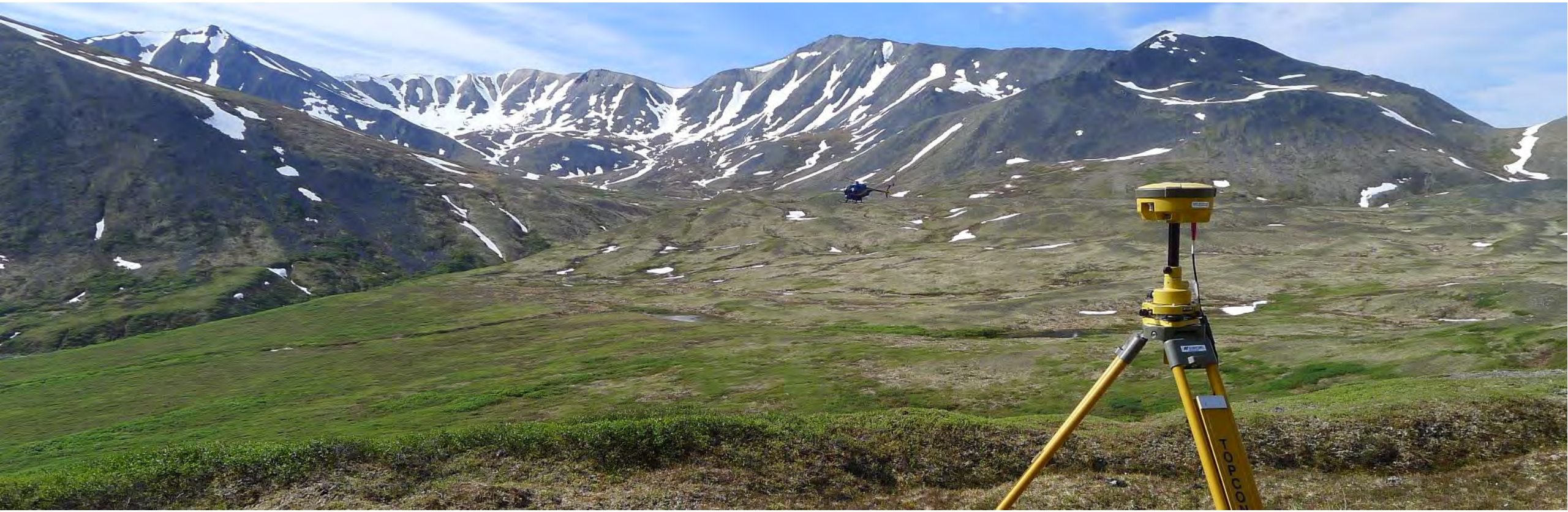
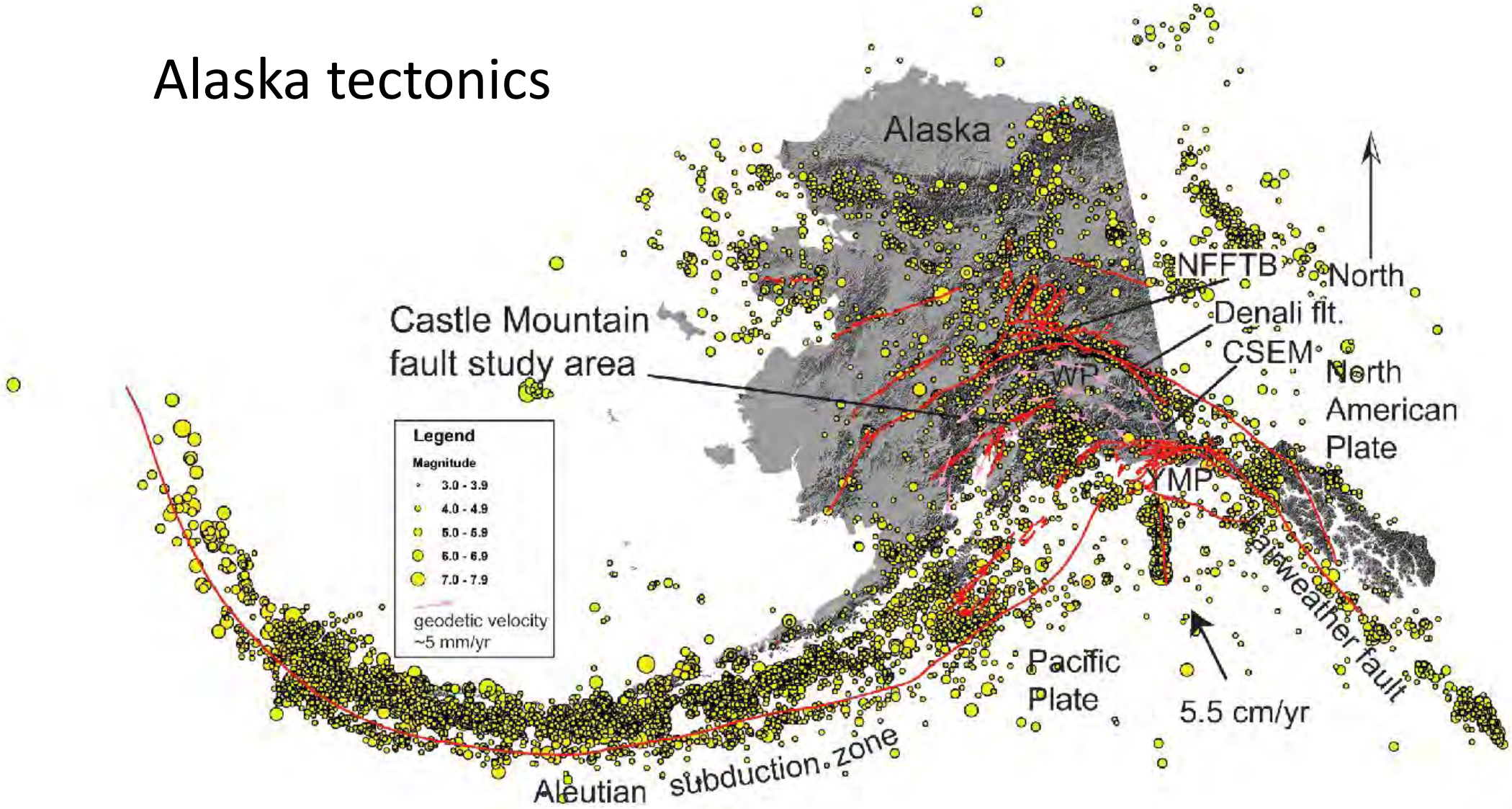
GLG494/598 (ASU) and GEOL 701J (UNR):
Mapping tectonic faults from geomorphology



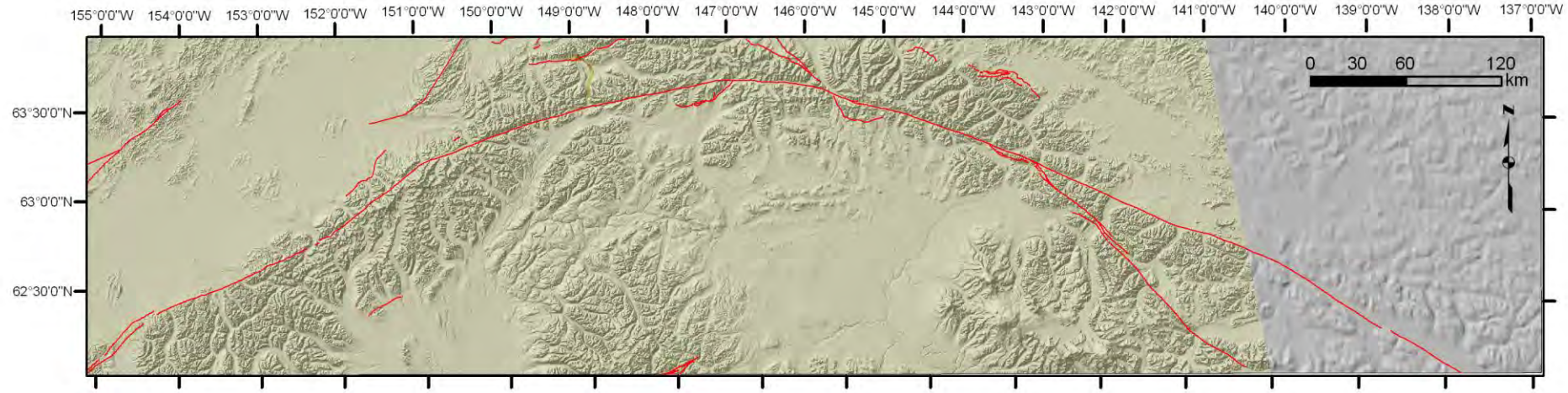
Strike-slip faults:
Mapping examples from Alaska and N. California

