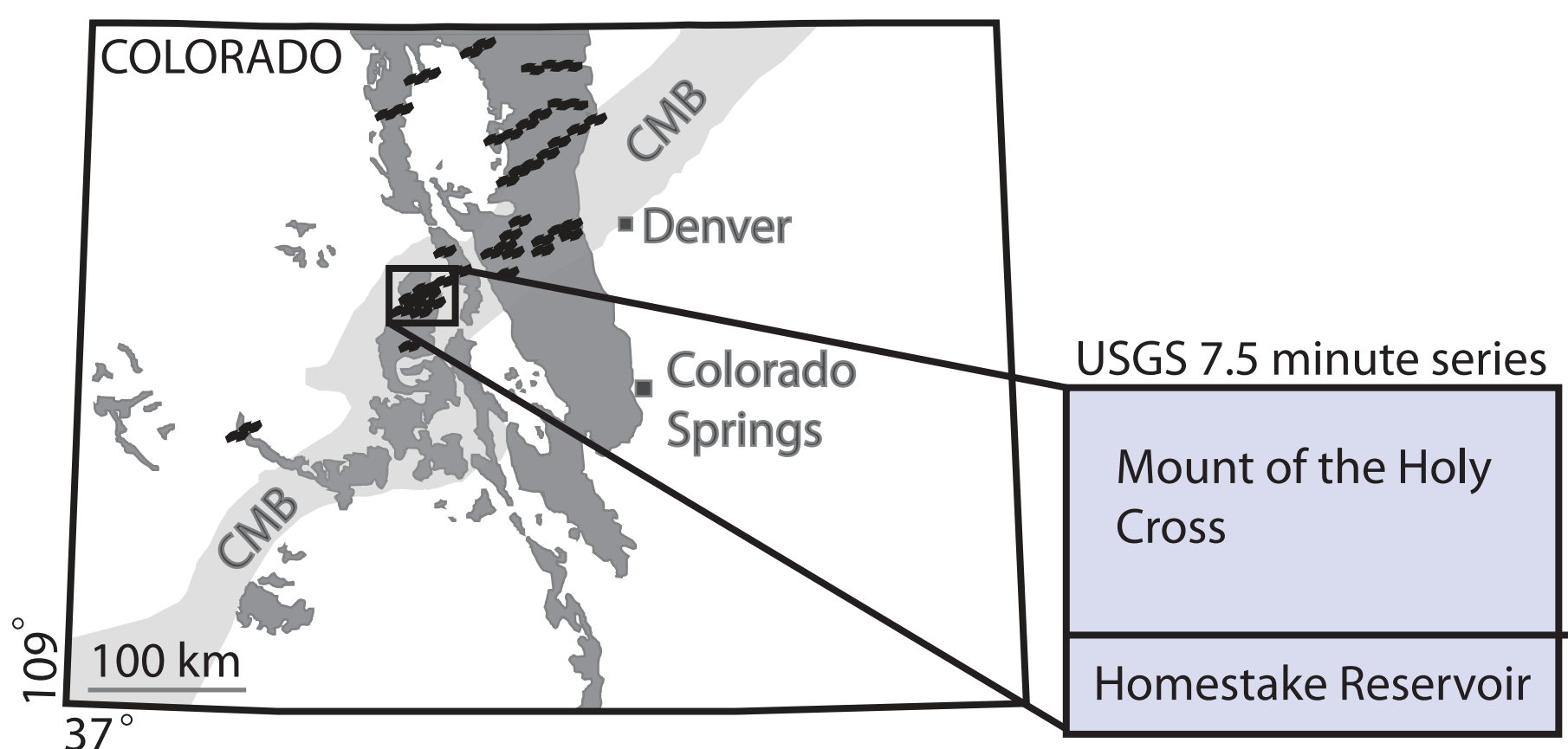
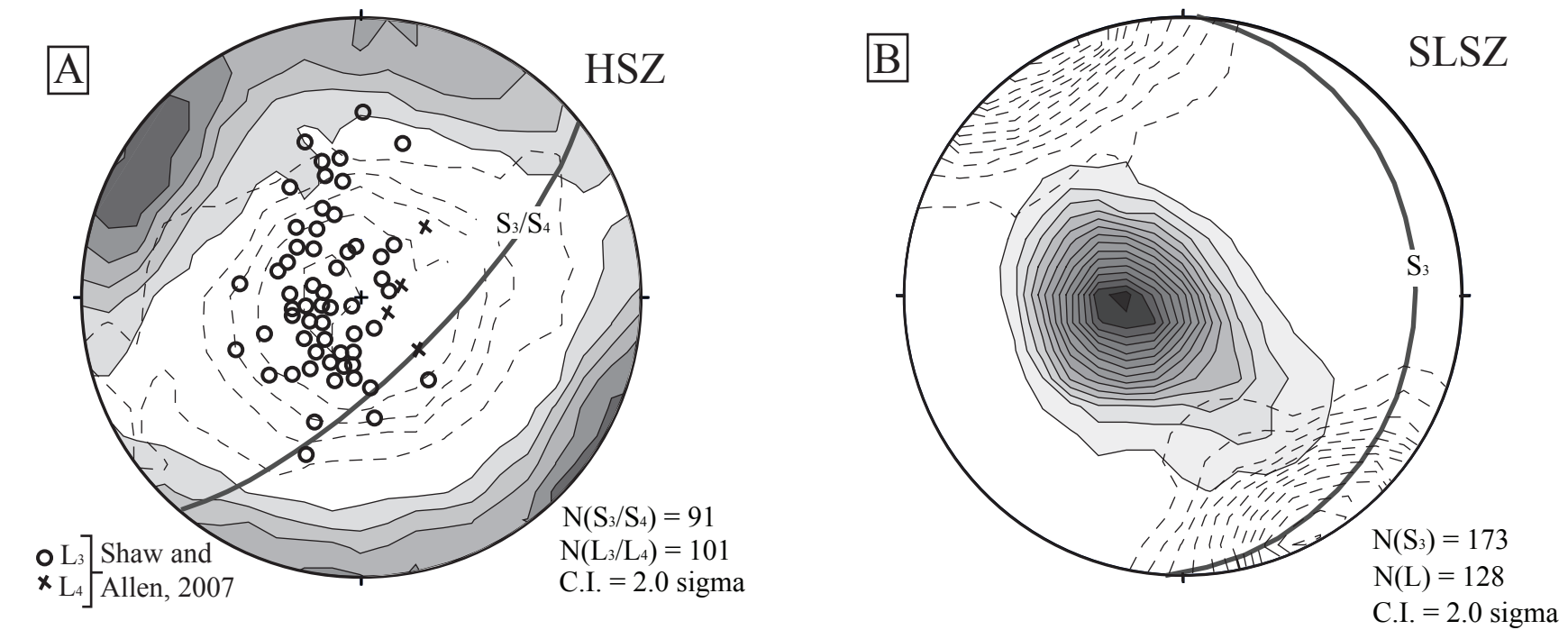


