit smaller block talus from into slope sheeting of Dorr Mtn.

Frost split cliff top at slide toe
View north up the Gorge that cuts the sheeting

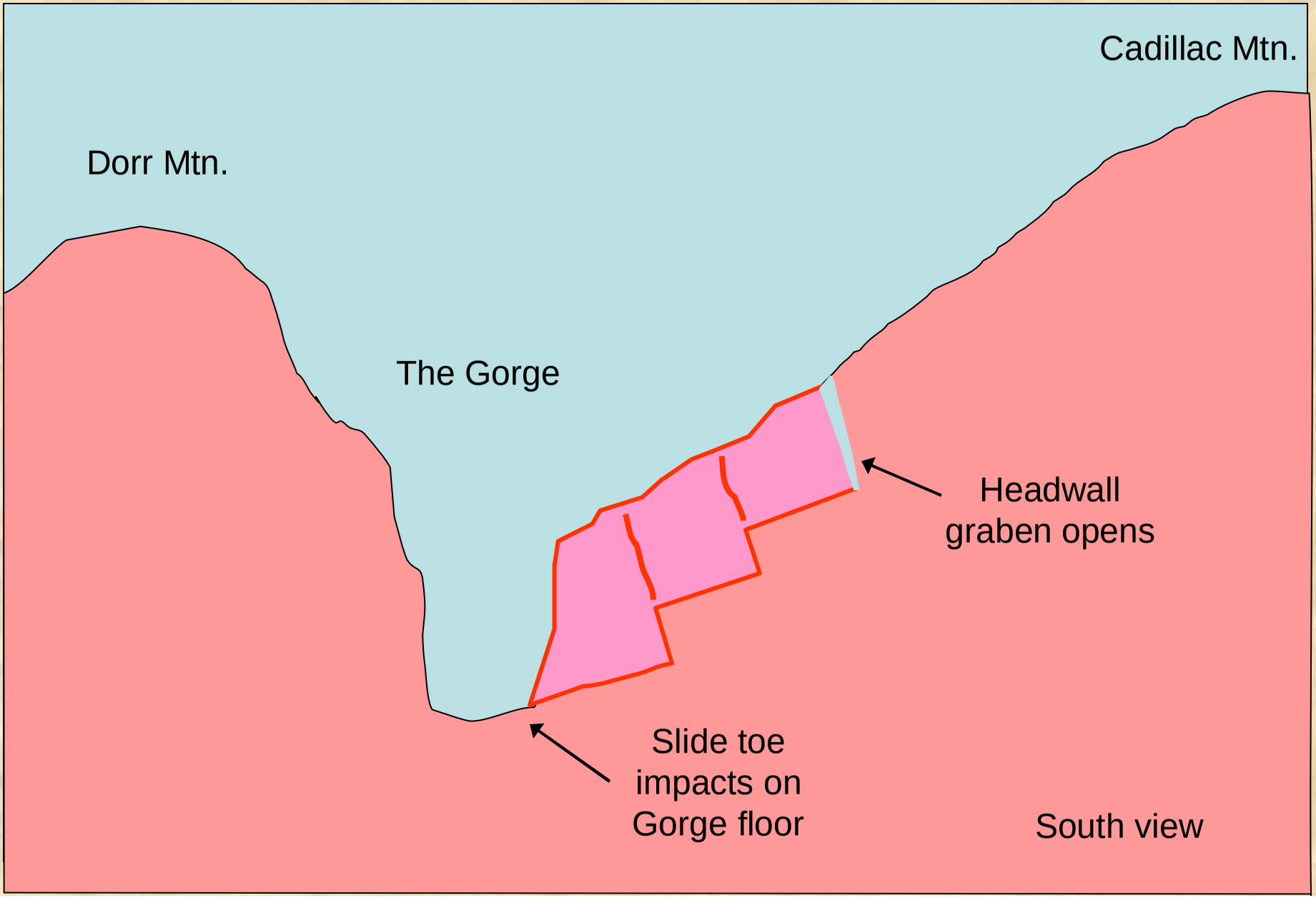
Joint block ready to topple off the cliff top as frost widening continues in the fractures initially opened by impact of the rock block slide on the floor of the gorge.