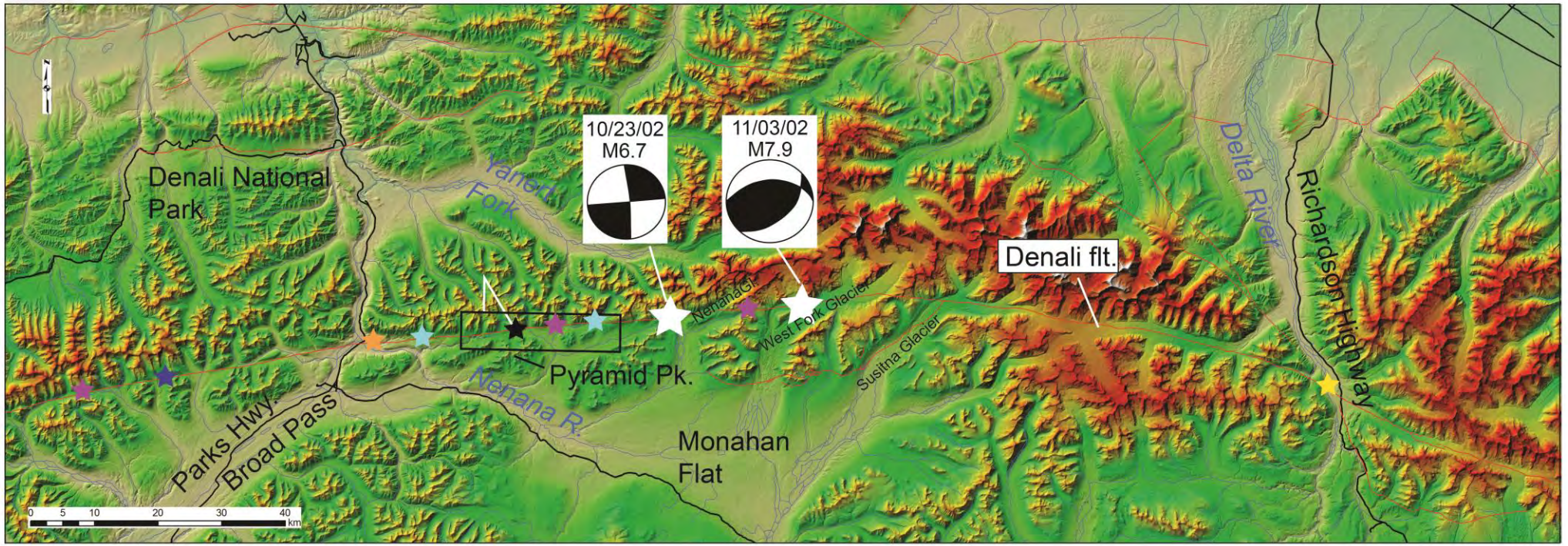
Professor Rich D. Koehler

Alaska tectonics



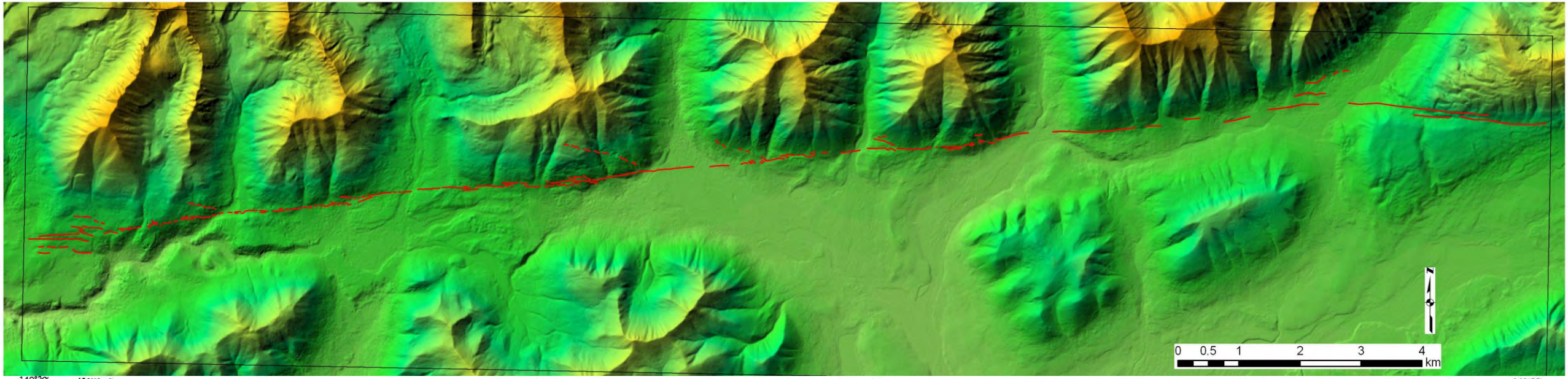
Denali fault

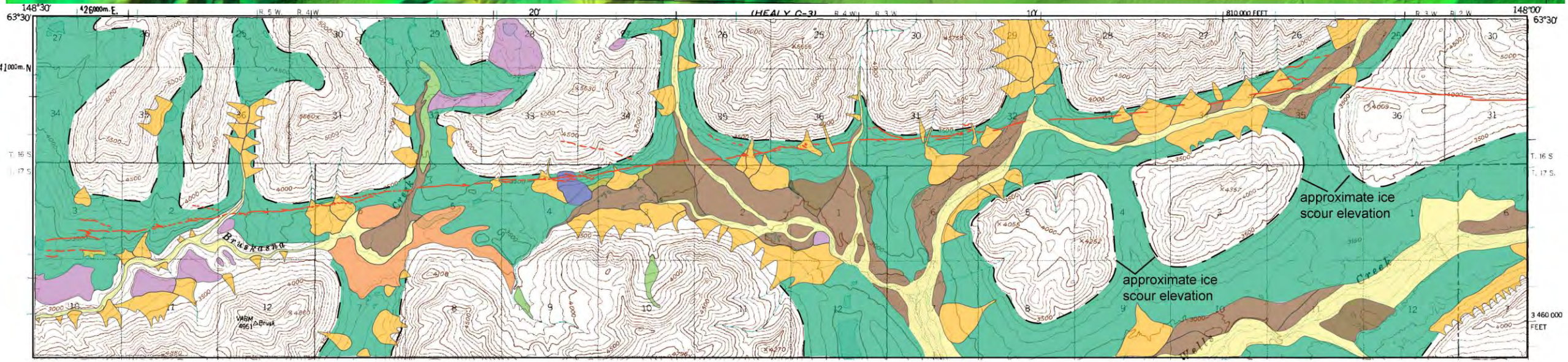


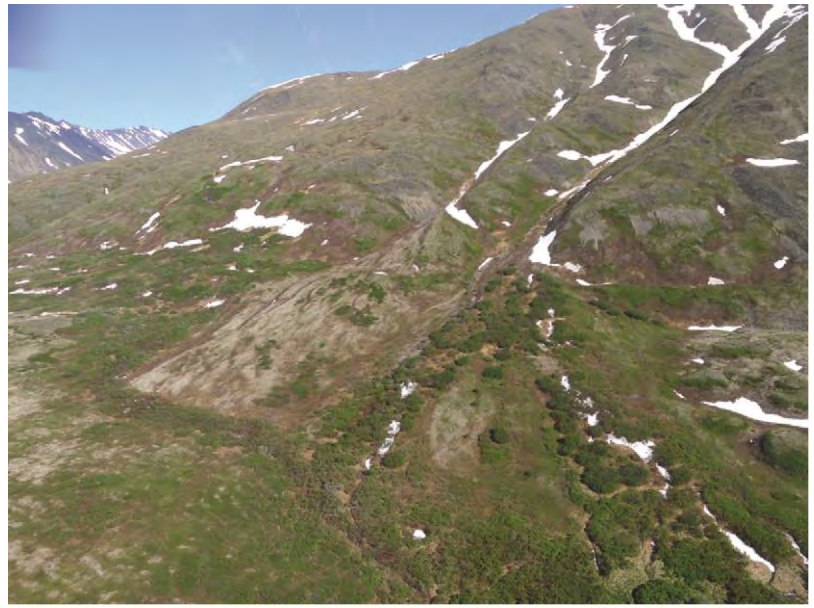


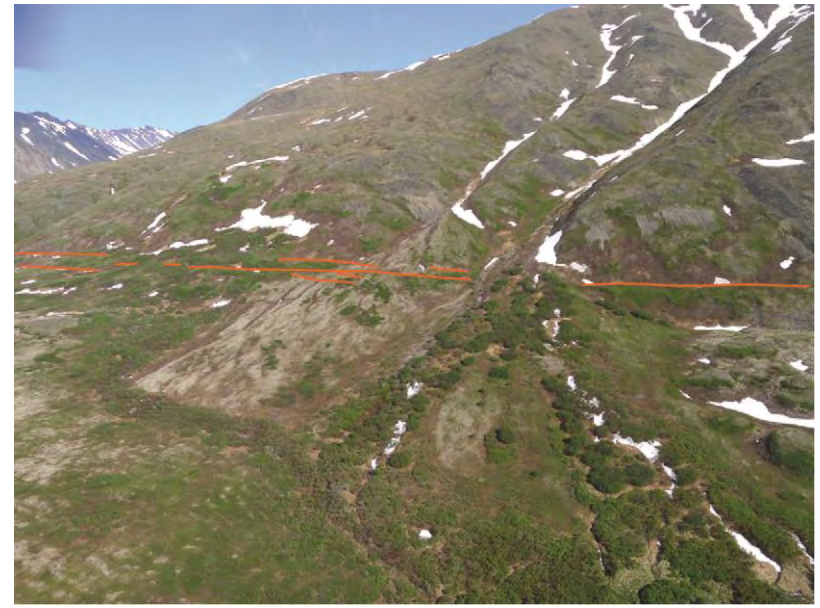
Previous studies: Carver et al., 2004 Schwartz et al. (in review) Mériaux et al., (2009) Bemis et al., 2012 Matmon et al., 2006

