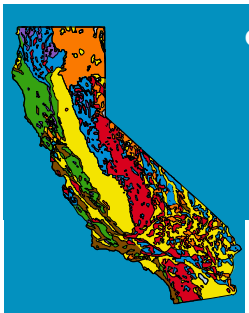

CALIFORNIA GEOLOGICAL SURVEY

GENERALIZED GEOLOGIC MAP OF CALIFORNIA

NOTE 17

Geologic maps show the distribution of rocks exposed at the surface of the earth as well as other geologic information. Rocks are grouped according to age and origin on the map. Age of the rocks is considered to be the geologic time at which the rock formed (see Geologic Time Scale on back page). Rocks are classified according to their origin:

1) sedimentary rocks form as accumulations of mineral material in oceans (marine) or on continents (continental); 2) igneous rocks form by crystallization of minerals from molten rock. Molten rock beneath the earth's surface is called magma. Magma cools slowly to form coarse-grained igneous rocks such as granite. Molten rock erupted on the earth's surface from volcanoes is called lava and forms volcanic rocks; 3) metamorphic rocks form from preexisting rocks by mineralogical, chemical, and/or structural changes. Other geologic information shown on geologic maps includes structural features such as faults. Faults are fractures in the earth's crust where rocks have moved relative to each other.

The map shown here is generalized from more detailed, larger scale maps. On this map, rocks exposed in California are placed in one of seven units:

Quaternary sedimentary rocks. Gravel, sand, silt, and clay deposited mostly in valleys and lowlands onshore. There are some marine sedimentary rocks of this age in California.

Tertiary sedimentary rocks. Sandstone, shale, and conglomerate usually deposited in relatively shallow marine water near the continental margin. These rocks are exposed mostly in the coastal regions of California.

Tertiary and Quaternary volcanic rocks. Lava flows erupted from volcanoes. These rocks make up much of the Cascade Range and the Modoc Plateau, and are widespread in eastern California. They also occur in coastal regions.

Mesozoic sedimentary rocks. Sandstone and shale that were deposited mostly in the ocean. The rocks make up the bulk of the Coast Ranges. They also occur in coastal southern California.

Mesozoic granitic rocks. A wide variety of coarse-grained igneous rocks formed when magma that intruded the earth's crust cooled and was later exposed by erosion. Granitic rocks occur throughout the state, but are most common in the mountainous areas such as the Klamath Mountains, the Sierra Nevada, and the Peninsular Ranges. Some granitic rocks are Cenozoic, Paleozoic, and Precambrian.

Mesozoic and Paleozoic metamorphic rocks. Metasedimentary and metavolcanic rocks that make up much of the Klamath Mountains and the Sierran foothills. They are also common in the Basin and Range, the Mojave Desert, the Transverse Ranges, and the Peninsular Ranges.

Serpentinized ultramafic rocks. A special type of rock that does not fit into the three common categories of rocks. The most common rock is serpentine, the California state rock (see CGS Note 14).

