

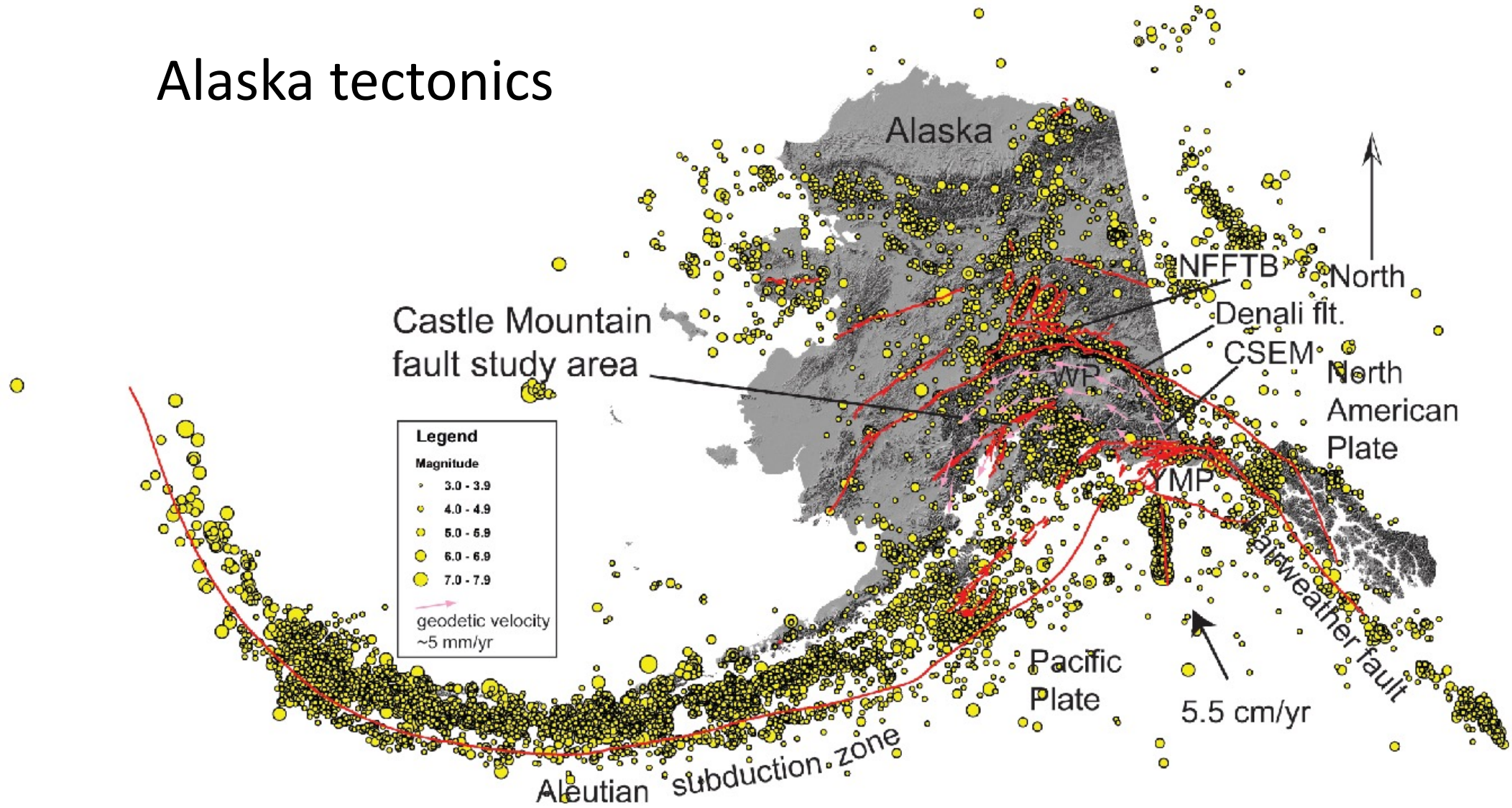
# GLG494/598 (ASU) and GEOL 701J (UNR): Mapping tectonic faults from geomorphology



Reverse/Thrust faults in Alaska:  
Geomorphic evidence for active deformation

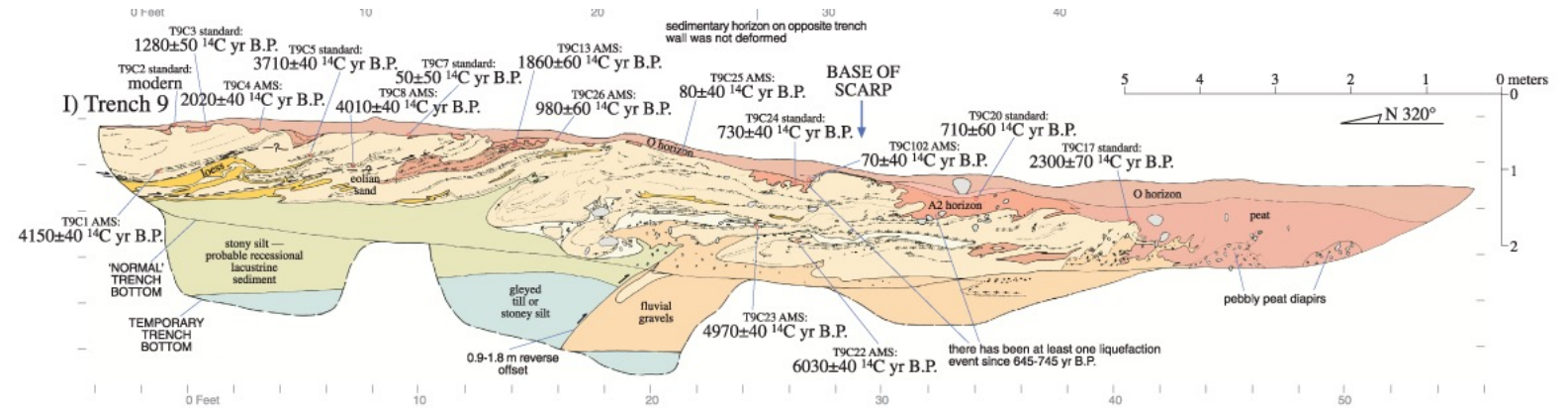
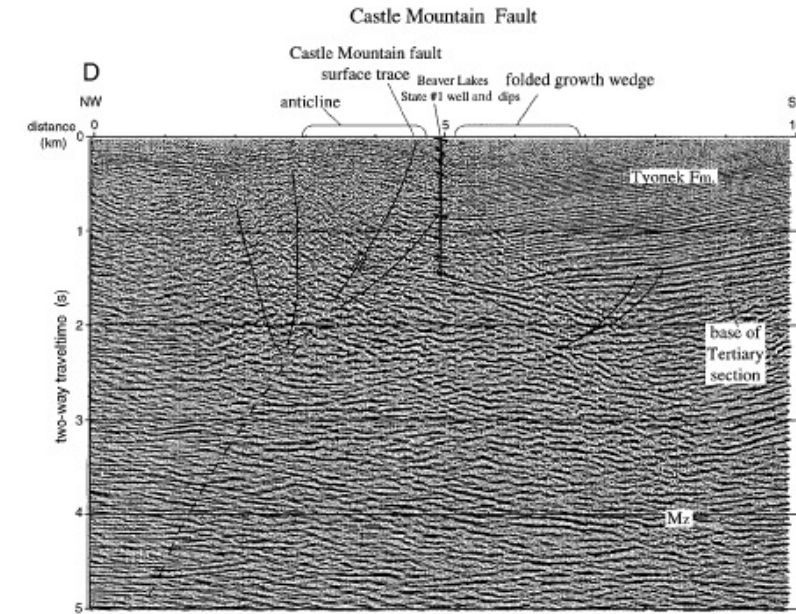
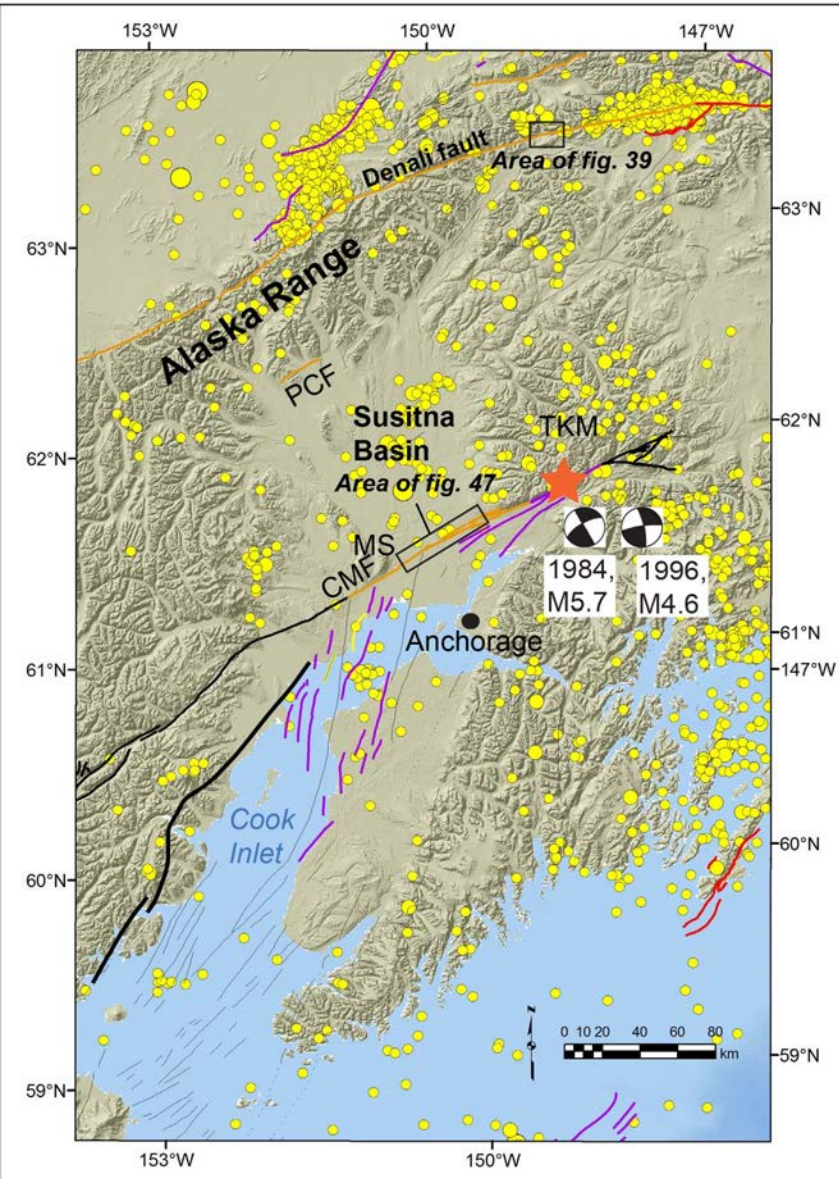
Rich D. Koehler