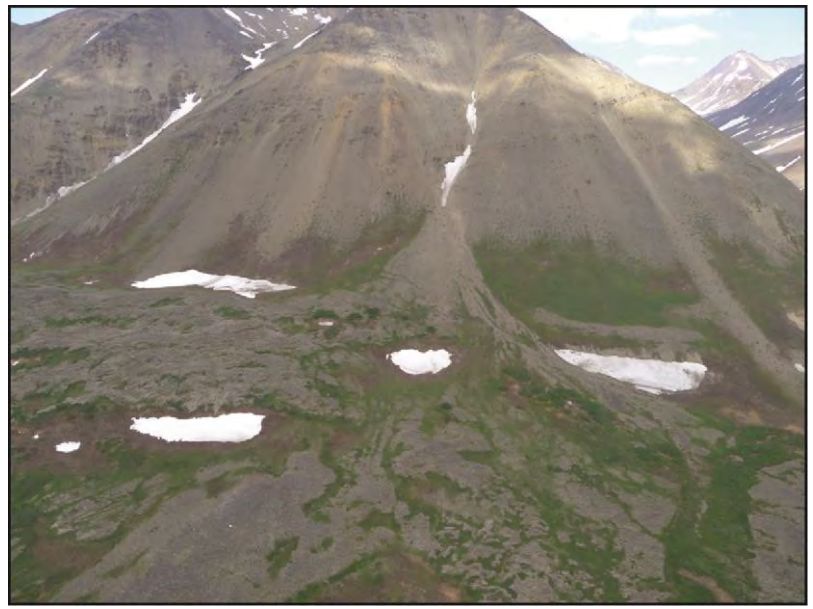
IfSAR and Quaternary surficial mapping

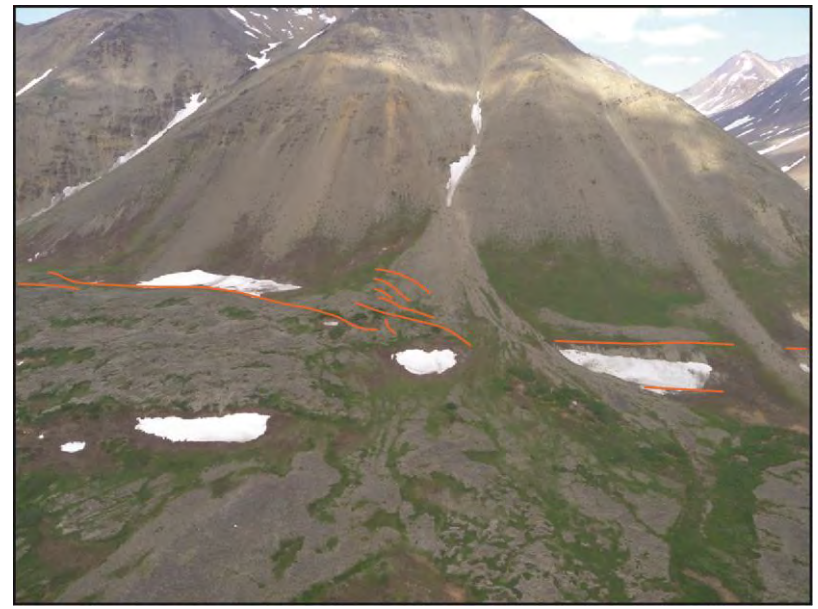


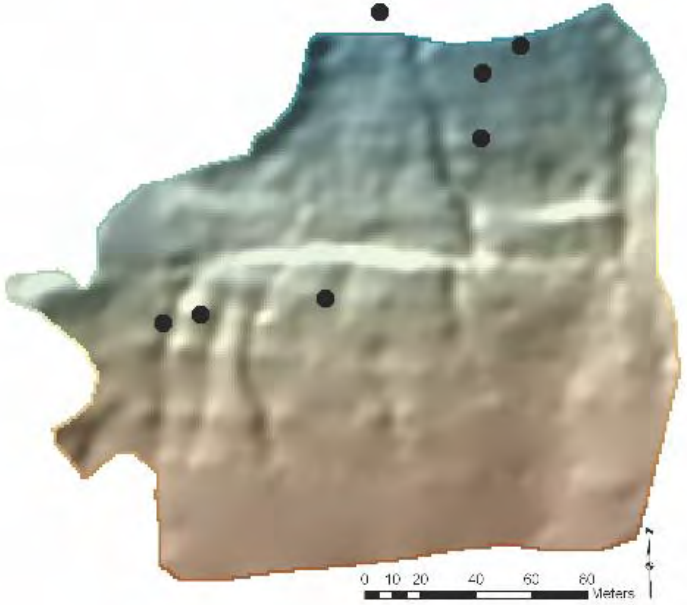




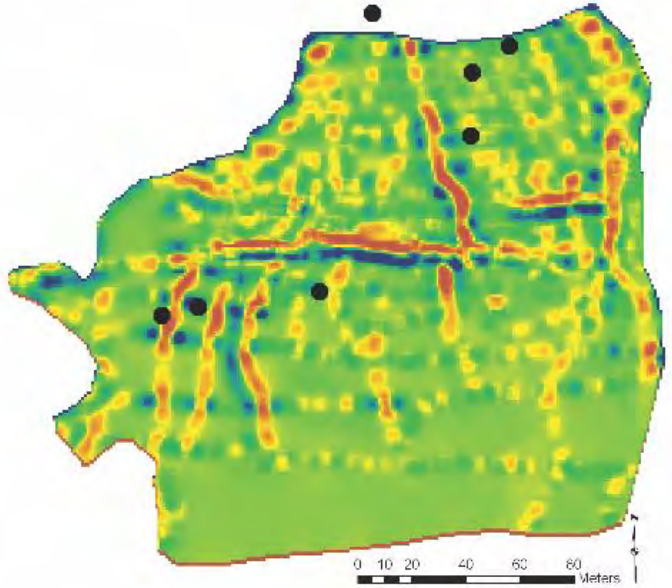




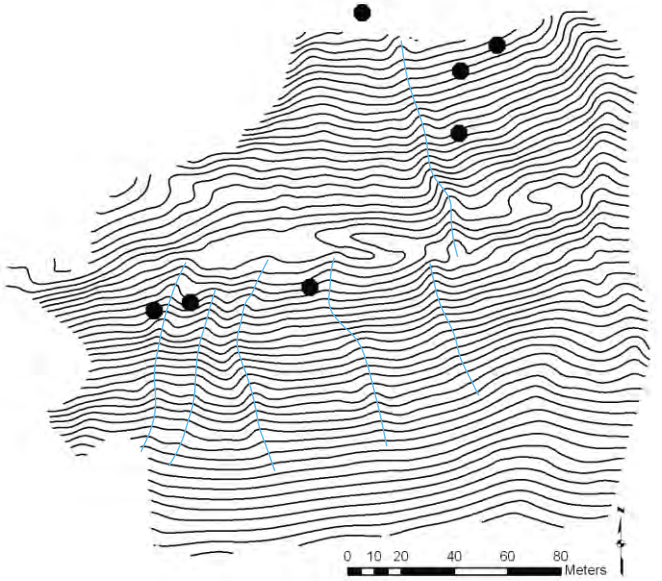