Slide toe with sheeting and vertical joints opened up
Slip surface buried by talus from post slide frost splitting

Overall schematic cross-section of the rock block slide with a planar slip surface



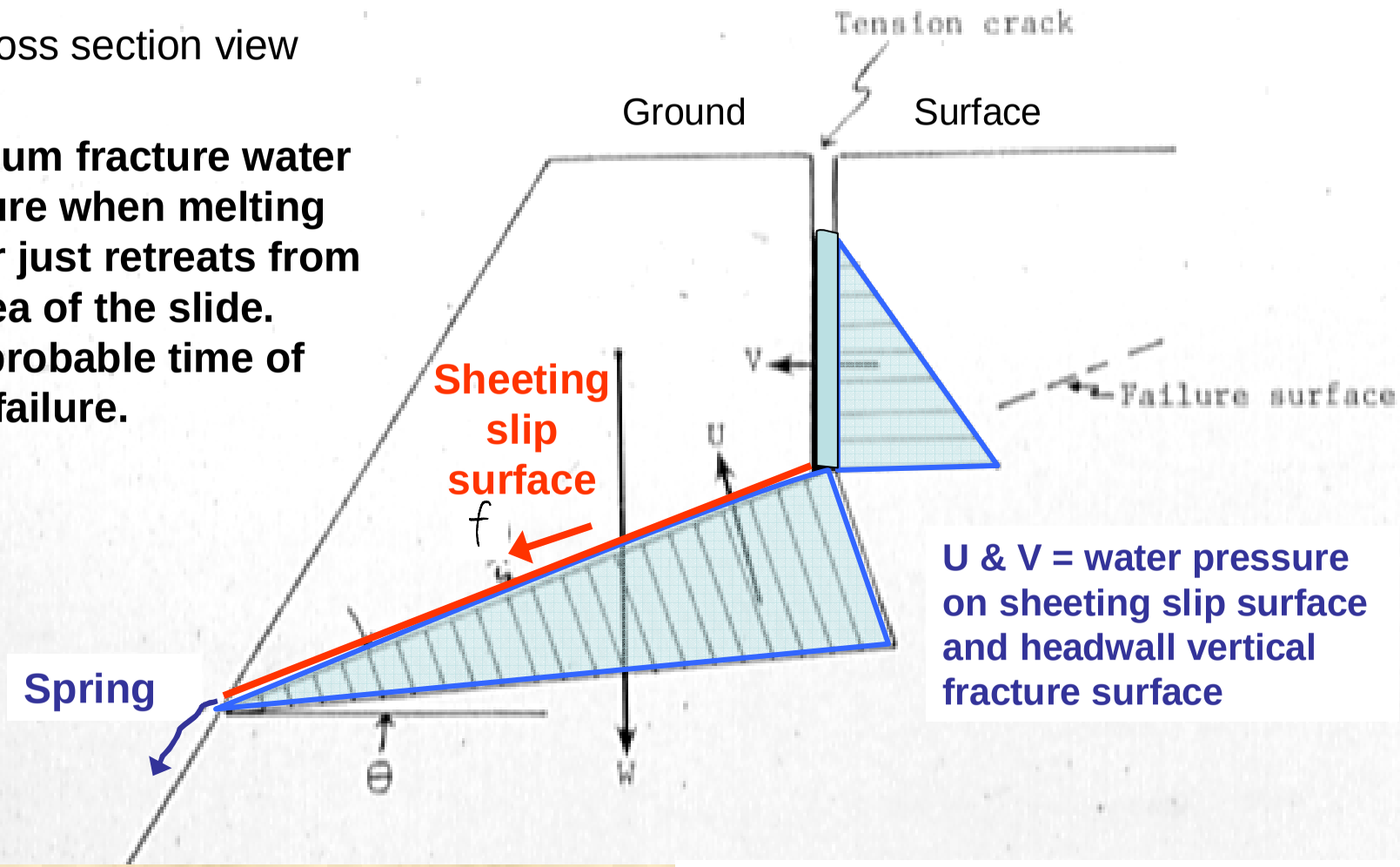
Overall schematic cross-section of the rock block slide with a stepped basal slip surface