# Alaska tectonics





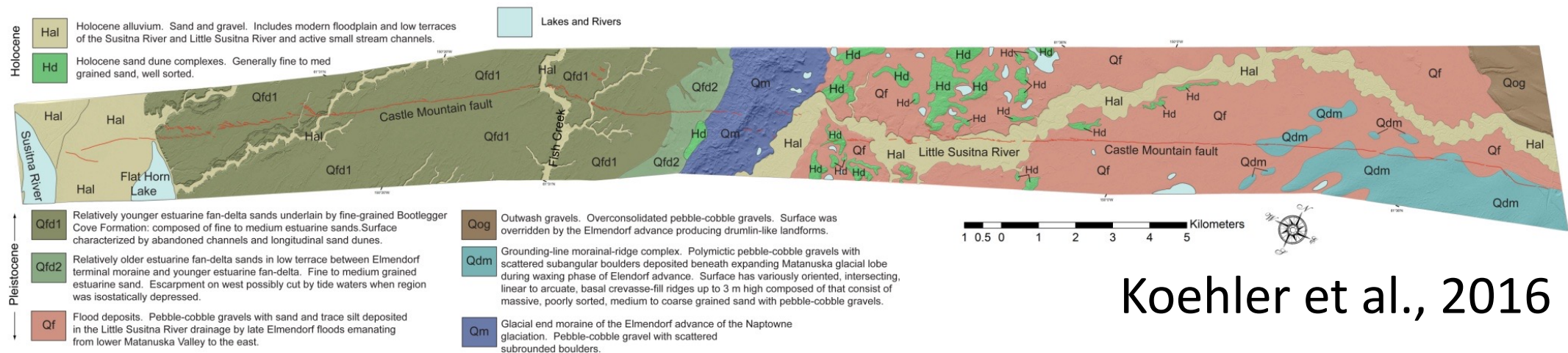
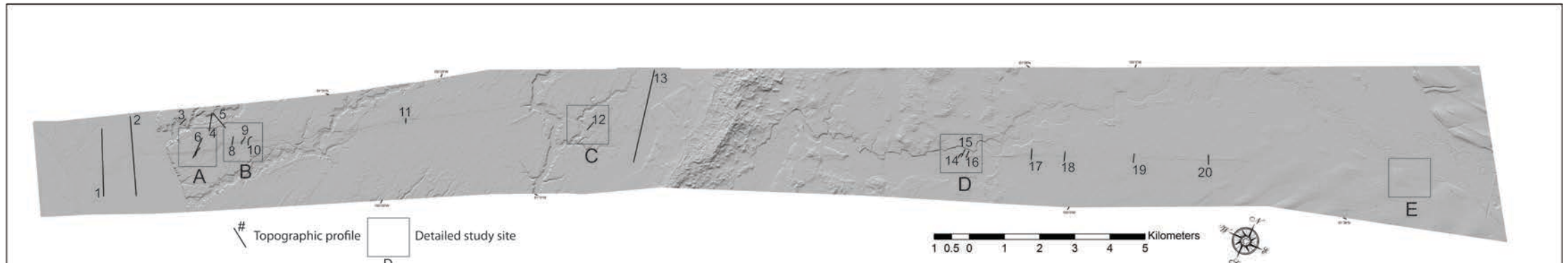
# Castle Mountain fault



Haeussler et al., 2002



# Castle Mountain fault



Koehler et al., 2016

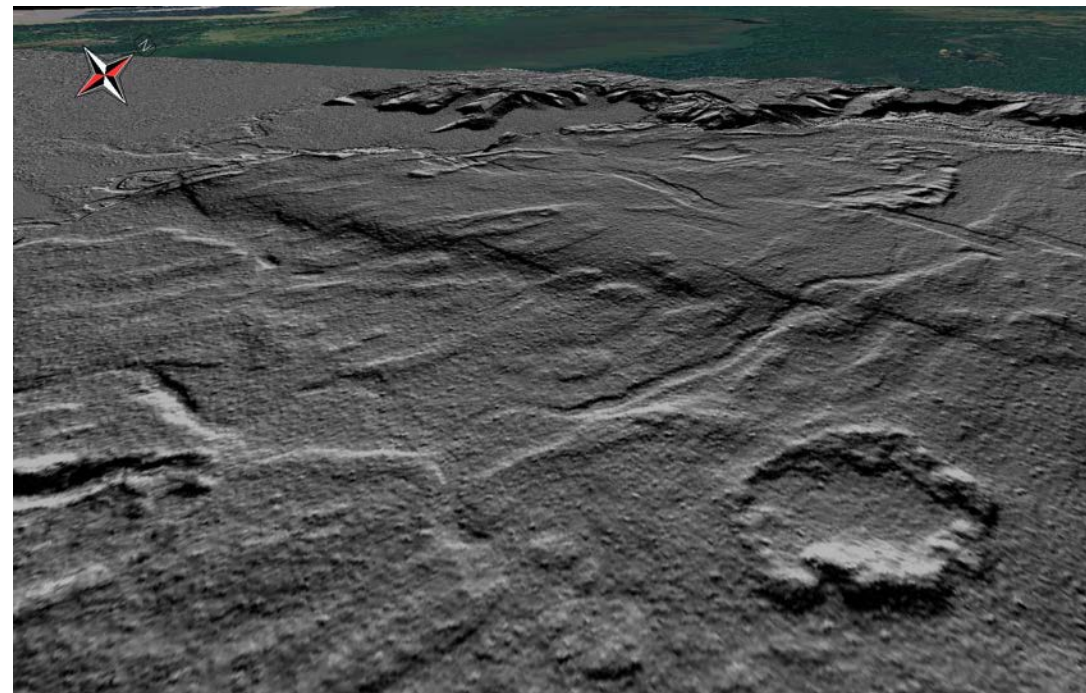
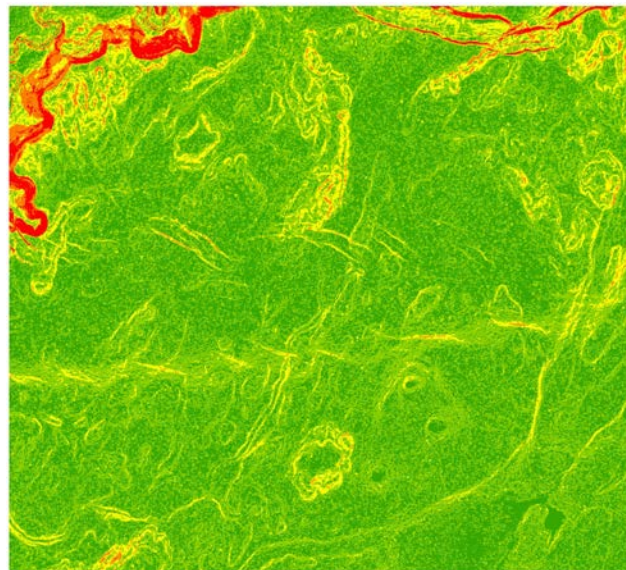
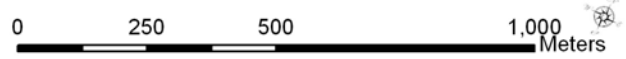
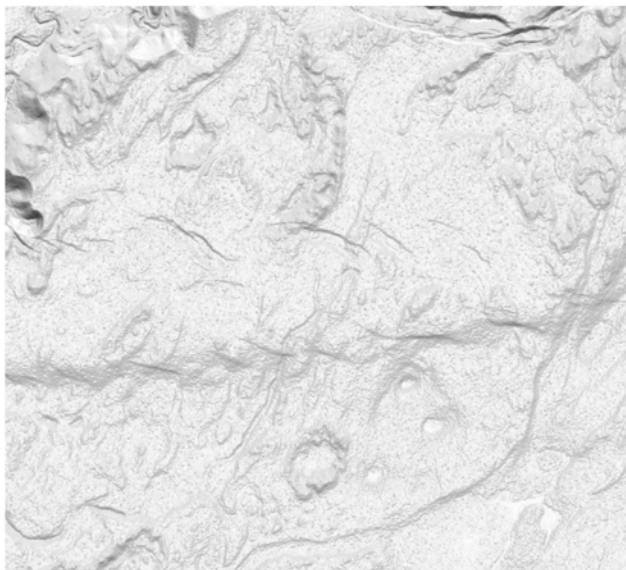