Differential GPS survey



Slope map



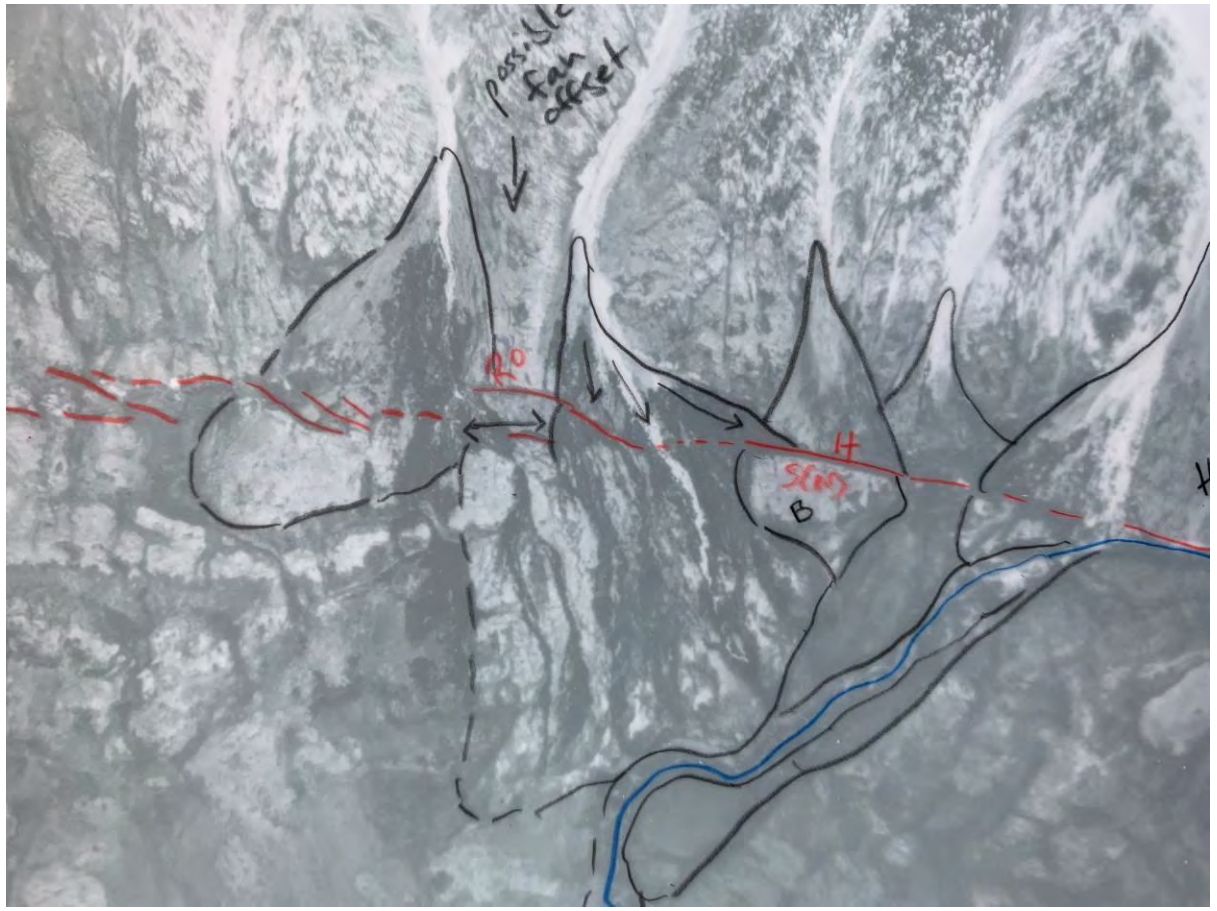
Topographic map

Offset avalanche debris fan

1:24,000 scale
air photo

Air photo mapping

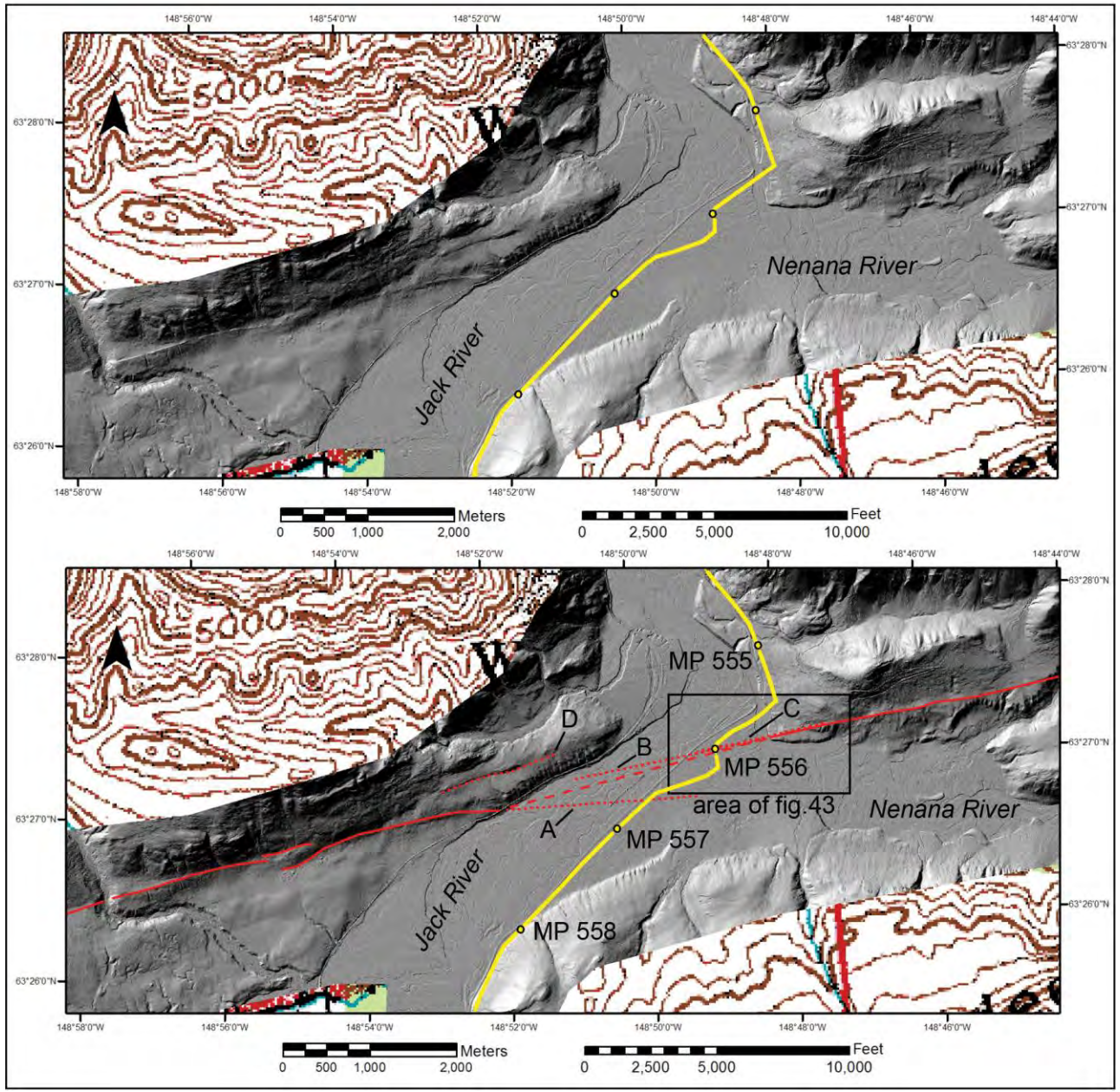
Air photo mapping

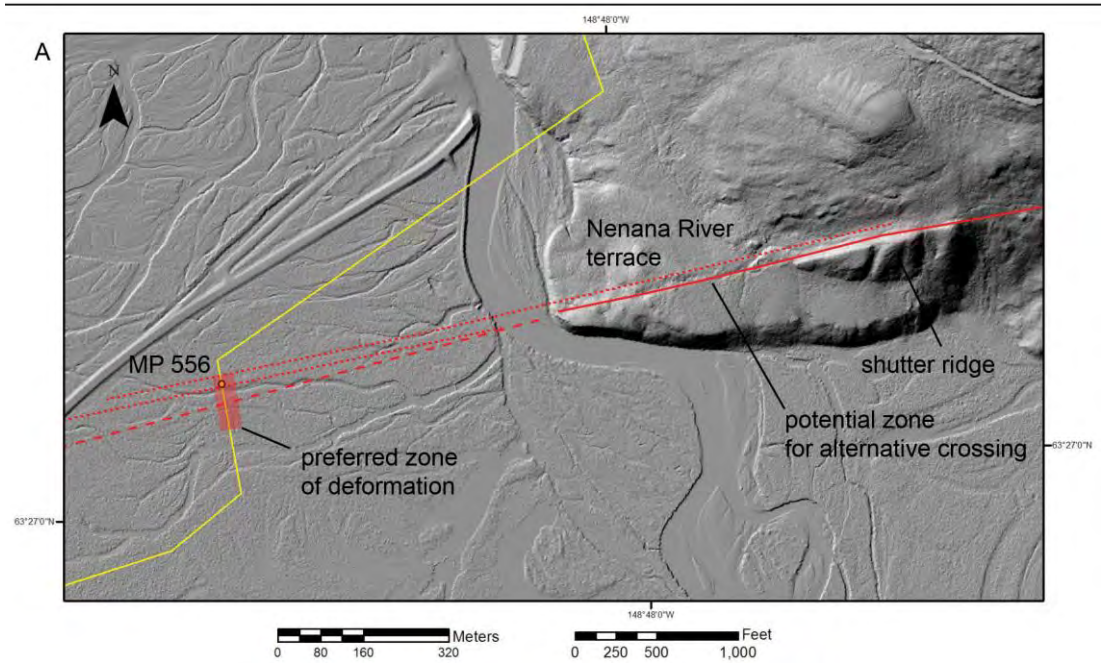