Plate 1: Geologic map of the HSZ and SLSZ, Eagle and Lake counties, Colorado

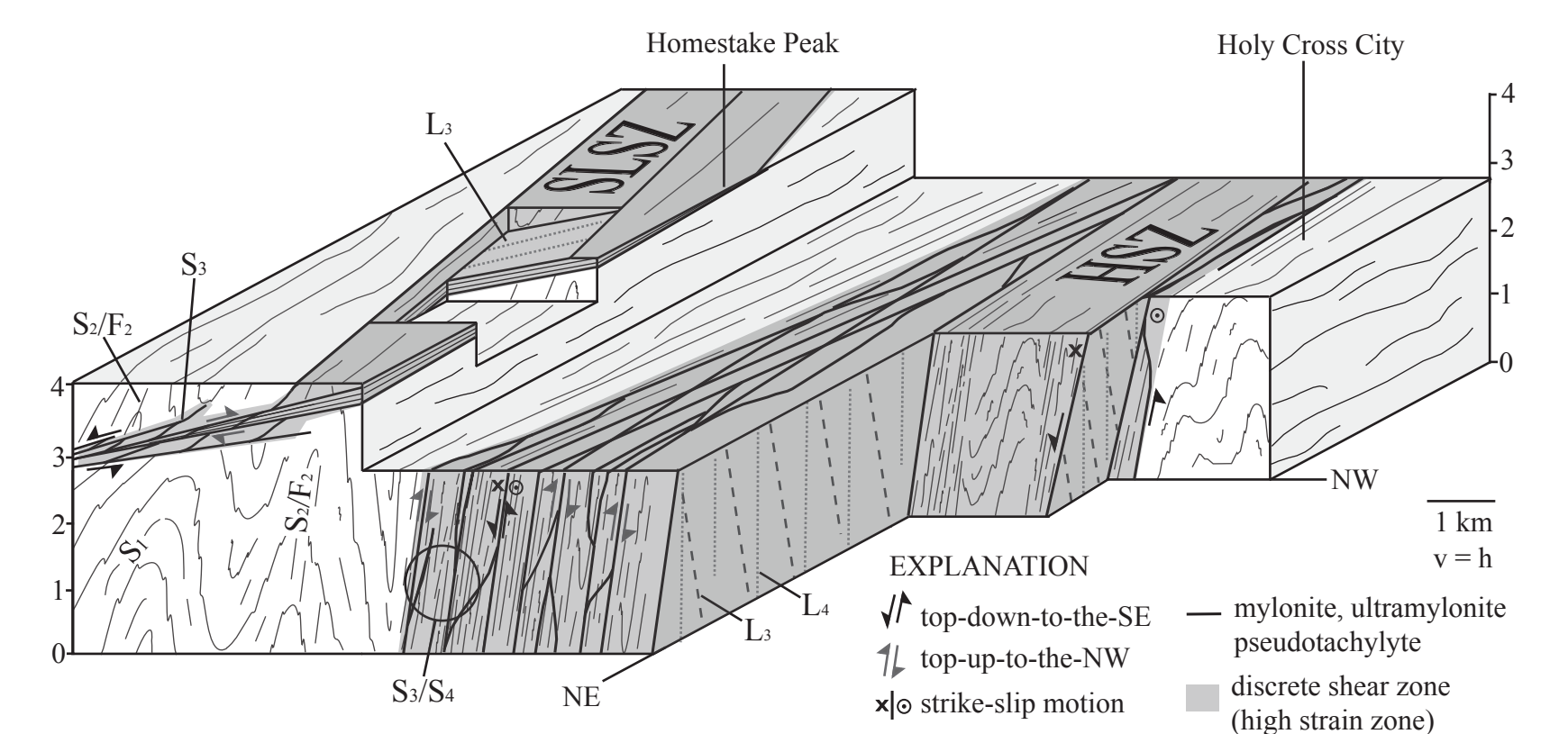
Geologic Map of the Homestake and Slide Lake shear zones,
Eagle and Lake Counties, Colorado
Mapping by Liz Lee, Micah Jessup, and Donnie Hicks
The Department of Earth and Planetary Sciences
University of Tennessee - Knoxville