# Castle Mountain fault scarps in the field

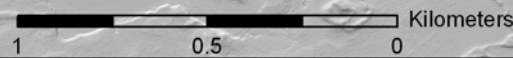
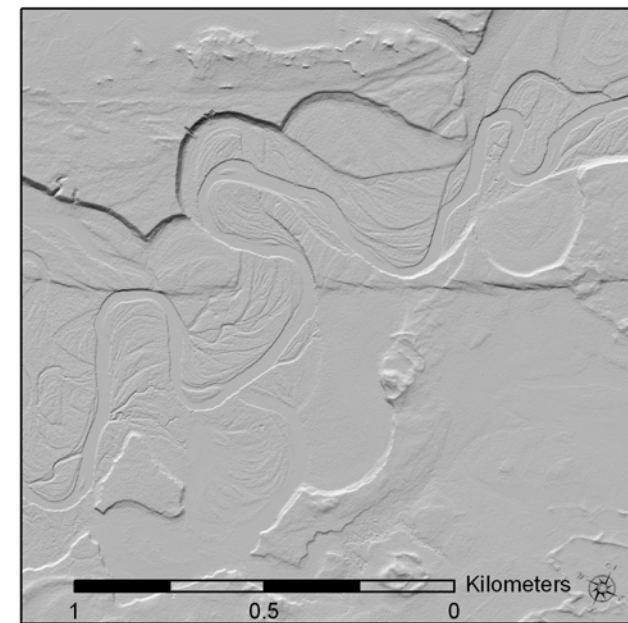
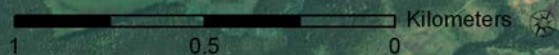
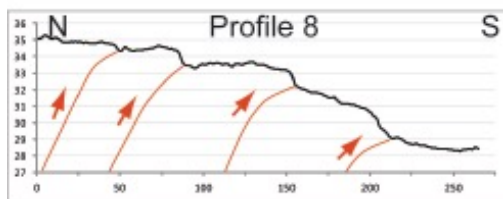
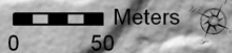
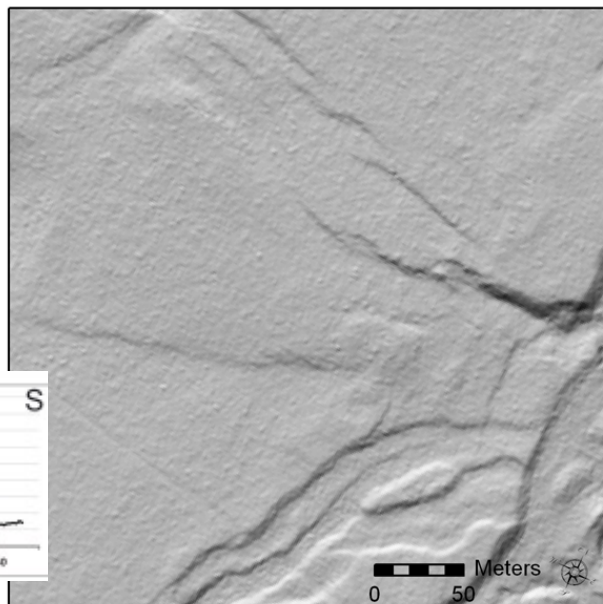