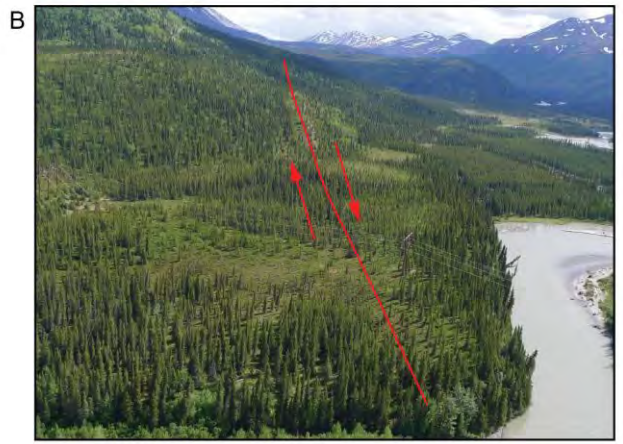
Denali fault

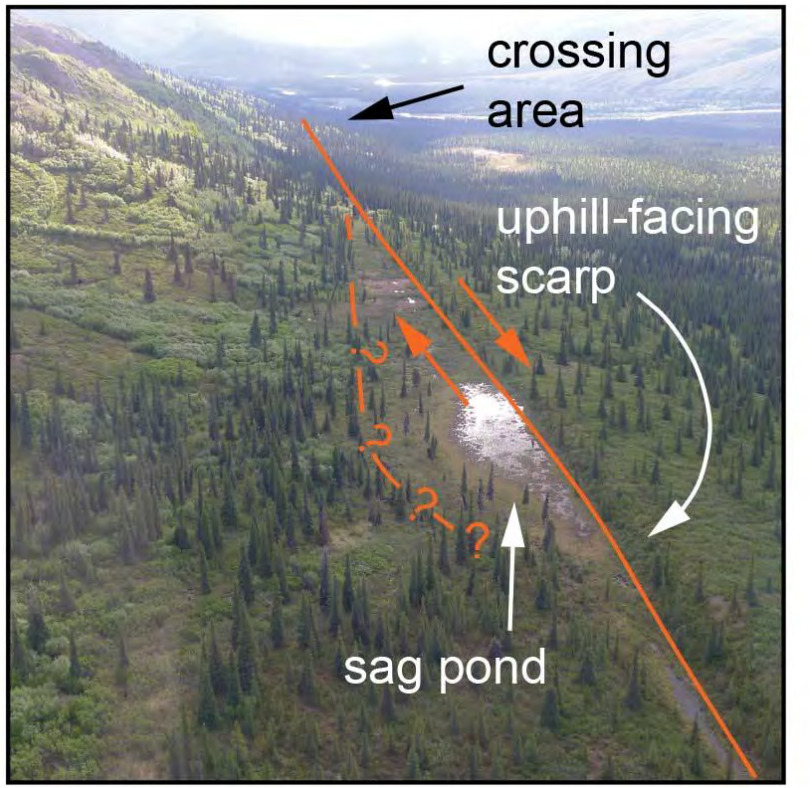
Linear trough cutting across glacially scoured bedrock saddle

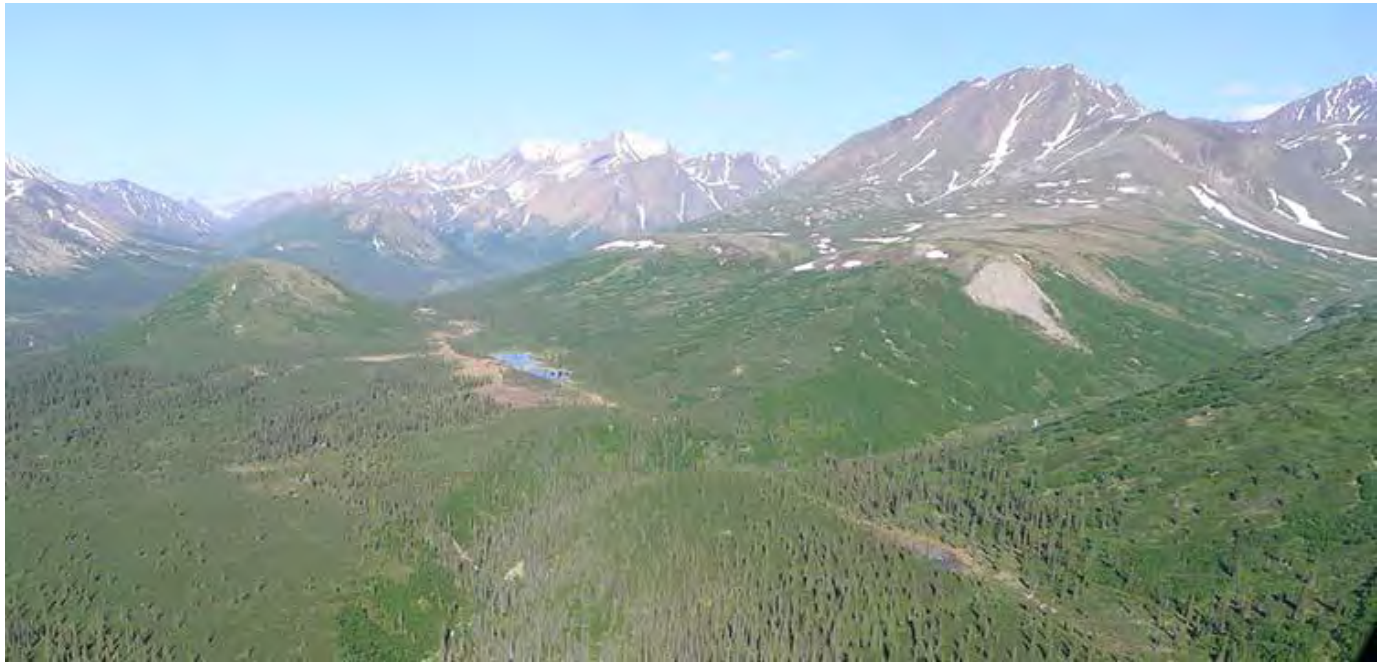
Denali fault, Parks Highway gas pipeline crossing



