Long, S.P., 2018, Geometry and magnitude of extension in the Basin and Range Province (39°N), Utah, Nevada, and California, USA: Constraints from a province-scale cross section: GSA Bulletin, https://doi.org/10.1130/B31974.1.

Data Repository

Plate DR1. Geologic cross section across the Basin and Range Province at ~39°N (1:200,000-scale). The present-day geometry is shown on A, and the pre-extensional geometry is shown on B. See the text for details on restoration methodology and estimation of extension. Light shaded areas above the modern surface on A represent eroded rock. The present-day and restored positions of the Paleogene unconformity, which is the datum used to restore extension, are shown with thick red lines. On B, the Paleogene unconformity is restored to an elevation of ~3 km, and light shaded areas above the unconformity either represent eroded pre-Paleogene rocks or Paleogene and younger rocks deposited above the unconformity. On B, the restored positions of the modern erosion surface are shown with thick blue lines. Crustal thickness data from proximal EarthScope USArray seismic stations distributed along the length of the cross section (Gilbert, 2012) are shown on A. Interpretations of Moho depth and prominent reflectors from the COCORP seismic reflection profile are also shown on A, and are modified from Allmendinger et al. (1983) for western Utah, Hauser et al. (1987) for eastern Nevada, Allmendinger et al. (1987) for central Nevada, and Surpless et al. (2002) for western Nevada and eastern California. The COCORP data illustrate important aspects of crustal structure, but were not used for the calculation of pre-extensional thicknesses, as they were collected from ~100 km to the north of the section line across much of Nevada (see Fig. 1A in the main text).

Figure DR1. Geologic map of part of the northern Pancake Range (1:12,000-scale), mapped by S. Long. Location of cross section line is shown with dark gray line.

Table DR1. Data supporting three-point problems for determination of fault and unconformity dip angles. The ‘strike azimuth’ was determined by locating two points of equal elevation along a fault trace, and connecting them with a line. The ‘elevation difference’ column represents the vertical distance between the elevation that the strike azimuth was determined at and a lower-elevation point measured along the fault trace, which was typically located at the bottom of a drainage. The ‘horizontal distance’ column represents the map distance between the strike azimuth line and the lower-elevation point, measured perpendicular from the strike azimuth line. The ‘fault dip angle’ was calculated by the equation: dip angle = $\tan^{-1}$(elevation difference/horizontal distance).

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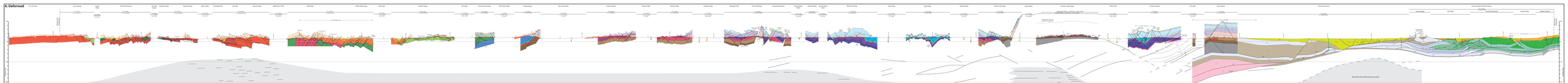

Plate DR1: Geologic cross section across the Basin and Range Province at approximately 39°N

Scale: 1:200,000

0 5 10 20 30 40 50 60 70 80 90 100 km

0 10 20 30 40 50 60 70 80 90 100 110 120 mi

Pre-vertical exaggeration

Rock units:

Volcanic-igneous rocks

- Tertiary/Cretaceous volcanic rocks
- Tertiary/Cretaceous intrusive rocks
- Cretaceous intrusive rocks

Eastern California and Western Nevada

- Neogene Sedimentary valley-fill sediments
- Paleogene Sedimentary valley-fill sediments
- Cenozoic sedimentary and volcanic rocks, undifferentiated (Cenozoic sedimentary and volcanic rocks, undifferentiated)
- Undifferentiated Cenozoic sedimentary and volcanic rocks
- Mesozoic sedimentary and volcanic rocks
- Undifferentiated Mesozoic sedimentary and volcanic rocks
- Pre-Cenozoic Pre-Cenozoic sedimentary and volcanic rocks
- Undifferentiated Pre-Cenozoic sedimentary and volcanic rocks
- Paleozoic sedimentary rocks
- Undifferentiated Paleozoic sedimentary and volcanic rocks
- Undifferentiated Pre-Cen

Geologic map of part of the northern Pancake Range

Scale: 1:12,000

1 kilometer

1 mile

N

39°25′N

115°40′W

Pancake Summit

GRAVEL PIT

PROSPECTS

TUNNEL

Mdp

IPe

Qaf

Qal

Tr

Trd

Tb

Tt

Tv

Qc

Map units:

- Qal — Quaternary alluvium
- Qc — Quaternary colluvium
- Qaf — Quaternary alluvial fans
- Tb — Tertiary basalt
- Tt — Tertiary tuff
- Tv — Tertiary volcaniclastic rocks
- Trd — Tertiary rhyolite dike
- Tr — Tertiary rhyolite
- IPe — Pennsylvanian Ely Limestone
- Mdp — Mississippian Diamond Peak Formation

Contacts:

- Syncline
- Normal fault
- Stratigraphic contact
- Line of cross-section

Strike and dip symbols:

- Bedding
- Compaction foliation
- Flow foliation

Location and fault	Geologic mapping source	Strike azimuth	Elevation difference	Horizontal distance	Fault dip angle
Schell Creek Range, easternmost low-angle normal fault	Drewes (1967)	008°	160'	600'	15° W
Schell Creek Range, low-angle normal fault (2nd from east)	Drewes (1967)	353°	200'	800'	14° W
Egan Range, 2nd-order W-dipping normal fault	Brokaw (1967)	330°	200'	200'	45° W
Egan Range, Kaibab fault	Brokaw and Heidrick (1966)	341°	80'	500'	9° W
Mahogany Hills, 1st-order W-dipping normal fault	Schalla (1978)	338°	180'	550'	18˚ W
Monitor Range, E-dipping thrust fault	Lohr (1965)	353°	480'	2800'	10° E
Toiyabe range, Paleogene unconformity (1)	Ferguson and Cathcart (1954)	010°	2000'	12400'	9˚ W
Toiyabe range, Paleogene unconformity (2)	Ferguson and Cathcart (1954)	023°	2400'	10400'	13˚ W
Toiyabe range, Paleogene unconformity (3)	Ferguson and Cathcart (1954)	008°	1200'	4800'	14˚ W
Toiyabe range, Paleogene unconformity (4)	Ferguson and Cathcart (1954)	023°	1200'	4100'	16˚ W
Toiyabe range, Paleogene unconformity (5)	Ferguson and Cathcart (1954)	027°	1500'	3400'	24˚ W
Paradise Range, Gabbs thrust	Silberling and John (1989)	002°	1100'	5800'	12˚ W
Paradise Range, Paradise fault	Silberling and John (1989)	354°	700'	3200'	12˚ W