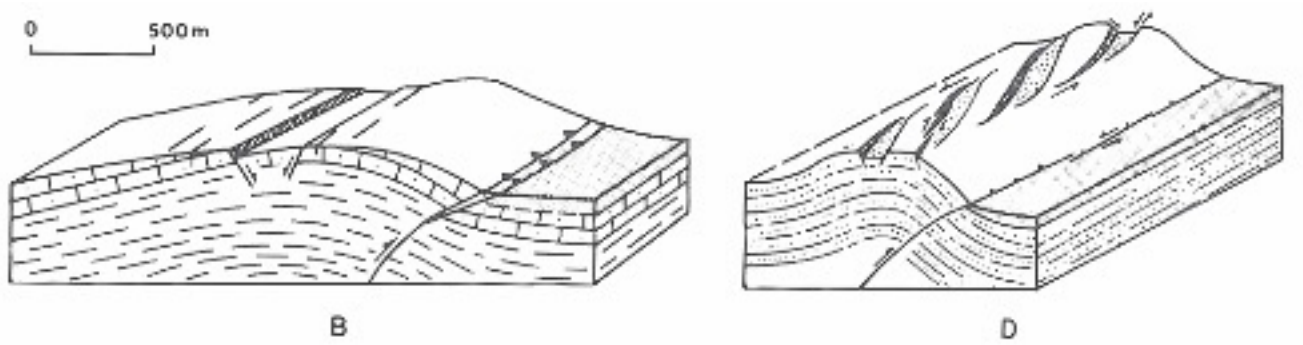
# Castle Mountain fault



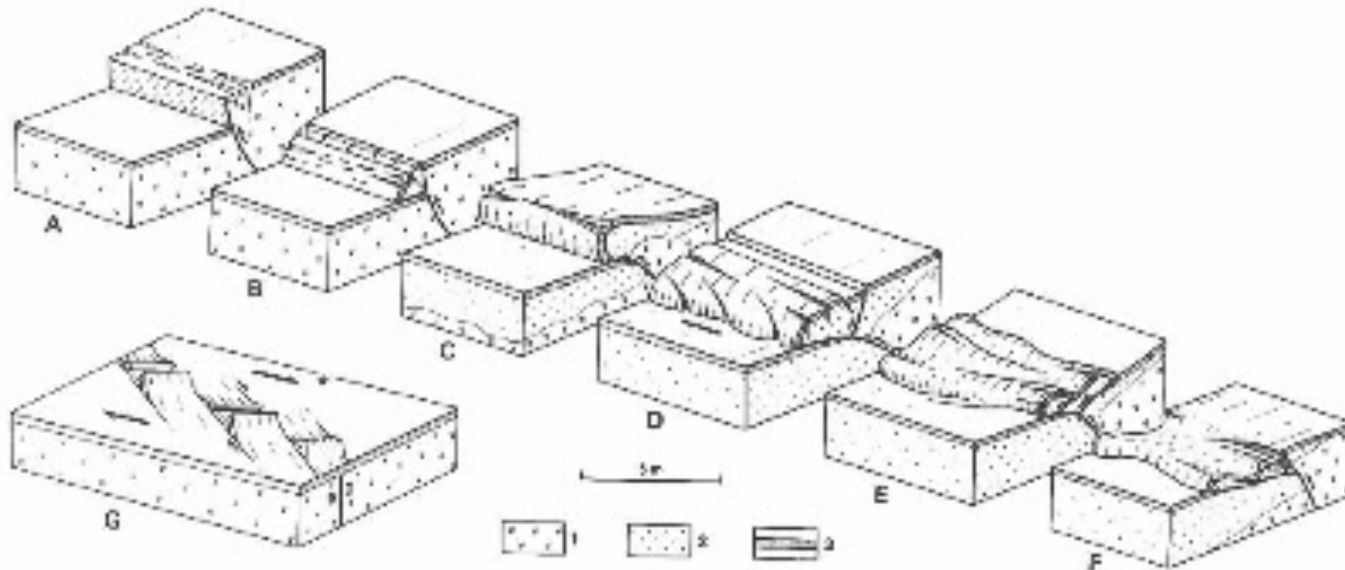
Koehler et al., 2016







1980 El Asnam, Algeria  
(Philip and Megharaoui, 1983)

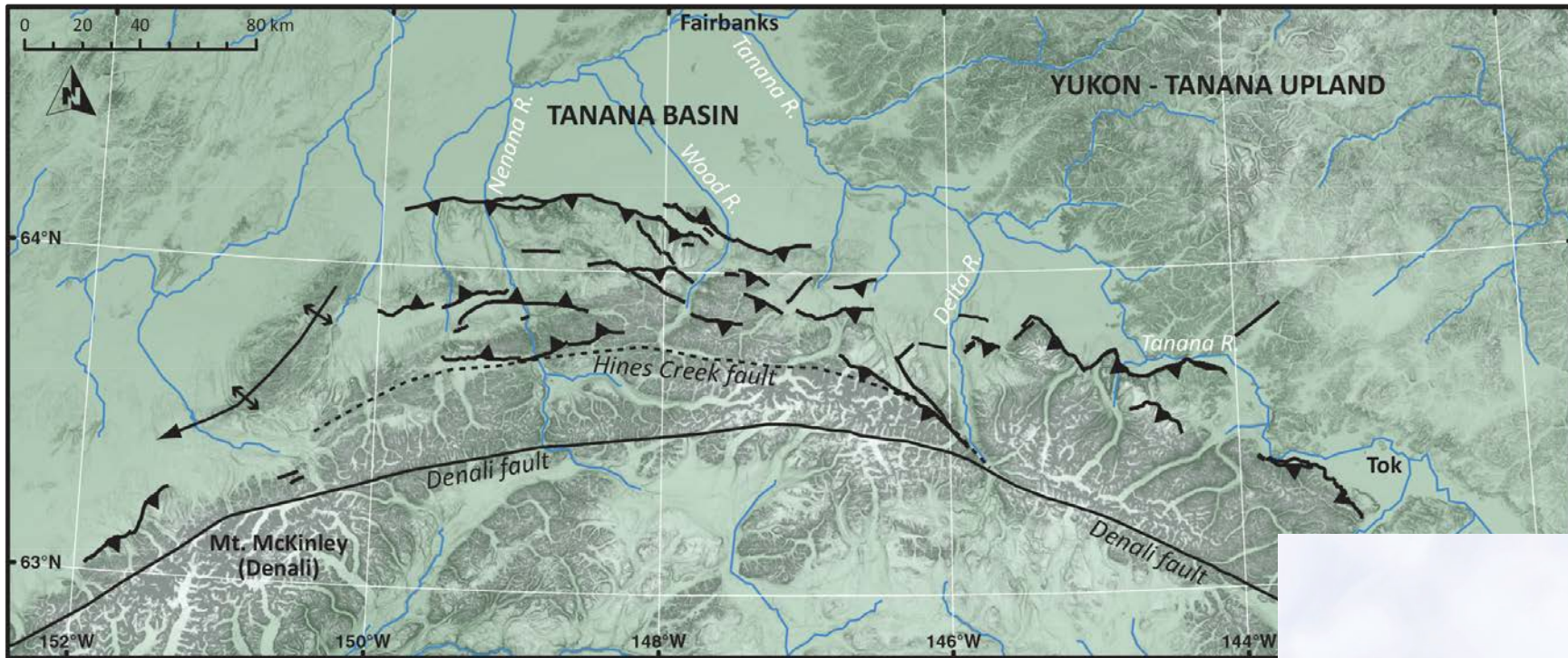


1988 Spitak fault, Armenia  
earthquake (Philip et al., 1992)



Ostler fault, New Zealand (NZ geological survey).  
Similarities include scarp morphology, hanging wall  
extension and folding, wrinkles in front of scarp, and  
occurrence of one late Holocene earthquake.





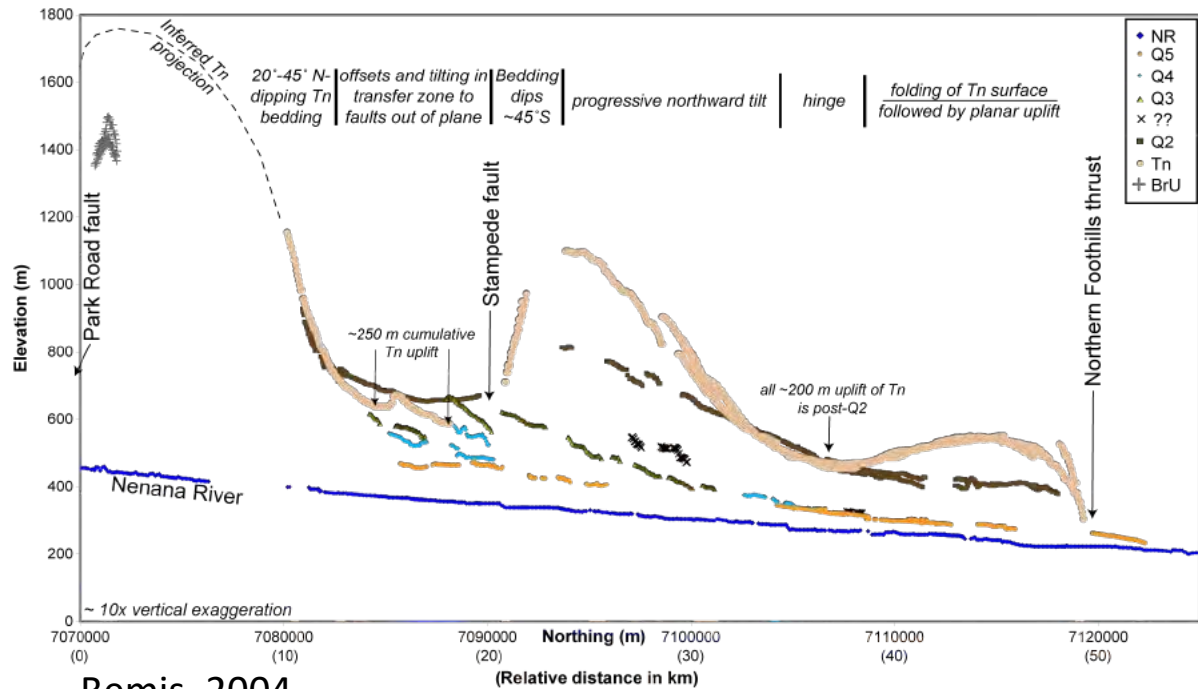
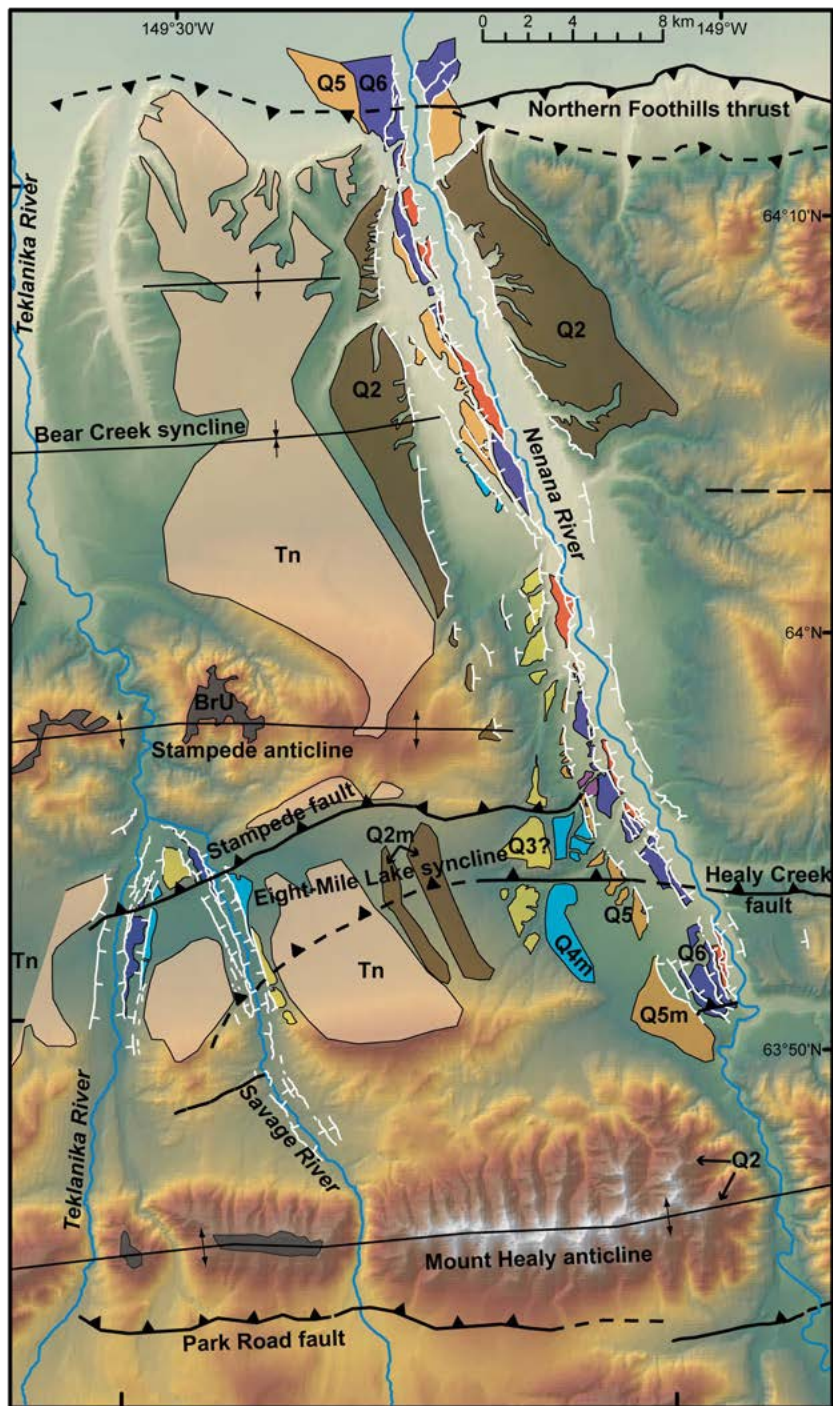
← Kantishna Hills → ← Western NFFTb → ← Transition Zone → ← Eastern NFFTb →

