
Data Repository

Figure DR1. Index map for elevation profiles 1–30 shown in Figures DR2–5 (blue) and in profiles in Figures 3, 5, 6, and 7 (red).

Figures DR2–DR5. Elevation profiles across scarps (Fig. DR1), arranged by fault. Lines were fitted to footwall (green) and hanging wall (orange) surfaces, and vertical separation (VS) determined at half scarp height along with associated uncertainty, calculated as in Speth et al. (in press). VE is vertical exaggeration.

Figure DR6. Trench across Union Peak fault scarp face in valley of Union Creek (Fig. 5). A. Photo looking west at scarp face and trench. B. Photo of trench. C. Photo of west end of trench. Yellow tape is 1 m long. D. Lithic fragments from breccia in bottom of trench and juvenile pumice clasts from overlying ignimbrite. Pumice clasts are rhyodacite and crystal-rich andesite. Lithic clasts are dominantly altered dacite and andesite derived from within Mount Mazama during the caldera-forming eruption. Largest clast (broken in half) is phenocryst-poor basaltic andesite likely of local origin. E. Sketch of materials exposed in north wall of trench. Ash matrix of lithic breccia is contiguous with that of pumiceous ignimbrite. Scale is approximate. Buried scarp is schematic.

Figure DR7. Trench across Union Peak fault scarp face northwest of Union Peak (Fig. 6). A. Photo looking approximately north along scarp. B. Photo looking west at scarp. Arrow points to person for scale. C. Photo of trench. D. Photo of west end of trench exposing boulder resting on pumiceous ignimbrite. Yellow tape is 50 cm long. Boulder is interpreted as sourced from till immediately west of trench and transported downslope by post-7.6 ka surface processes. E. Sketch of materials exposed in north wall of trench. Basaltic andesite clasts are locally derived. Scale is approximate. Buried scarp is schematic.

Table DR1. Fault scarp profile data
Bybee Creek scarps
Profile 16

VS = 6.0 ± 0.2 m
VE = 3.3

Profile 20

VS = 0.7 ± 0.1 m
VE = 14.8

Bybee Creek scarps
Profile 17

VS = 3.7 ± 0.2 m
VE = 3.8

Profile 21

VS = 3.0 ± 0.3 m
VE = 4.7

Glaciated andesite of Applegate Peak
Profile 18

Minimum VS = 27.7 ± 1.7 m
VE = 2.3

Profile 22

Minimum VS = 21.8 ± 0.2 m
VE = 1.2

Castle Creek fault
Profile 19

Minimum VS = 1.7 ± 0.2 m
VE = 2.8

Bacon & Robinson Figure DR2
Bacon & Robinson Figure DR3

Western fault north of Little Castle Ck.
Profile 23

Eastern fault north of Little Castle Ck.
Profile 24

Eastern fault north of Little Castle Ck.
Profile 25

Union Peak fault
Profile 26

Glaciated Union Peak fault
Profile 27

Union Peak fault
Profile 28

Fault west of Union Peak
Profile 29

Fault south of Union Peak
Profile 30

Minimum VS = 11.0 ± 0.2 m
VE = 2.8

Minimum VS = 2.1 ± 0.1 m
VE = 1.9

Minimum VS = 3.6 ± 0.3 m
No VE

Minimum VS = 2.1 ± 0.3 m
VE = 2.8

Minimum VS = 3.9 ± 0.2 m
VE = 2.5

Minimum VS = 2.9 ± 0.1 m
VE = 4.8

Other data point
Foot wall fit
Hanging wall fit

Minimum VS = 4.8 ± 0.4 m
VE = 2.1

Till
Thin ignimbrite
Andesite north of Castle Creek cinders

Till
Thin ignimbrite
Andesite north of Castle Creek cinders

Till
Andesite north of Castle Creek cinders

Till
Till

Talus

Talus

Talus

Talus

Glaciated basaltic andesite of Union Peak

Till

Till

Till

Till

Till

Till

Till

Till

Till

Till

Till

Till

Till

Till
**Profile 1**

- **Oasis Butte fault**
- Minimum VS = 2.9 ± 0.2 m
- VE = 2.5

**Profile 2**

- **Oasis Butte fault**
- Minimum VS = 4.0 ± 0.1 m
- VE = 2.9

**Profile 3**

- **Oasis Butte fault**
- Talus
- VS = 1.9 ± 0.2 m
- VE = 2.2

**Profile 13**

- **Oasis Butte fault**
- Minimum VS = 1.8 ± 0.1 m
- VE = 7.1

**Profile 14**

- **Oasis Butte fault**
- Glaciated andesite of Lightning Spring
- VS = 4.1 ± 0.8 m
- VE = 1.6

**Profile 15**

- **Oasis Butte fault**
- Minimum VS = 5.3 ± 0.1 m
- VE = 3.0

**Profile 12**

- **Oasis Butte fault**
- Ignimbrite
- VS = 0.5 ± 0.1 m
- VE = 9.2
Minimum VS for Bald Crater fault:

- Profile 4: 11.9 ± 0.6 m, VE = 1.2
- Profile 8: 9.0 ± 0.2 m, VE = 2.1

Minimum VS for Red Cone Spring fault:

- Profile 9: 4.5 ± 0.3 m, VE = 1.8
- Profile 10: 12.4 ± 0.4 m, VE = 1.9

Minimum VS for Bald Crater fault and Red Cone Spring fault:

- Profile 5: 8.5 ± 0.2 m, VE = 1.8
- Profile 6: 9.5 ± 0.4 m, VE = 2.8
Mazama ignimbrite
Lithic breccia

Hypothesized buried scarp in LGM till

Lithic breccia banked against scarp

Soil
Mazama ignimbrite

Hypothesized buried scarp

Basaltic andesite clasts in ignimbrite

Glaciated basaltic andesite flow-top breccia

Transported basaltic andesite till boulder

Soil

Mazama ignimbrite

Hypothesized buried scarp

50 cm 50 cm

West

East

Bacon & Robinson Figure DR7
Table DR1—Fault scarp profile data

<table>
<thead>
<tr>
<th>Profile no.</th>
<th>Fault</th>
<th>Northing (m)(^1)</th>
<th>Easting (m)(^1)</th>
<th>Vertical separation (m)(^2)</th>
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<tr>
<td>1</td>
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<td>4746639</td>
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<td>Figure 7C</td>
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<td>563745</td>
<td>9.4 ± 0.8(^3)</td>
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</table>

\(^1\)UTM Zone 10, North American Datum 1983, coordinates of west end of profile

\(^2\)Vertical separation measured at half of scarp height and uncertainty based on fits to footwall and hanging wall surfaces

\(^3\)Minimum value owing to burial of hanging wall surface by ignimbrite