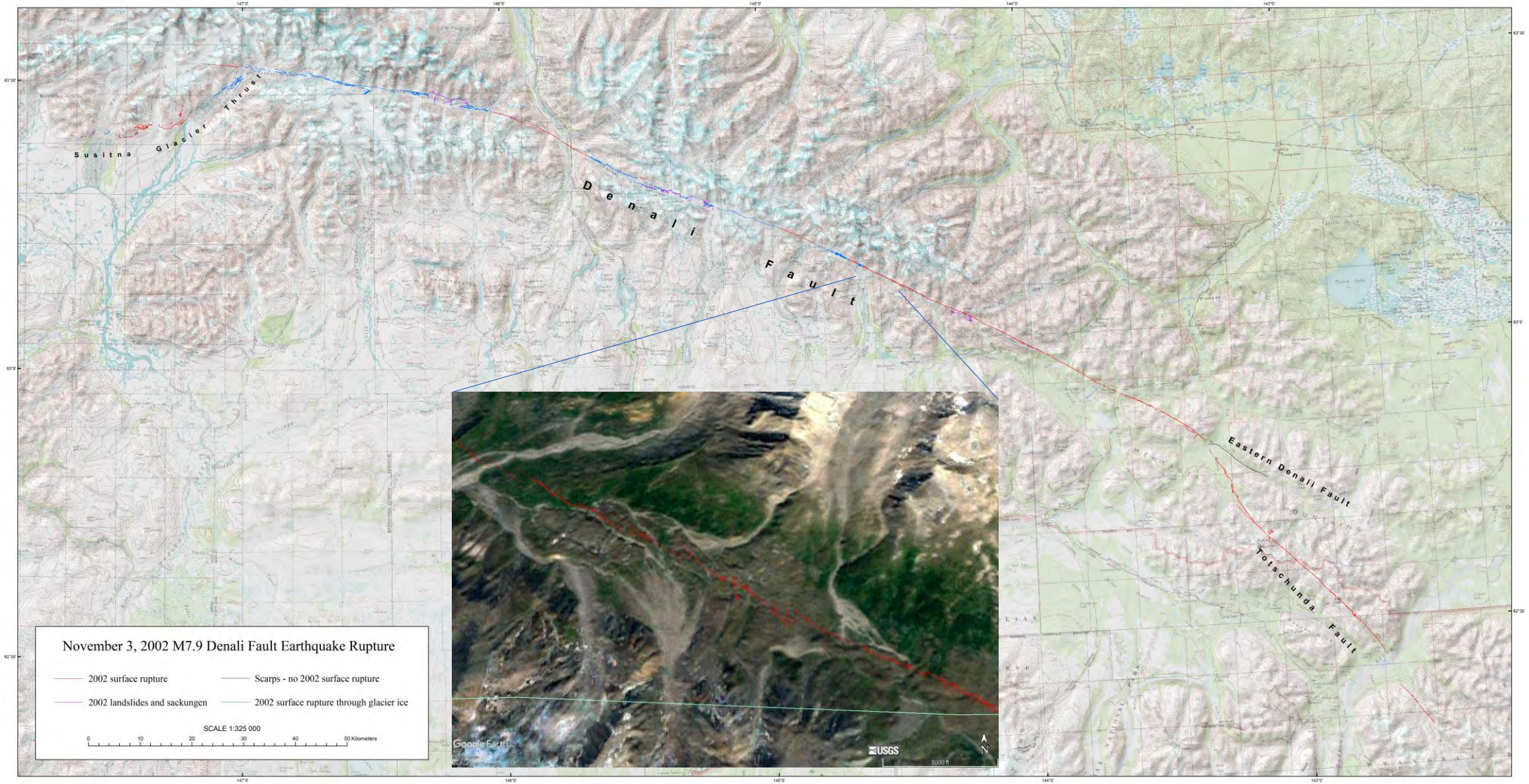




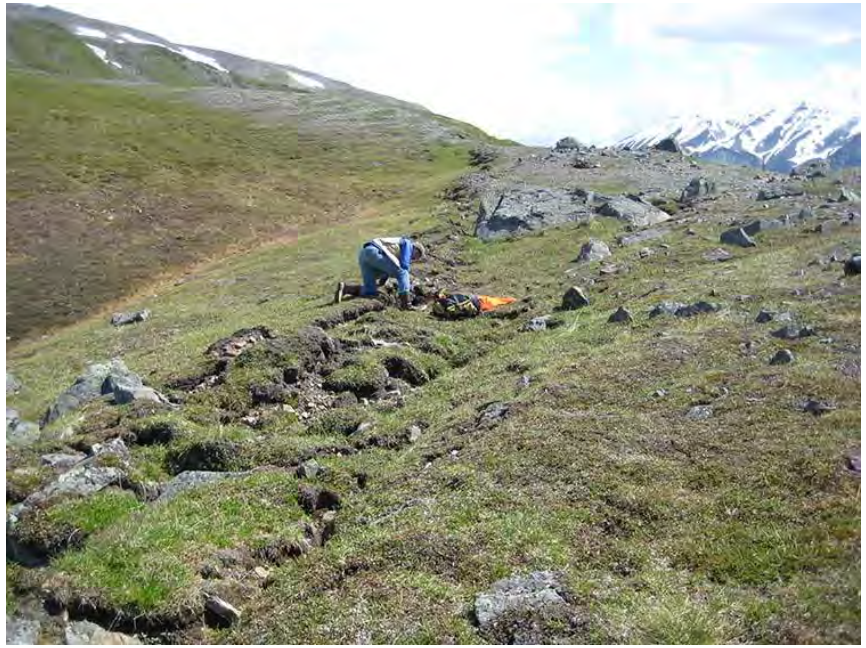

crossing
area
uphill-facing
scarp
sag pond



2002 Denali fault rupture, Haeussler et al., 2009

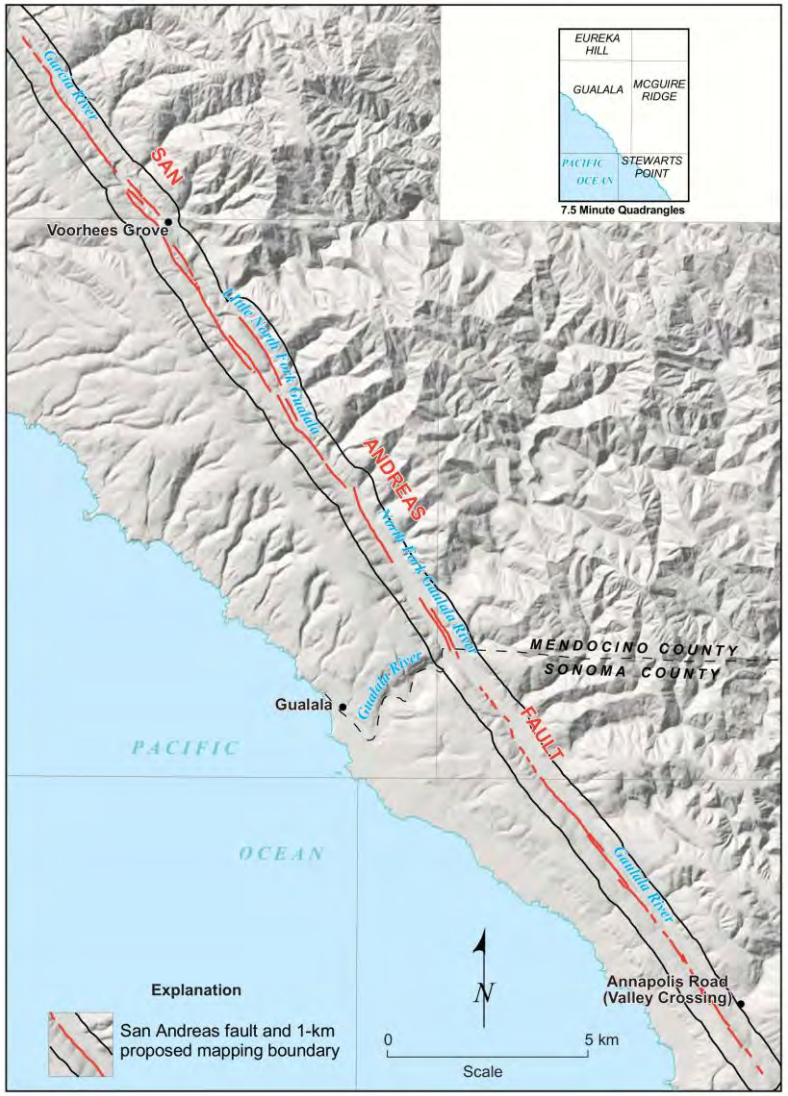


Field photos 2002 rupture

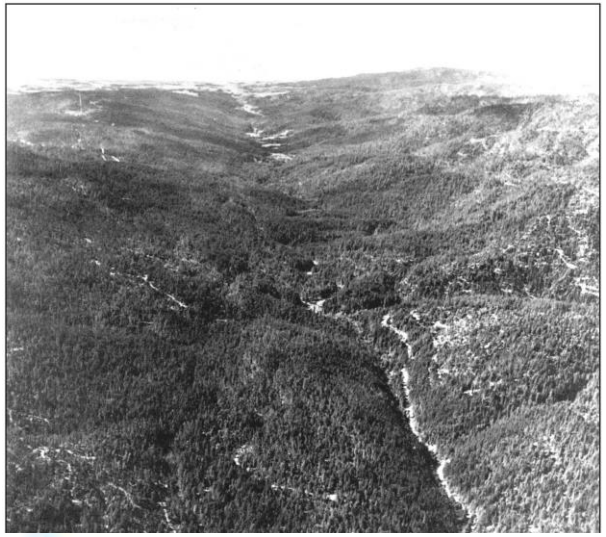


Field photos 2002 rupture

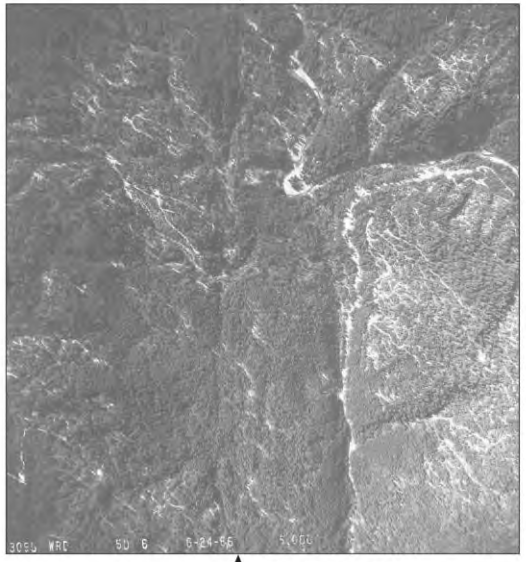
San Andreas fault, northern California



Koehler et al., 2005



San Andreas fault



San Andreas fault

Linear trough and uphill facing scarp

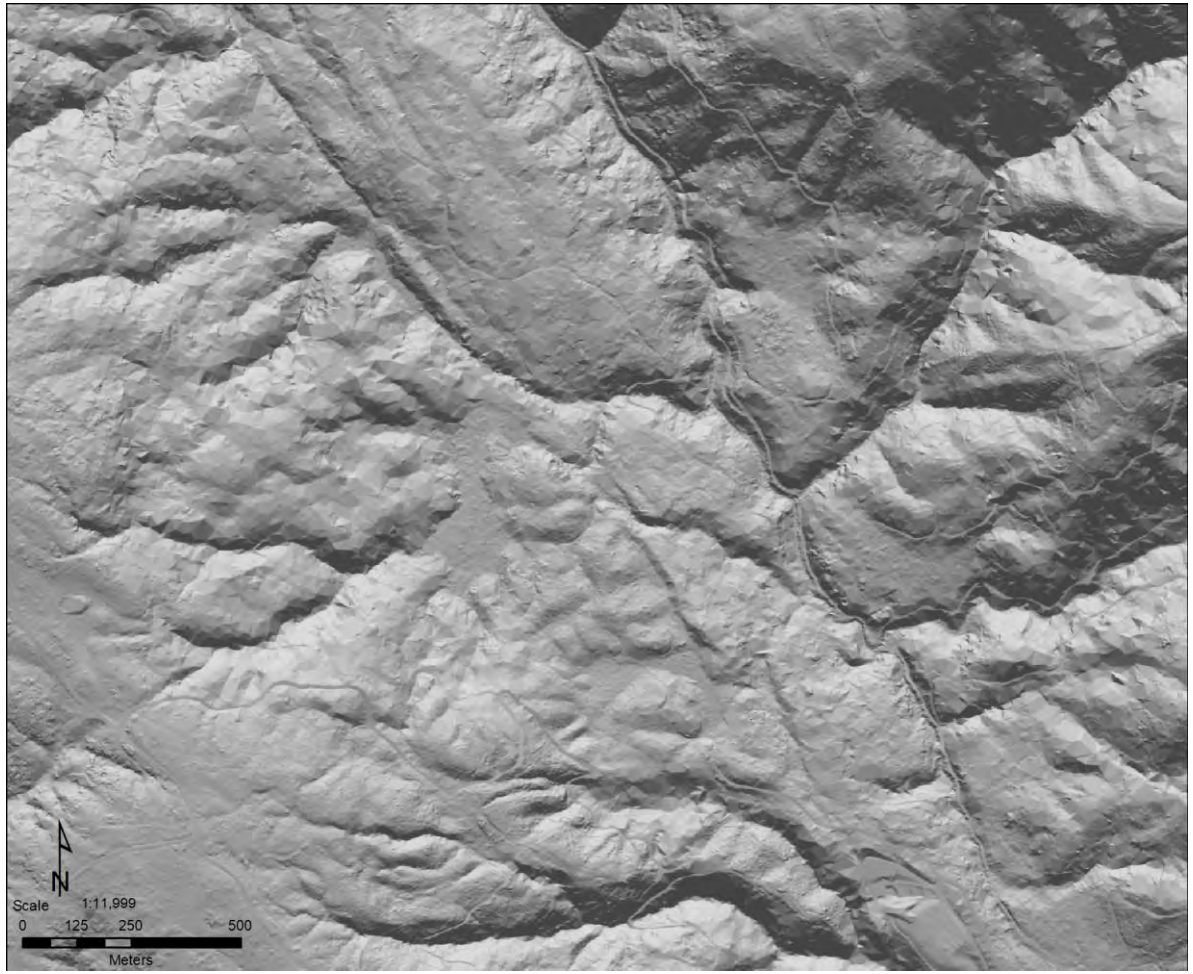