Bemis et al., 2012

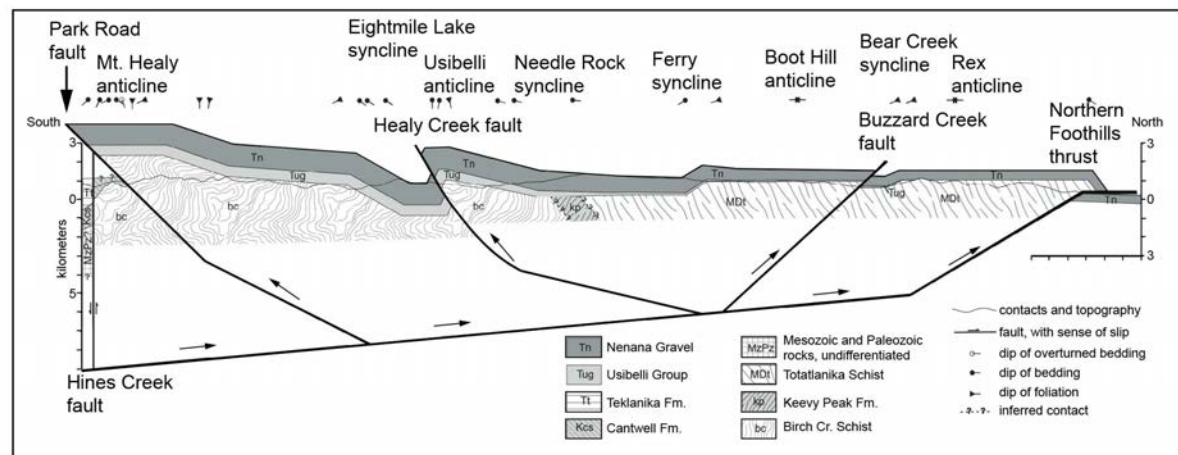
## Northern Foothills Fold and Thrust Belt





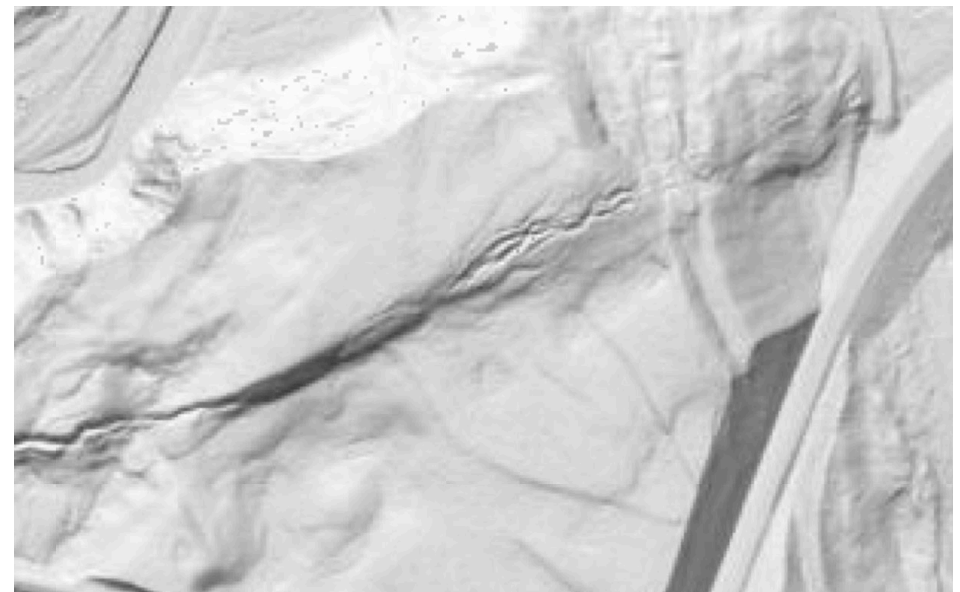
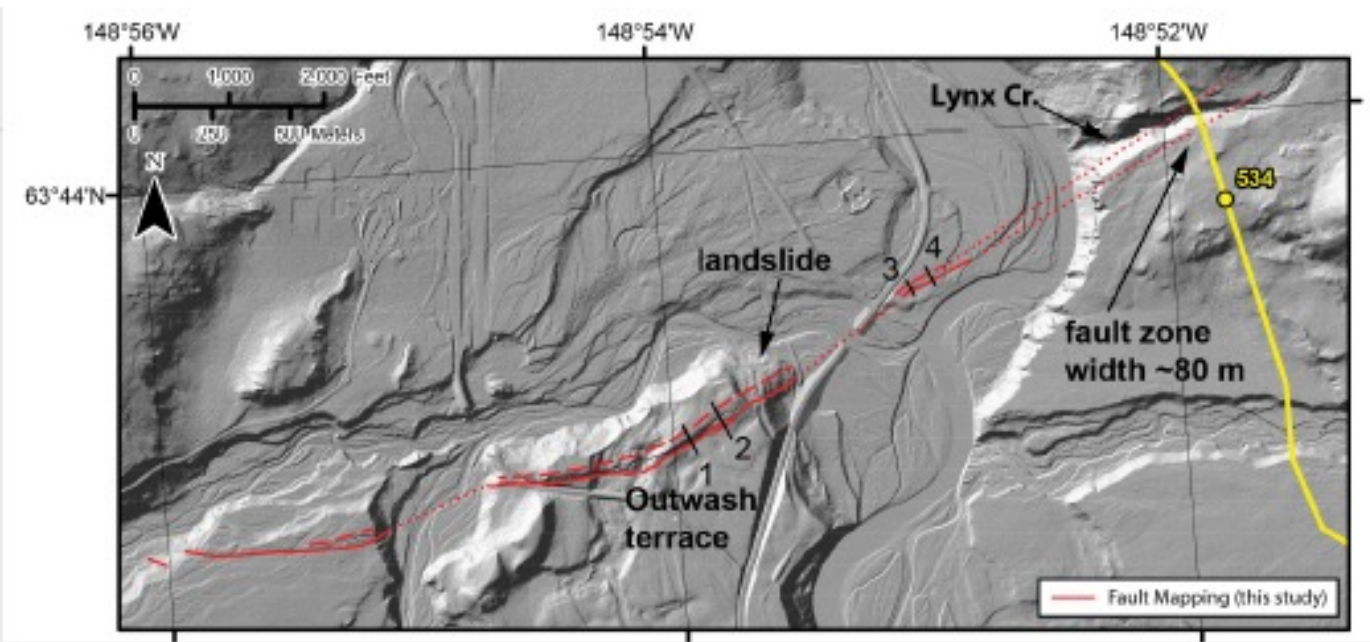