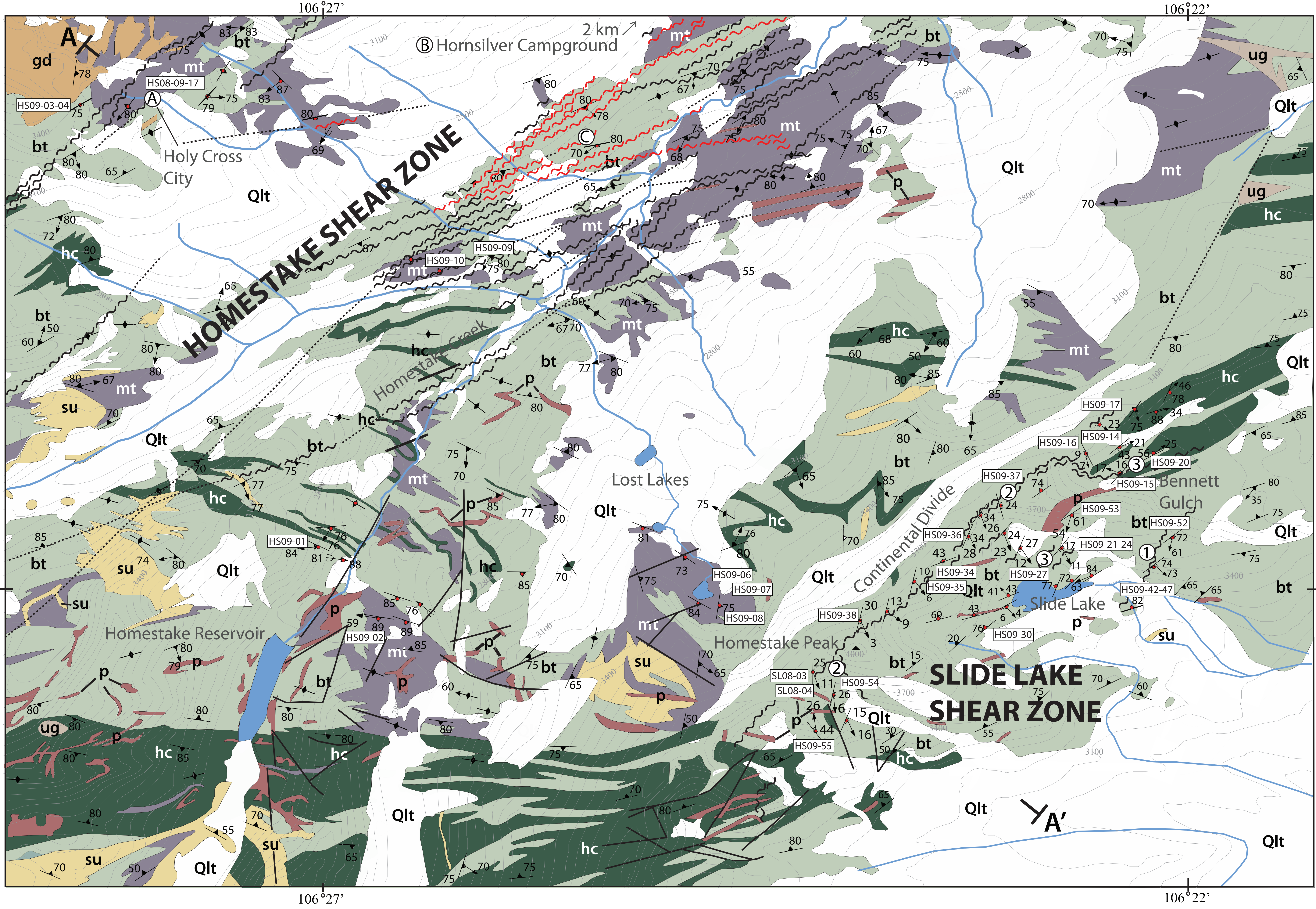
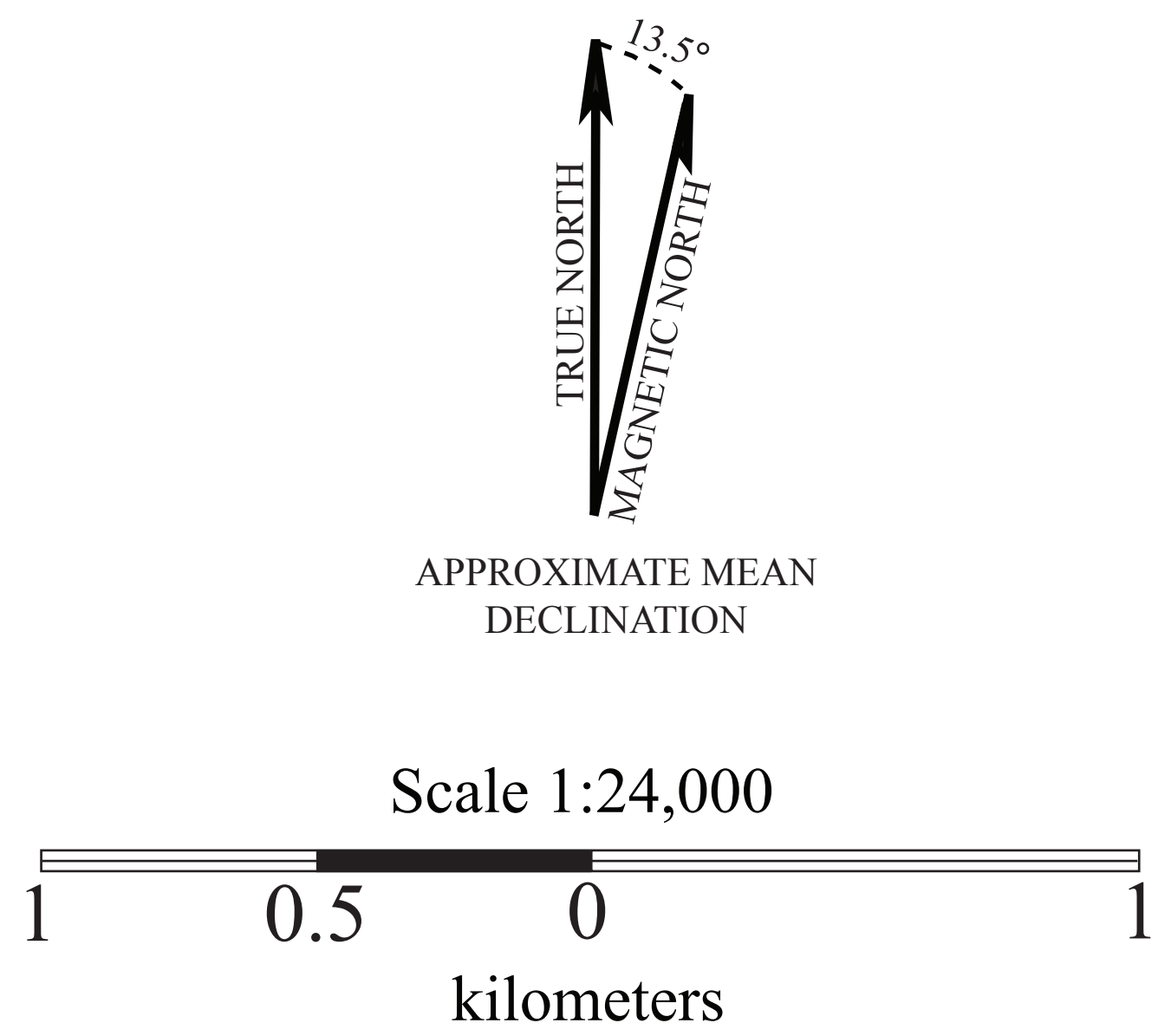
Generalized map (above) of Colorado, showing Proterozoic exposure (dark gray polygon in center of state), Proterozoic shear zones (small black lines), and the location of the Colorado Mineral Belt (CMB). Also showing the two major USGS 7.5 minute series topographic maps used for this study.