Table 1. Geomorphic Symbol Codes used in Map Compilation

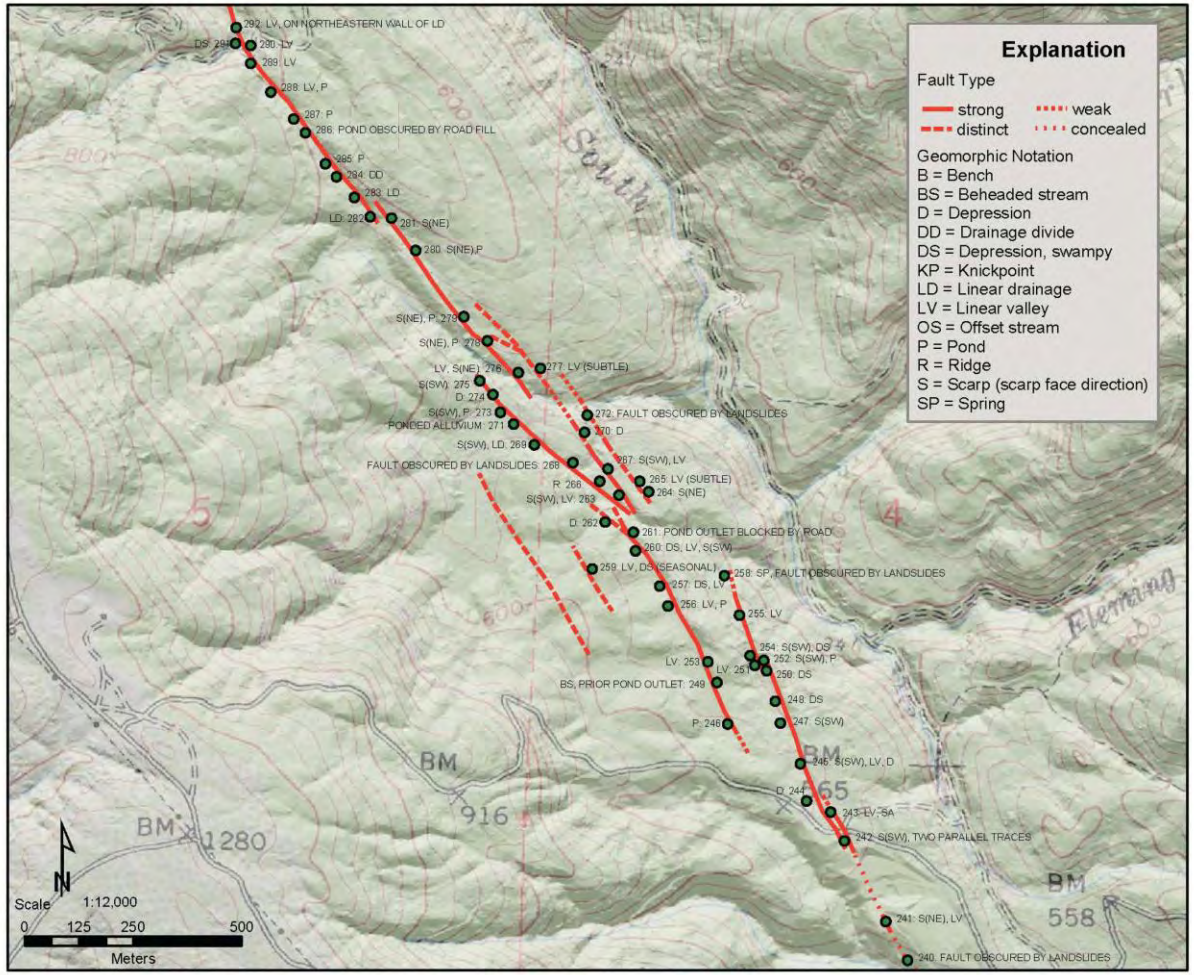
Geomorphic Feature	Symbol
Scarp (northeast facing)	s (NE)
Scarp (southwest facing)	s (SW)
Pond	p
Swampy depression	ds
Dry linear depression or swale	d
Saddle	sa
Spring	sp
Linear valley	lv
Linear drainage	ld
Swale	sw
Linear break in slope	bs
Bench	b
Tectonic ridge	r
Stream knickpoint	kp
Vegetation lineament	v
Drainage divide	dd
Offset stream channel	os
Beheaded or abandoned stream channel	bs
Deflected stream	ds
Pirated channel	pc