Factors affected the stability of a rock block

Side or cross section view

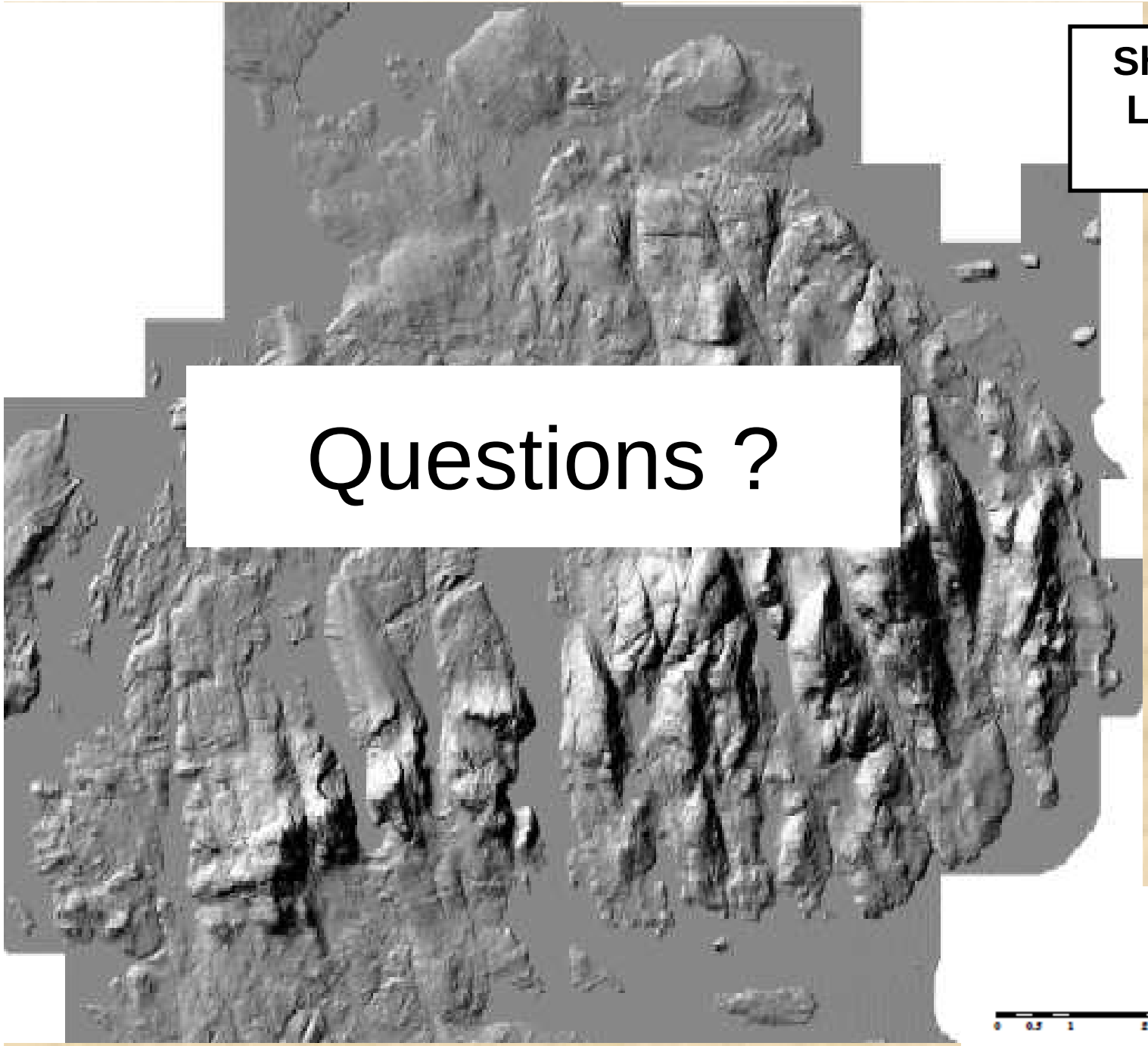
Maximum fracture water pressure when melting glacier just retreats from the area of the slide. Most probable time of slope failure.



U & V = water pressure on sheeting slip surface and headwall vertical fracture surface

$$\text{Factor of safety} = \frac{\text{Shear strength available}}{\text{Shear strength required for stability}}$$

Shaded relief Lidar image of MDI



Questions ?

Assembled by COA GIS student Alex Barowicz from 60 smaller images