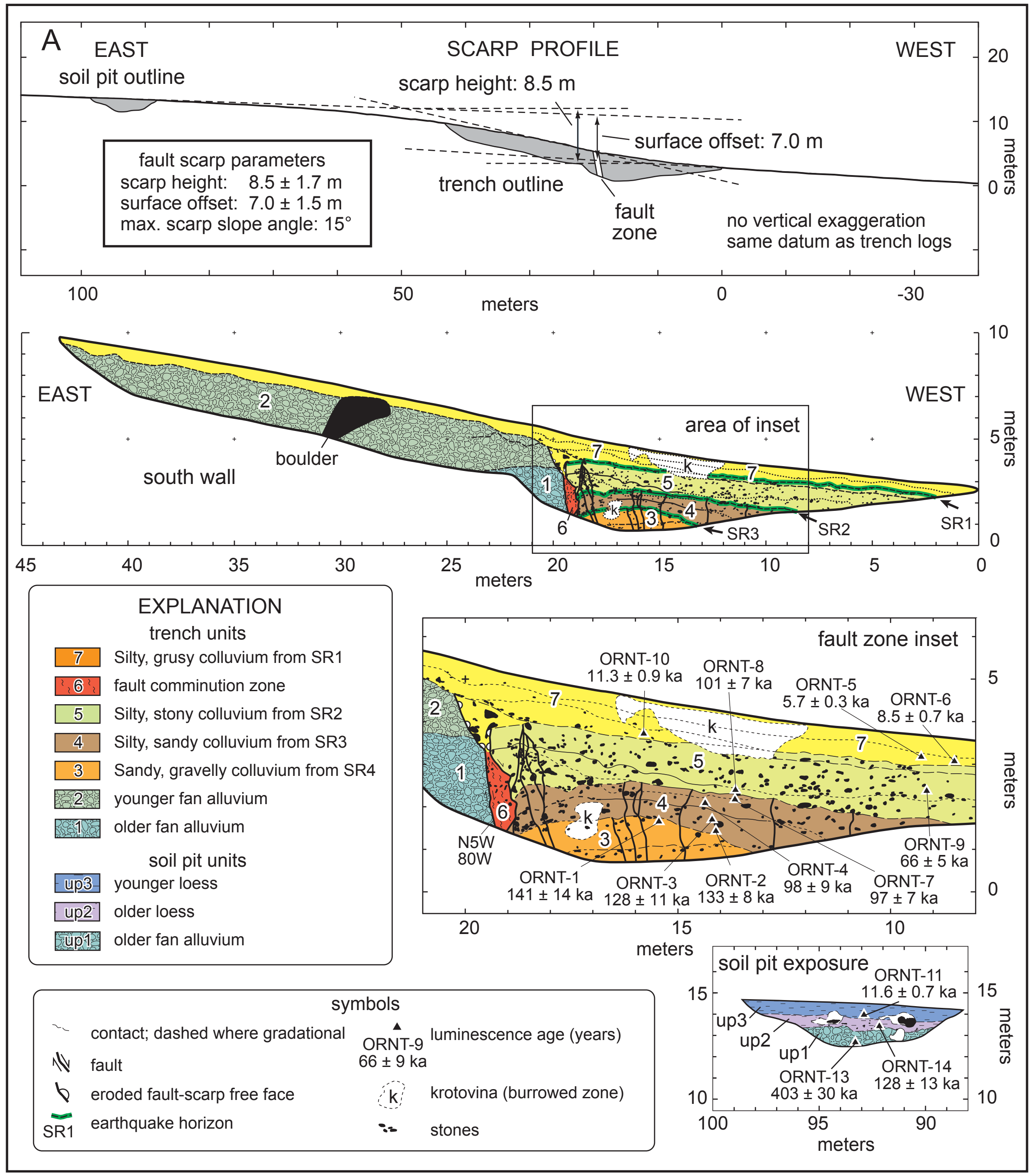
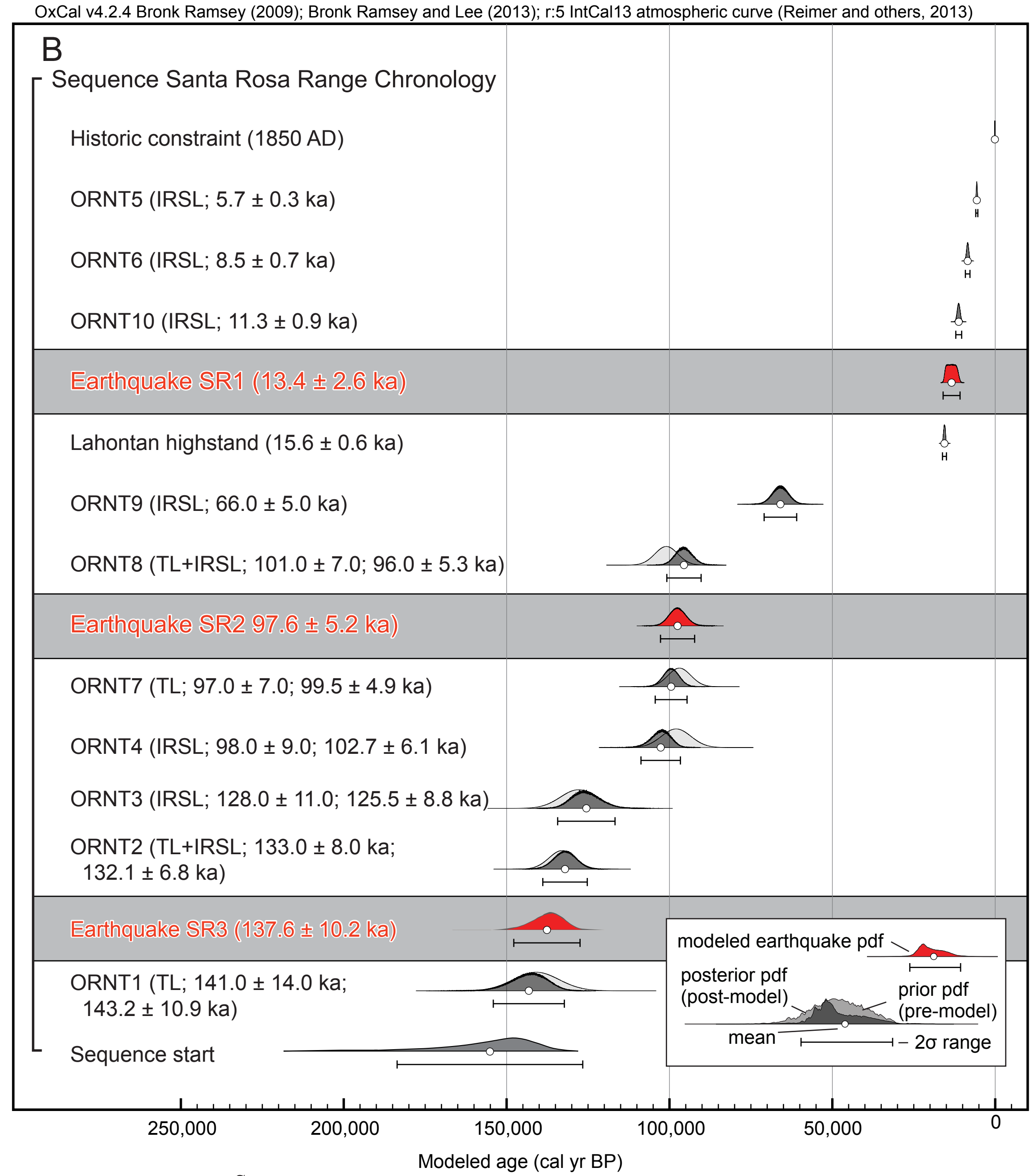
Figure S3. Summary figures of paleoseismology of Santa Rosa Range fault zone. A) Scarp profile and logs from a trench across the Santa Rosa Range fault zone at a site ~5 km southeast of Orovada, NV (modified from Figs. 3 and 4 of Personius and Mahan, 2005). B) New OxCal model of chronological data from Personius and Mahan (2005).