Bemis, 2004

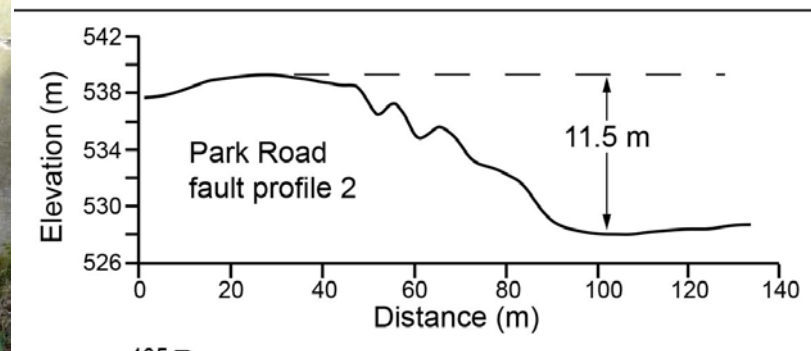


Bemis and Wallace, 2007



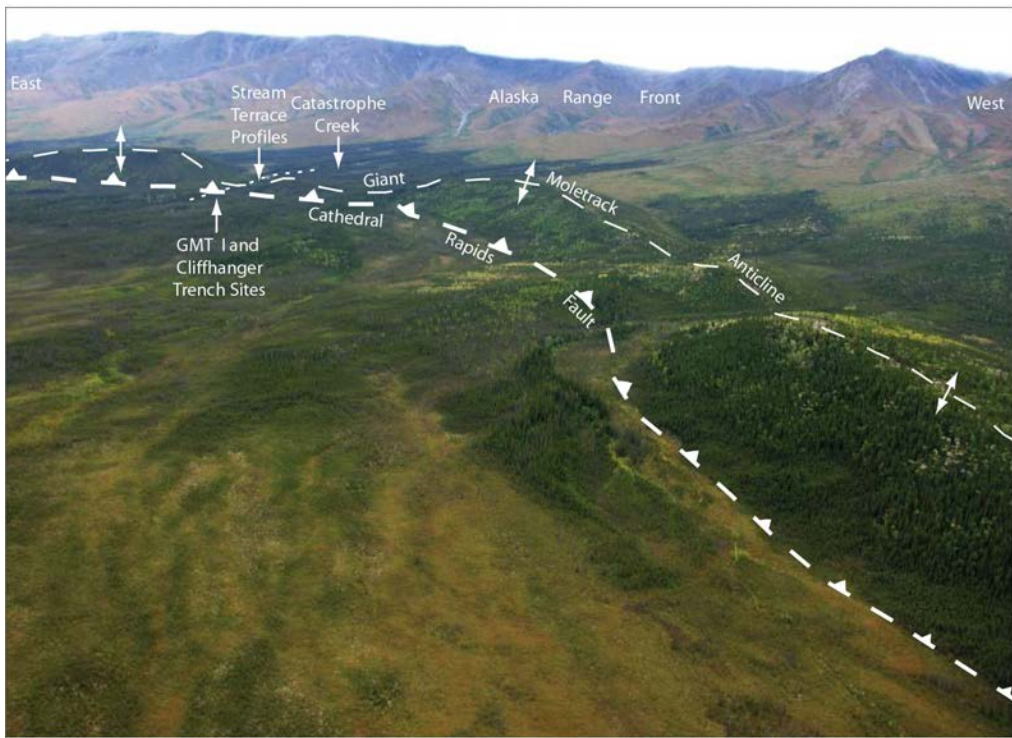


### Park Road fault

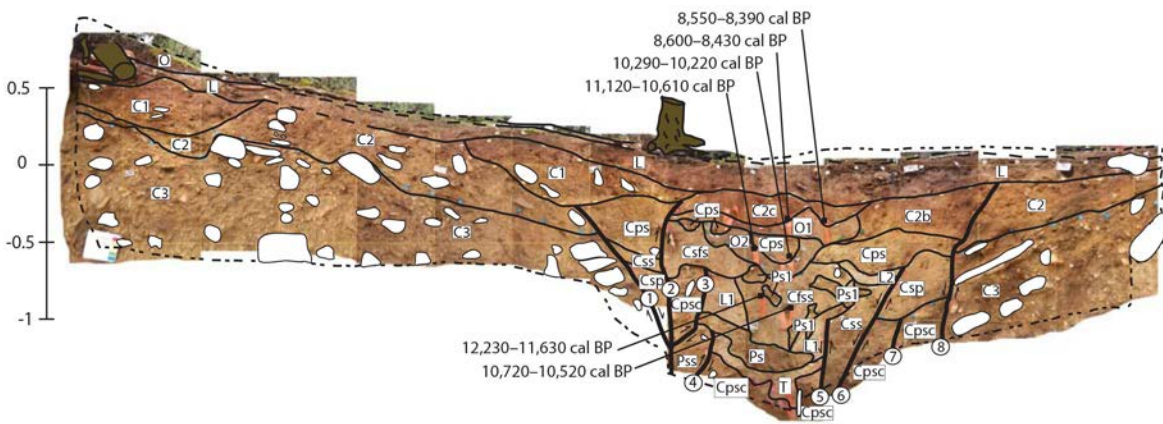
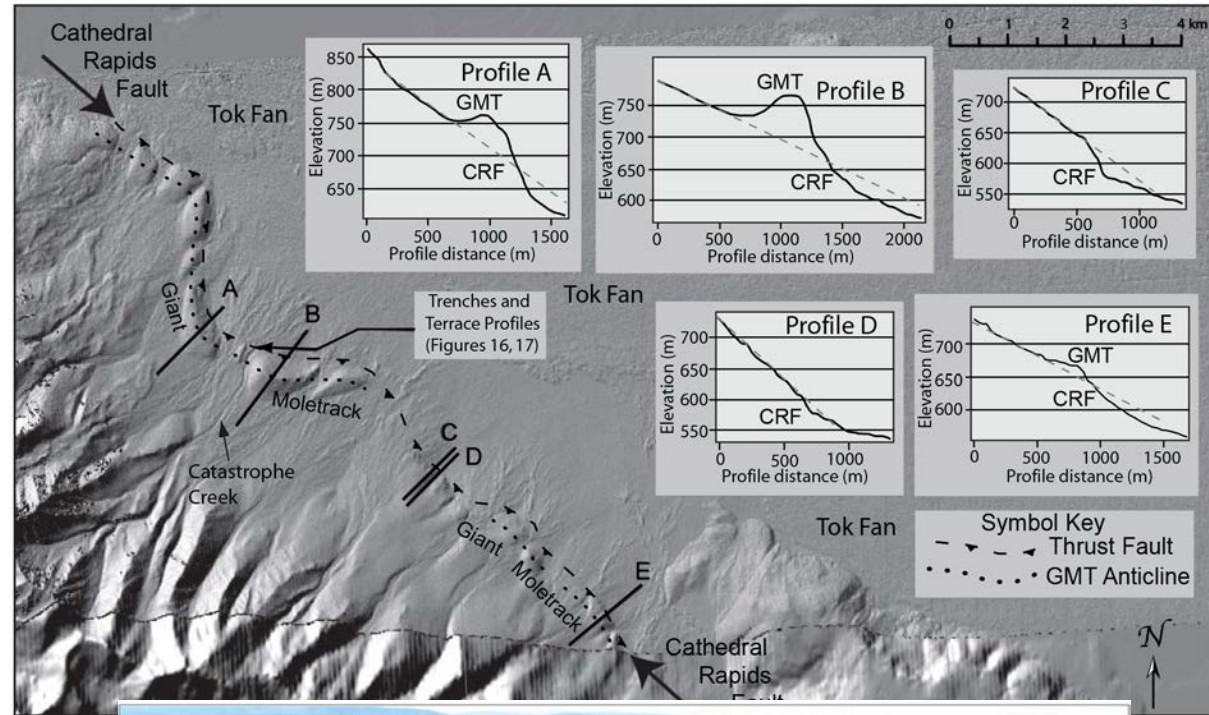


