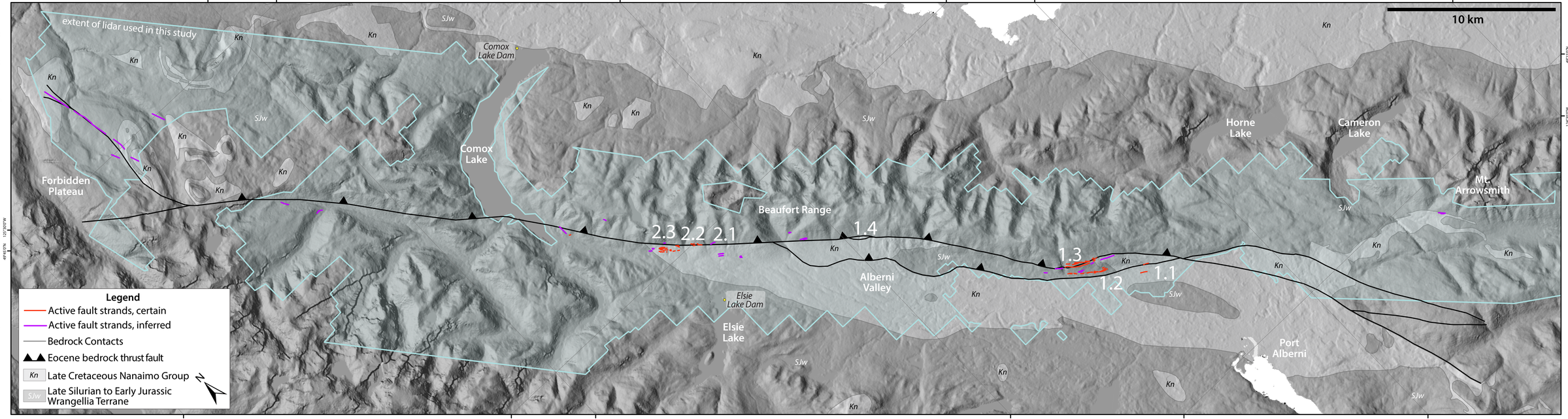

Figure S1: Distribution of known and inferred active fault strands along the Beaufort Range fault. These fault-related scarps, sag ponds, and pressure ridges (red and blue lines) occur discontinuously for >60 km along strike and are distinct from those formed through glacial, gravitational, or anthropogenic processes (e.g., Figure S4a-c). Lineaments extend from the Forbidden Plateau in the northwest (the epicenter of the 1946 M 7.3 Vancouver Island earthquake; Rogers and Hasegawa, 1978), through the steep rangefront of the Beaufort Range, and toward the southeast where the Beaufort Range fault projects toward the Cameron River and Fulford faults in Canada. The Fulford fault projects toward the Skipjack Island fault zone in the USA (see Main Text Figure 1 for locations of regional faults). Fault-related scarps are mapped in both the hanging wall and footwall of the Eocene bedrock Beaufort Range fault (bold barbed black line; bedrock geology and faults after Cui et al., 2017), a thrust fault that places Late Triassic Karmutsen Fm. basalts over the Cretaceous Nanaimo Gp. Fault scarps offset Quaternary deposits ranging in age from ~13.6-11 ka to ~3-4 ka (see Main Text Figure 3 for surficial mapping). Sites 1.1 to 2.3 labeled for reference. Basemap is hillshaded SRTM (JPL, 2013).