Lower hemisphere equal area stereonet showing foliation and lineation relationships in the field area. Black planes represent average S3 foliation plane and shaded contours represent poles to foliation for all measured S3 planes. Stretching lineations from this study represented by dashed contour lines. Stretching lineations from Shaw and Allen (2007) denoted with "x" and "o". (A) HSZ S3 average (056, 79°SE), L3 (88° → 209), and L4 (80° → 120). (B) SLSZ average Sx (003, 17°SE) and Lx (005° → 154).



Block diagram of the SLSZ and HSZ viewed to the south. Foliation relationships and shear sense are shown. Black arrows represent top-down-to-the-SE, gray arrows represent top-up-to-the-NW shear sense. Lineations denoted as dashed lines on foliation plane.



Explanation

- strike and dip of S₁/S₂ surface from Tweto (1974)
- strike and dip of S₂ and S₃ (mylonitic/ultramylonitic surface foliation)
- strike and dip of S₃ (mylonitic surface foliation)
- measurement from this study
- vertical foliation
- trend and plunge of stretching lineation
- trend and plunge of fold axis (open, isoclinal)
- shear (mylonite and ultramylonite) zone
- fault
- projected shear zone
- pseudotachylyte from Allen (2005)
- top-down-to-the-SE displacement
- top-up-to-the-NW displacement
- dextral motion