Koehler et al., 2016





Cathedral Rapids fault



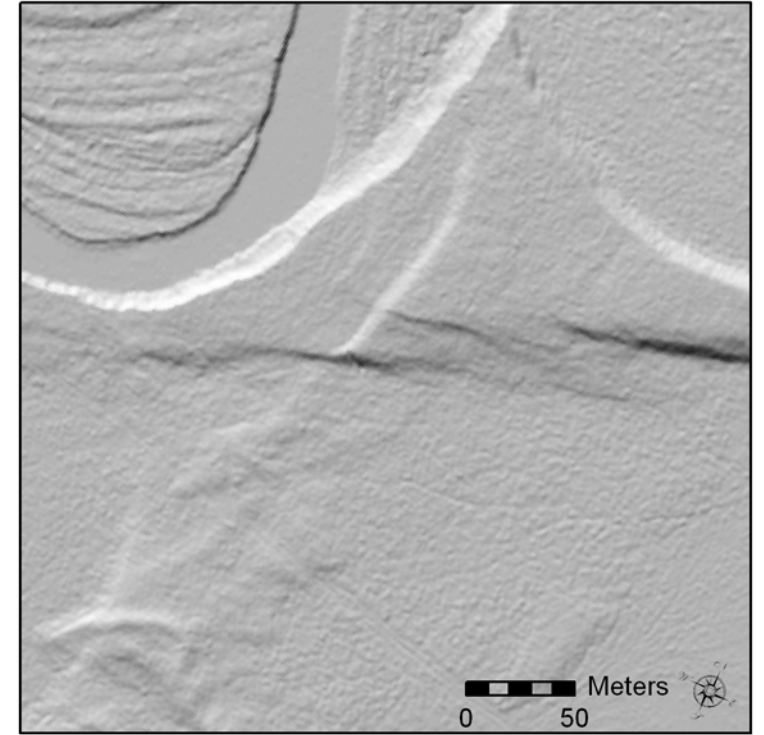
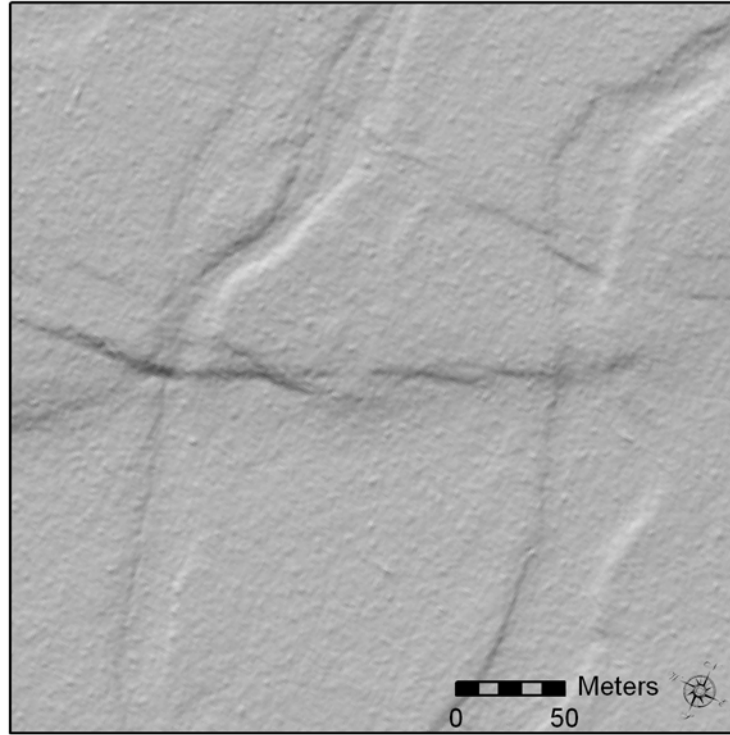
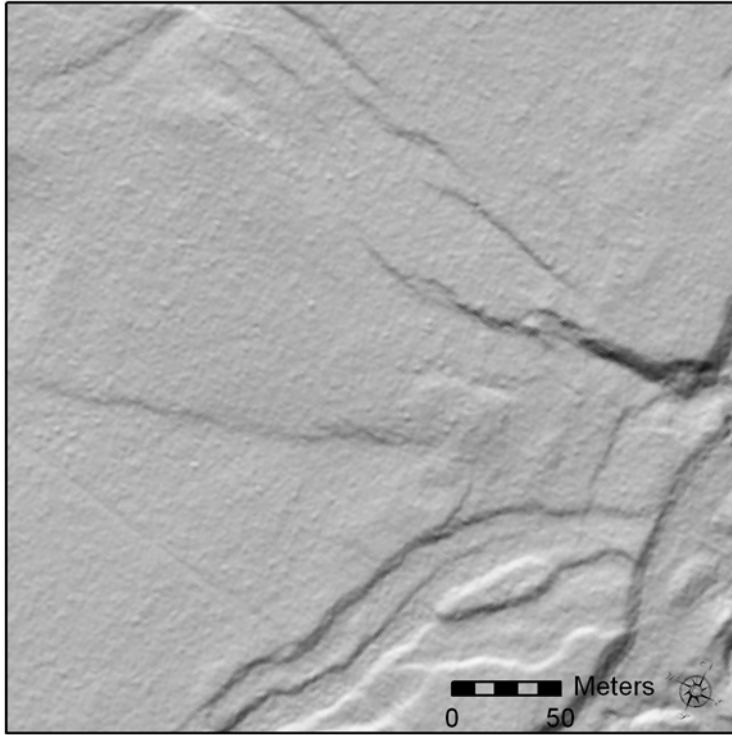
Hanging wall extension with graben

Carver et al., 2010

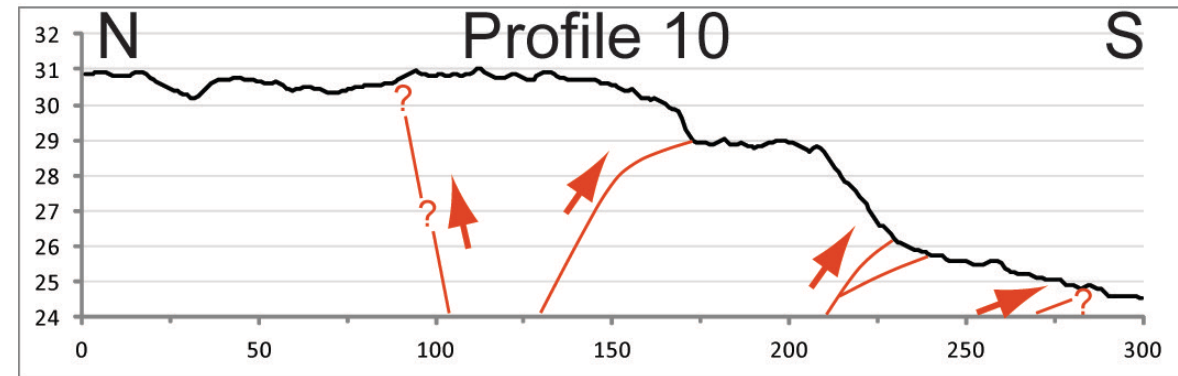
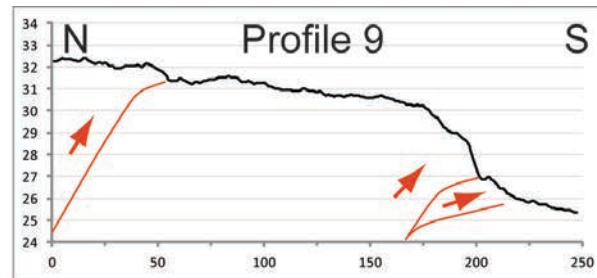
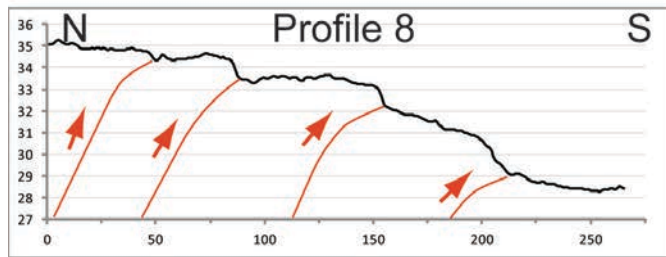