Keeping track of features using site numbers

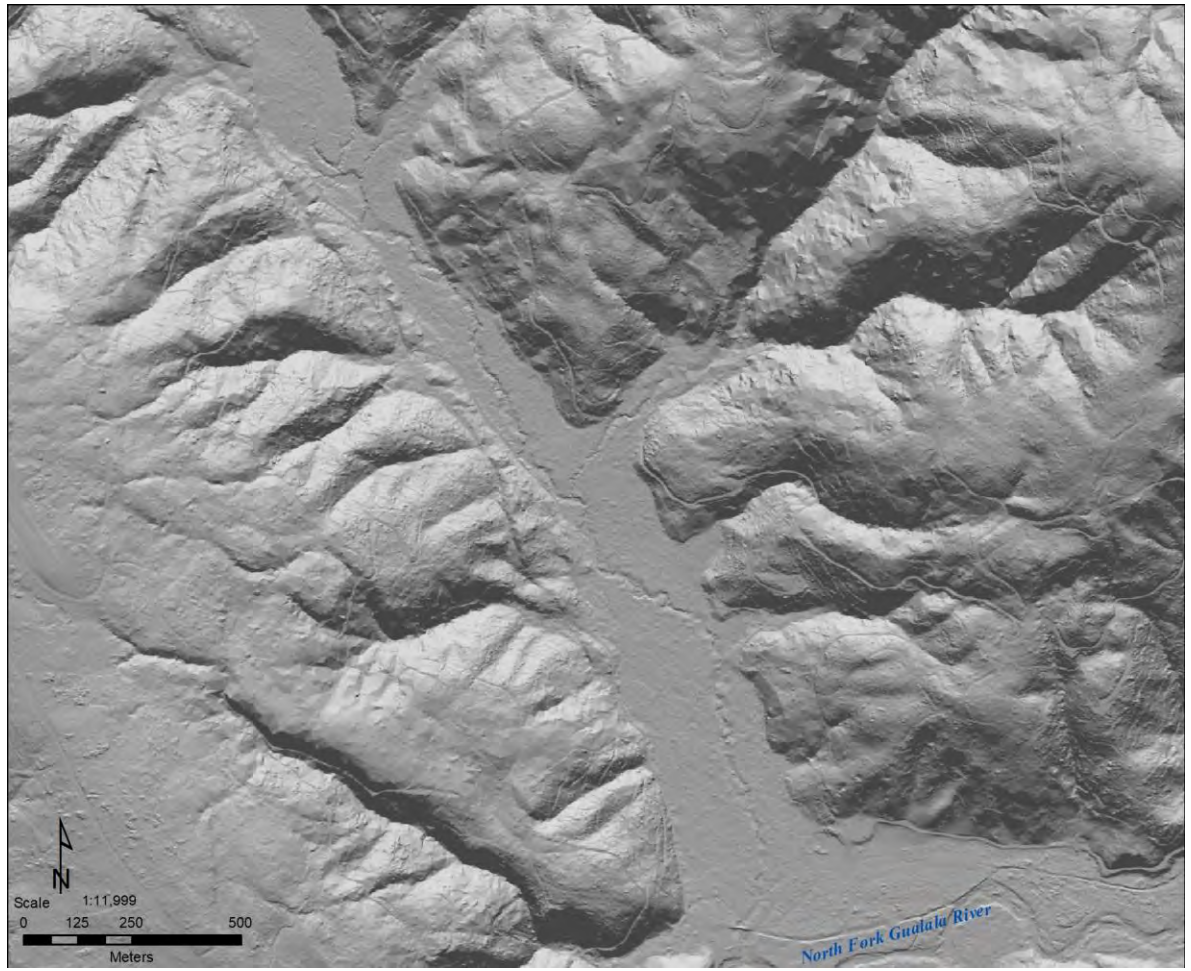
Location	Geomorphic Feature	Site Number
~ 3 km south of Annapolis Road to Buckeye Creek	Ponds and swampy bogs	1, 2, 6, 8, 11, 12, 16, 21, 22, 23, 24, 26, 28, 30, 31, 33, 35, 39, 45, 47, 50, 59, 70, 72, 74, 75, 79, 81
~ 3 km south of Annapolis Road to Buckeye Creek	Scarps	36, 40, 42, 48, 49, 52, 54, 61, 77, 86, 87, 90, 92, 94
~ 3 km south of Annapolis Road to Buckeye Creek	Offset streams and beheaded channels	3, 4, 5, 7, 9, 10, 20, 27, 32, 34, 55, 56, 64, 69, 71, 84, 85, 93
Buckeye Creek to Big Pepperwood Creek	Ponds and swampy depressions	96, 99, 103, 110, 119, 120, 137
Buckeye Creek to Big Pepperwood Creek	Scarps	97, 99, 101, 102, 104, 110, 115, 122, 123, 124, 126, 129, 134, 142
Buckeye Creek to Big Pepperwood Creek	Offset streams and beheaded channels	116, 118, 125, 136, 142, 144

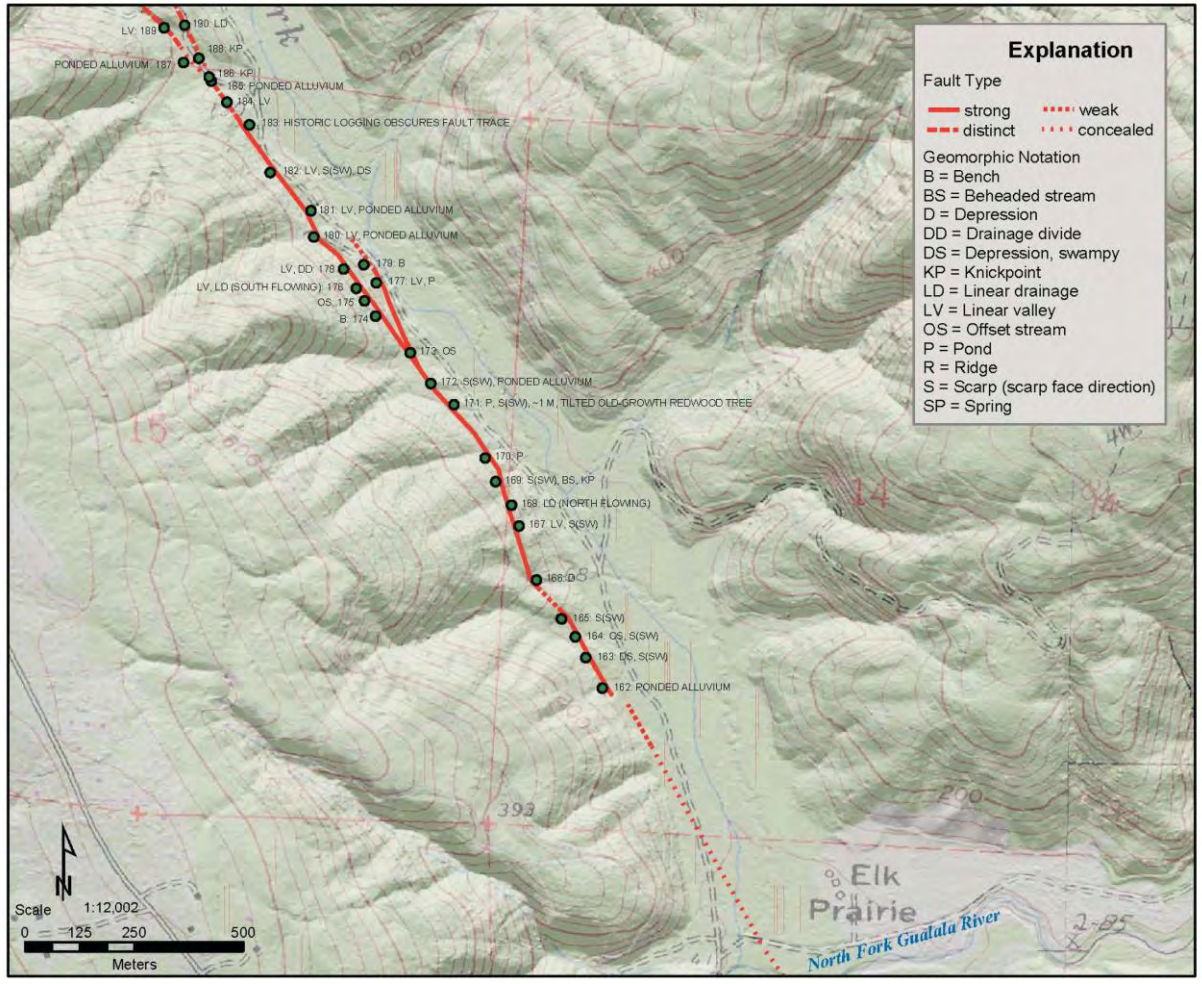
Lidar and field mapping, northern San Andreas fault





Lidar and field mapping, northern San Andreas fault





Lidar and field mapping, northern San Andreas fault