Paleoseismic Parameters

Paleoearthquake timing (2σ)

EQ	P2005*	this study
SR1	13.5 ± 2.5 ka	13.4 ± 2.6 ka
SR2	99 ± 9 ka	97.6 ± 5.2 ka
SR3	140 ± 15 ka	137.6 ± 10.2 ka

Recurrence Intervals (2σ)

Interval	P2005*	this study
SR1-0	13.5 ± 2.5 kyr	13.4 ± 2.6 kyr
SR1-SR2	85.5 ± 11.5 kyr	84.1 ± 5.9 kyr
SR2-SR3	41 ± 14 kyr	40.0 ± 11.4 kyr

Vertical Displacements (1σ)

SR1	2.0 ± 0.5 m (incl. +0.5 m basin fault)
SR2	2.1 ± 0.7 m
SR3	1.5 ± 0.5 m
Total	5.6 ± 0.7 m

Slip Rate (1σ)

Average (latest Quaternary): 0.13 ± 0.03 mm/yr
(2.0 ± 0.5 m/15.6 ± 0.30 kyr)

Average (Interval SR1-SR3): 0.03 ± 0.01 mm/yr
(3.6 ± 0.7 m/124.2 ± 5.25 kyr)

Average (pre SR3-present): 0.04 ± 0.01 mm/yr
(5.6 ± 0.7 m/143.2 ± 5.5 kyr)

(*--Personius and Mahan, 2005)

Summary

The paleoseismology of the Santa Rosa Range section (SRRS) of the Santa Rosa Range fault zone (SRRFZ) has been described in detail by Personius et al. (2004) and Personius and Mahan (2005). Here the SRRFZ consists of two primary strands: a range front strand that forms the steep western margin of the Santa Rosa Range, and a sympathetic strand with considerably less total throw that offsets the basin floor 4-6 km west of the range front trace. We include both primary strands in the SRRFZ because the trace of the basin floor strand mimics the strike and overall length (35-40 km) of the range front strand and both probably ruptured at the same time during the most-recent surface-rupturing earthquake. Data from a trench on a splay of the range front trace about 5 km southeast of Orovada, Nevada yielded evidence for four surfacerupturing earthquakes, the last three of which occurred since 141 ± 14 ka (Fig. A; modified from Figs. 3 and 4 of Personius and Mahan (2005). Based on the cross-sectional area of the colluvial wedges, the oldest and youngest dated surface ruptures (SR3 and SR1) had surface offsets of 1.5 ± 0.5 m, and the middle rupture (SR2) had a surface offset of 2.1 ± 0.7 m. The basin-floor strand is marked by a ~0.5-m-high scarp in sediments related to the highstand of Lake Lahontan. Personius and Mahan (2005) used luminescence dating to estimate the following times of the past three surface-rupturing earthquakes: the most recent earthquake (SR1) occurred 13.5 ± 2.5 ka, the penultimate earthquake (SR2) occurred 99 ± 9 ka, and the next older earthquake (SR3) occurred 140 ± 15 ka; a fourth earthquake is poorly constrained at >141 ± 14 ka and <403 ± 30 ka. Herein we present an OxCal model of the chronological data from Personius and Mahan (2005) that produces similar earthquake ages (Fig. B). We combine the surface offset estimate of earthquake SR3 from the Orovada trench (1.5 ± 0.5 m) and the surface offset of the basin floor trace (0.5 m), and use the regional age of the Lahontan highstand (15.6 ± 0.3 ka) to calculate an average latest Quaternary slip rate of 0.13 ± 0.03 mm/yr. However, this rate is substantially higher than late Quaternary interval and average rates based on the long (tens of thousands of years) recurrence intervals between the past three dated earthquakes at the Orovada trench site (Personius and Mahan, 2005).

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