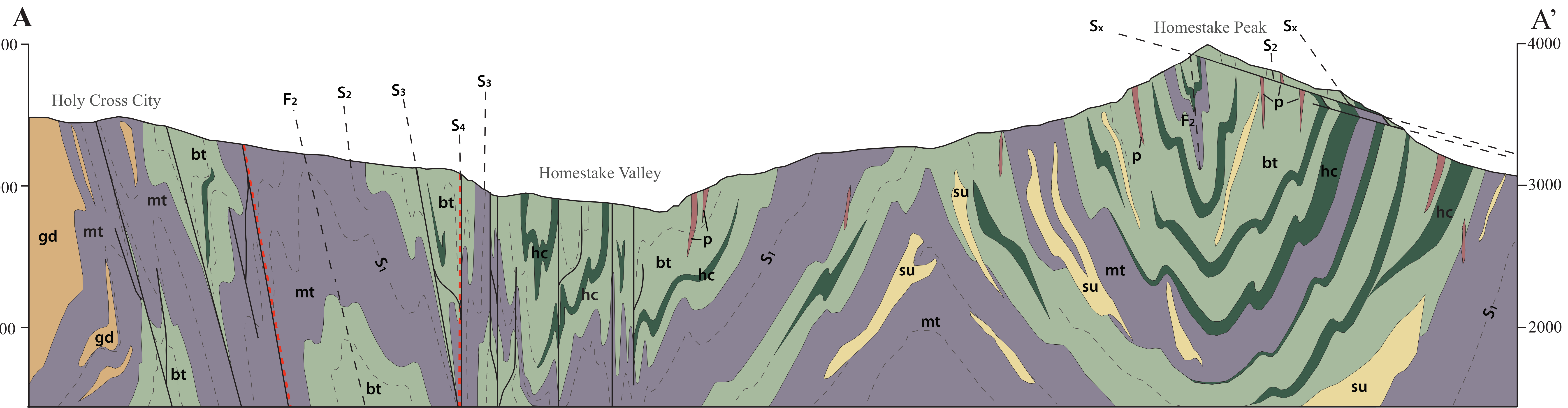
Rock Unit Description

- Qlt** Holocene and Pleistocene landslide, talus, avalanche, and periglacial boulder-creep deposits; glacial and post glacial.
- gd** Paleoproterozoic granite to granodiorite concordant with surrounding gneisses. Relative age relations suggest relationship to the Cross Creek Granite.
- su** Mesoproterozoic unclassified St. Kevin Granite (~1.39 Ga; Pearson et al., 1966).
- ug** Proterozoic unclassified granite found as small bodies in and near shear zones.
- p** Proterozoic pegmatite. Variety of ages, some white, coarse-grained and feldspathic. In Homestake Valley the pegmatites contain pink feldspar, quartz and muscovite. Found in and around mylonitic shear zones.
- bt** Paleoproterozoic biotite-plagioclase-quartz paragneiss and schist with sillimanite, garnet and some cordierite. Interlayered with hc unit.
- hc** Paleoproterozoic hornblende and calc-silicate paragneiss with amphibole and pyroxene, impure quartzite. Interlayered with bt unit.
- mt** Paleoproterozoic migmatite. Structurally disorganized mixtures of biotite gneiss and granitoid.

Additional description: Structural data came from this study (20% total strike and dip/lineation represented in this map), Tweto (1974), with pseudotachylyte from Allen (2005) and Shaw and Allen (2007). Cross section line from A-A' and taken from this map and Tweto (1974). SLSZ outcrops are numbered 1-3: (1) Bennett ridgeline, (2) Homestake ridgeline - Continental Divide, (3) Slide Lake cirque and Bennett Gulch cirque. HSZ outcrops from this study lettered A-C: (A) Holy Cross City, (B) Hornsilver Campground, (C) Homestake valley.

References

- Allen, J.L., III, 2005. A multi-kilometer pseudotachylyte system as an exhumed record of earthquake rupture geometry at hypocentral depths (Colorado, USA). *Tectonophysics* 402, 37-54.
- Shaw, C.A., Allen, J.L., 2007. Field rheology and structural evolution of the Homestake shear zone, Colorado. *Rocky Mountain Geology* 42, 31-56.
- Tweto, O., 1974. Geologic map and sections of the Holy Cross Quadrangle, Eagle and Summit Counties, Colorado. U.S. Geological Survey Professional Paper P-956, 96 p.



vertical = horizontal

Plate 2: Geologic cross section with skyward and to-depth structural interpretation in shades of gray. Red dashed lines show shear zone projection, (1) SLSZ is a splay of the HSZ and (2) SLSZ is not connected to, and displaced the HSZ. Cross section line form Plate 1, line A-A'.

