

Pepperwood Preserve Naturalist Program: Geology Day

with Nicole Myers www.appreciatingearth.com



Field Questions:

- Rock ID Observations: Any outcrops to observe? Rock texture? Rock type? Visible minerals?
- Is there enough information to determine how and when this rock formed?: Rock origin? Rock age? Rockd app info? <https://rockd.org/>

Forces of Change

Tectonics:

- ~200-30Ma Oceanic divergent boundary drifts towards Farallon-Pacific Plate convergent boundary subduction zone
- ~30-0Ma San Andreas tectonic transform boundary faulting & uplift

Current Ice Age Climate:

- Last Glacial Maximum = cold & wet
- Current Interglacial Stage = warming & drying
- Anthropomorphic Climate Disruption = accelerated warming & weather pattern disturbance

Pepperwood Geologic Evolution Clues

- ~200-180Ma Coast Range Ophiolite
- ~150-40Ma Franciscan Complex = mafic volcanics + pyroclastic volcanics + volcanic mudflows + marine sediments + metamorphic rocks
- ~20 million years of faulting & uplift
- ~8-2.5Ma Sonoma Volcanics
- 3.2-0.8Ma Glen Ellen & 4.17Ma & younger Huichica Formations fluvial deposits
- Modern alluvium

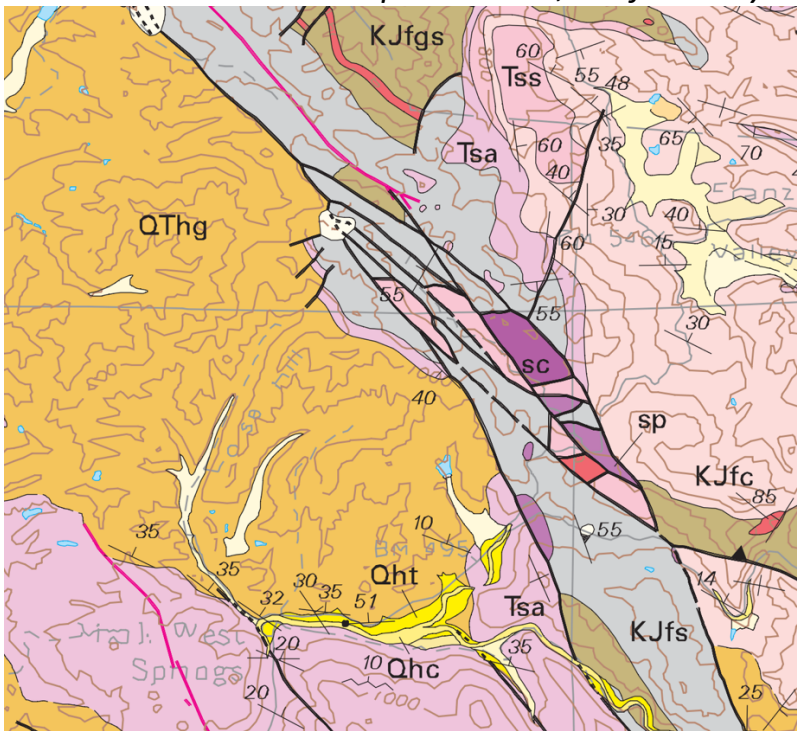
Events in Landscape Development

- Past volcanic eruptions
- Earthquakes & fault movements form NW-SE oriented mountain ranges & valleys
- Continental uplift = increased elevation range = more climactic extremes = differential rock weathering & erosion
- Flood events (El Nino & atmospheric rivers)
- Landslides (steep slopes due to uplift & heavy precipitation)
- Wildfires & Drought (atmospheric high pressure & NE winds)

Regional Natural Disasters

- Sonoma County Major Wildfire History: 1870, 1923, 1964, 2017, 2019, 2020 (atmospheric high pressure, NE winds, & wind corridors)
- Sonoma County Significant Earthquake History: 1864, 1865, 1868, 1888, 1891, 1899 1906, 1969, 1989

Pepperwood Preserve Geologic Map = section of Geologic Map and Map Database of Eastern Sonoma and Western Napa Counties, California by Graymer et. Al 2007



North Santa Rosa geologic cross-section from Evaluation of Ground Water Resources: Sonoma County Volume 1 Geologic and Hydrologic Data December 1975