# Large scale (1:3000) images of Castle Mountain fault scarps

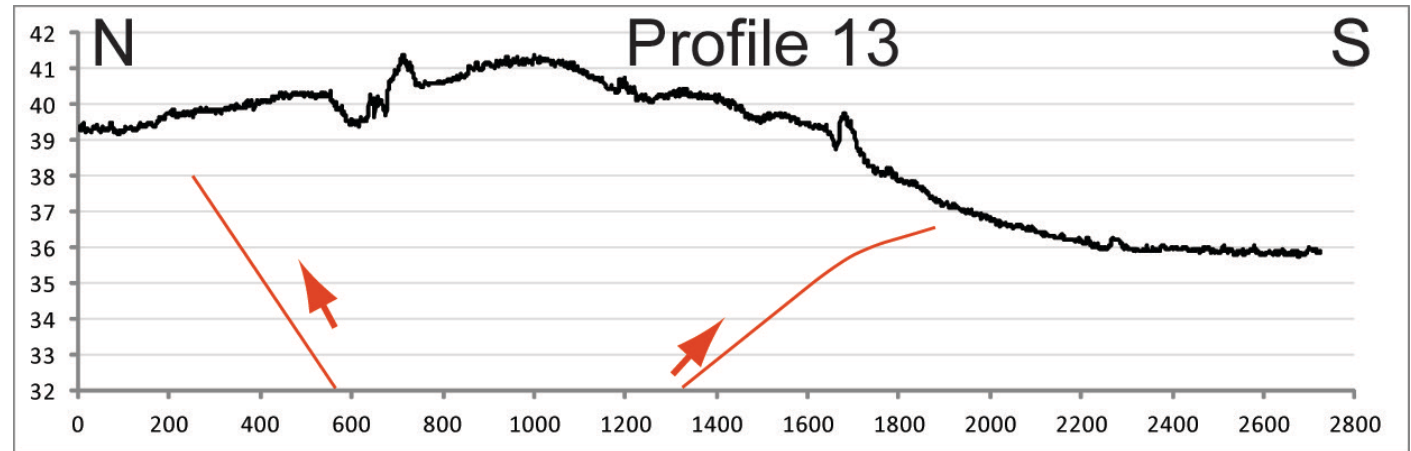
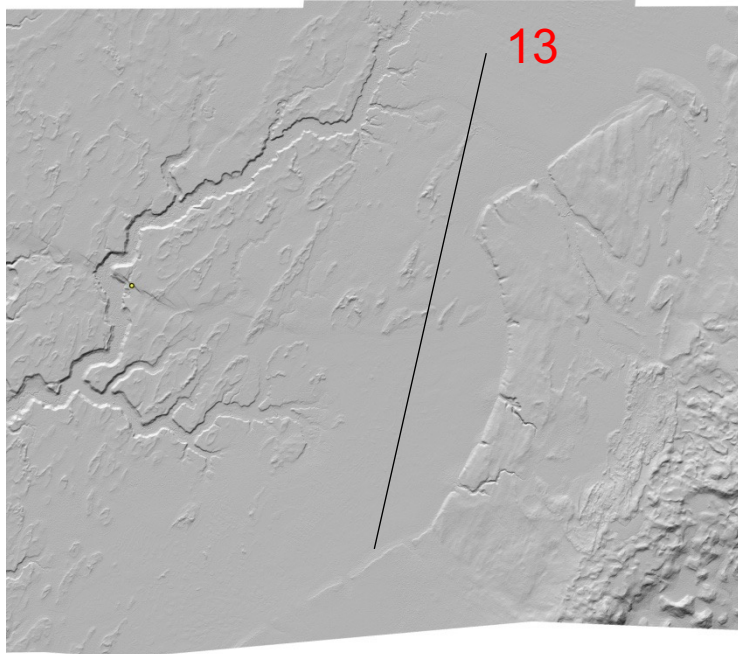
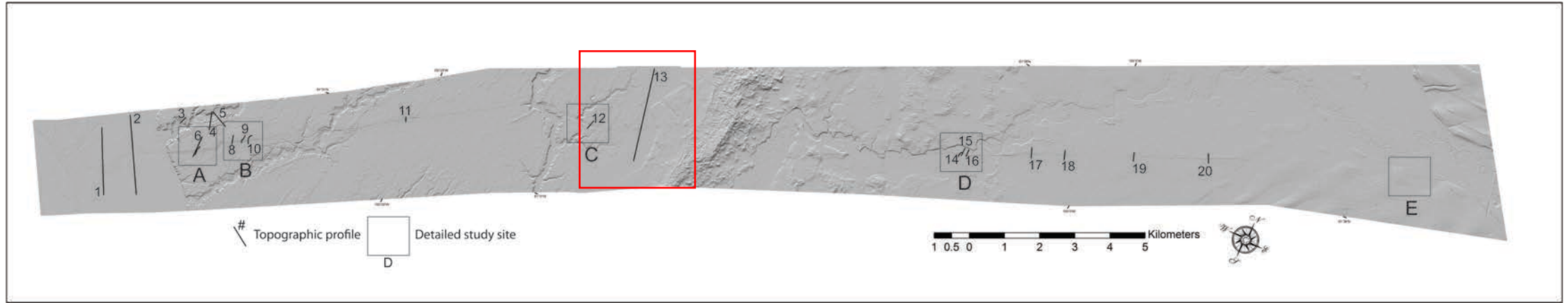


# Typical topographic profiles across the Castle Mountain fault



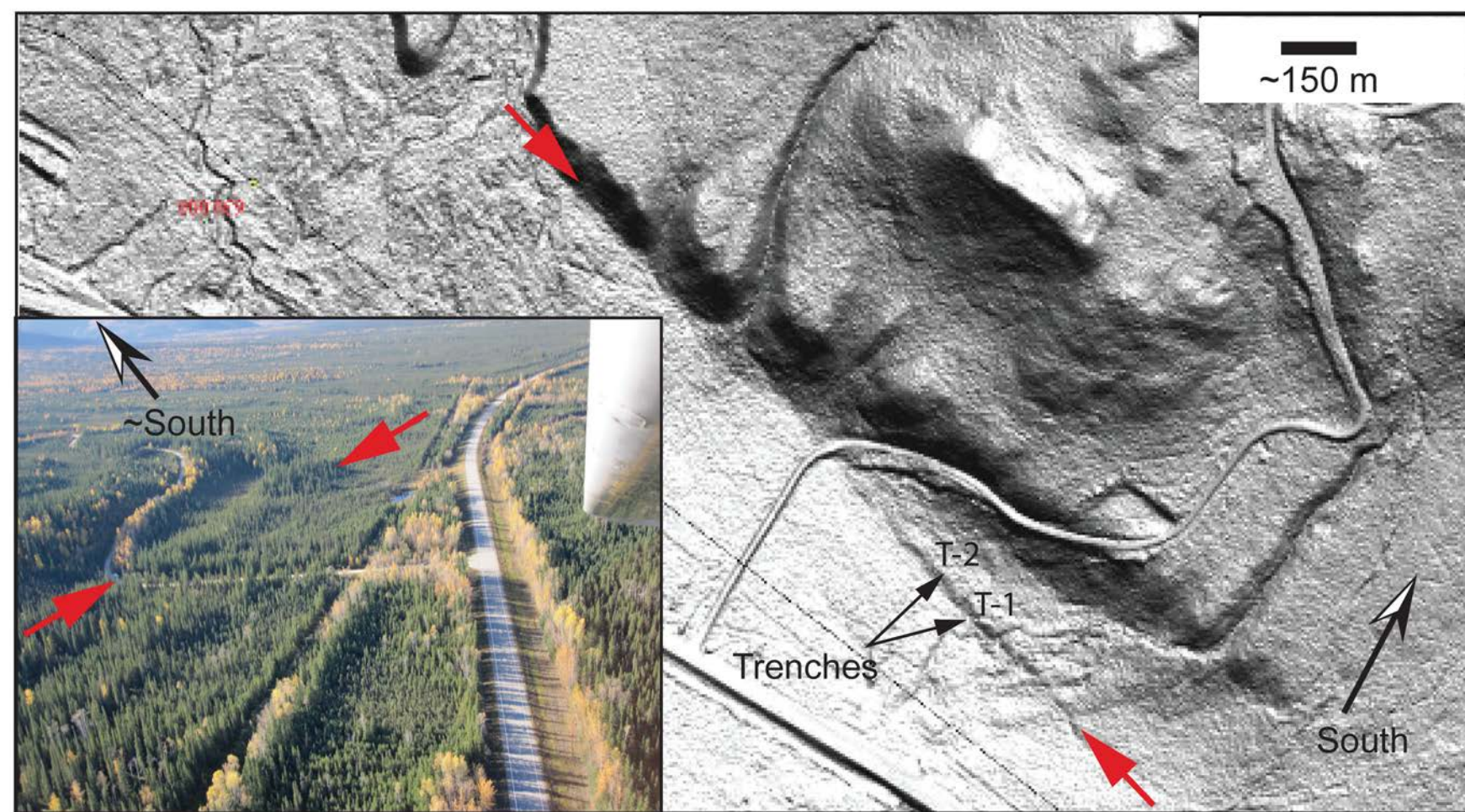


# Castle Mountain fault

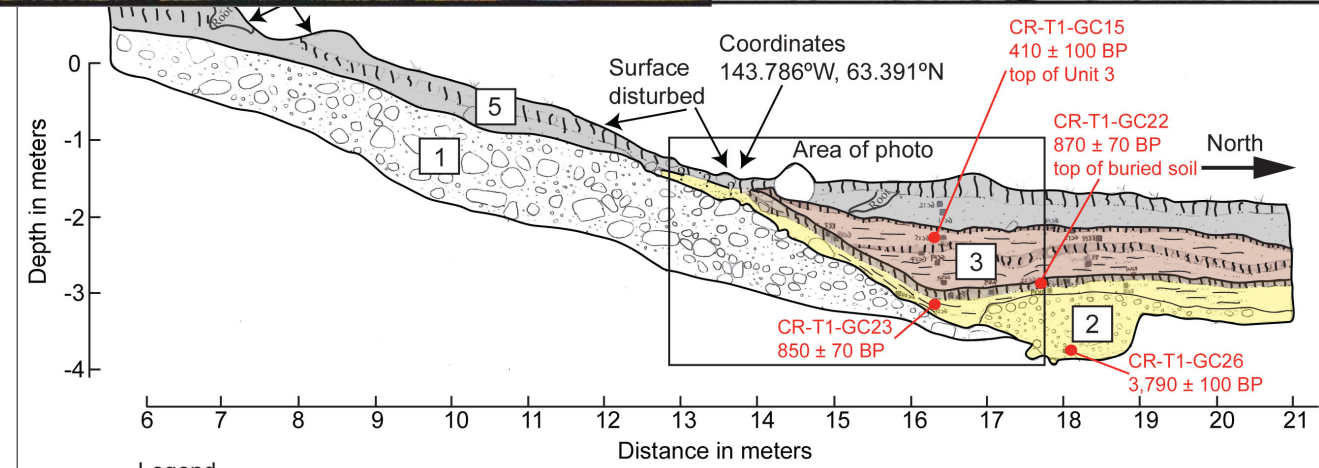


Broad fold within a step in the fault





Cathedral Rapids fault



Koehler and Woods, 2013