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CALIFORNIA GEOLOGICAL SURVEY
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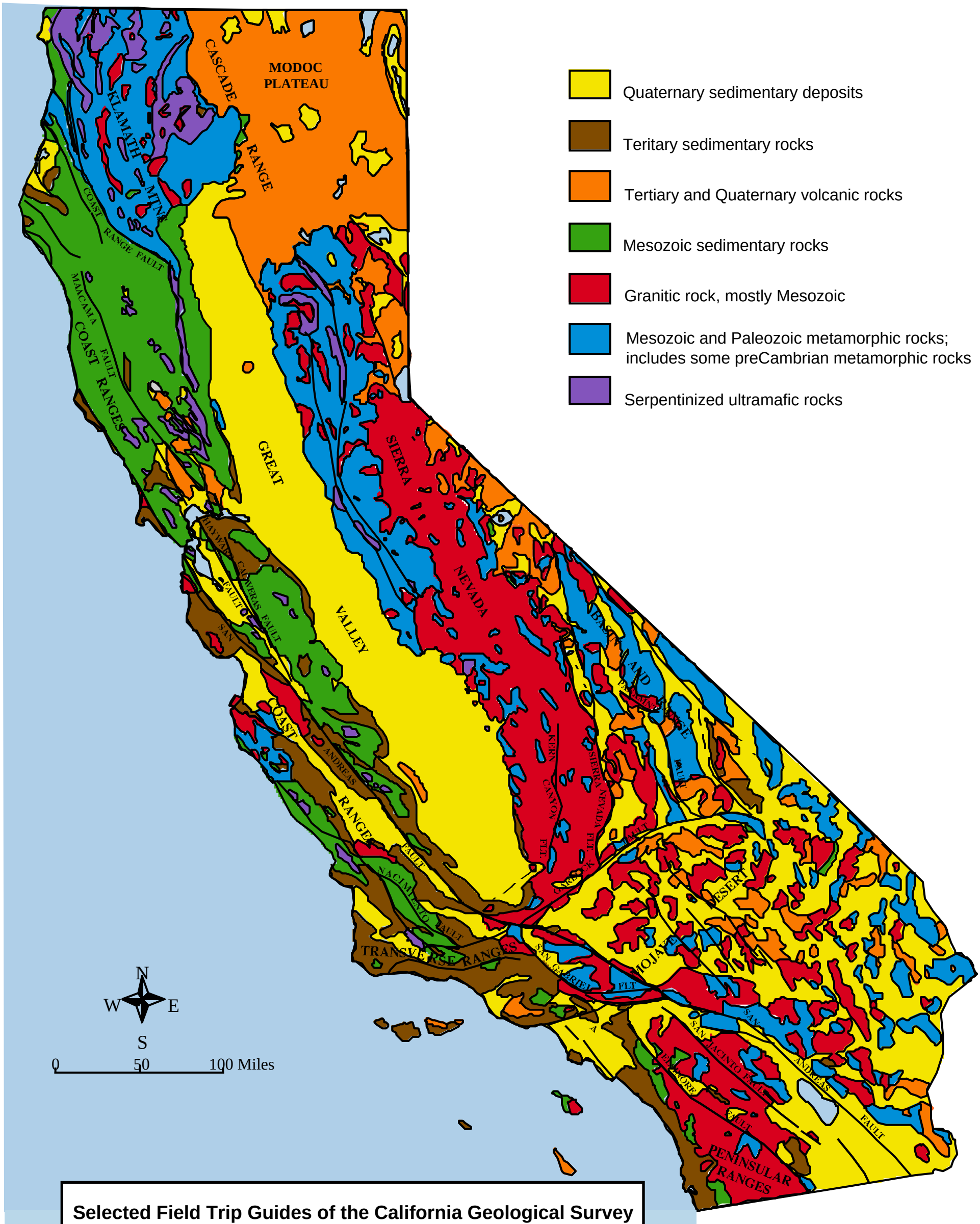
GENERALIZED GEOLOGIC MAP OF CALIFORNIA



Quaternary sedimentary deposits

Teritary sedimentary rocks

Tertiary and Quaternary volcanic rocks

Mesozoic sedimentary rocks

Granitic rock, mostly Mesozoic

Mesozoic and Paleozoic metamorphic rocks; includes some preCambrian metamorphic rocks

Serpentinized ultramafic rocks

Selected Field Trip Guides of the California Geological Survey

- SP109 *Geologic Excursions in Northern California: San Francisco to the Sierra Nevada*. 1991
- SP119 *Geologic Field Trips in Northern California.* 1999
- SP122 *Field Guide to the Geology and Tectonics of the Northern Sierra Nevada.* 2000

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GEOLOGIC TIME SCALE

RELATIVE GEOLOGIC TIME			TIME In Millions of Years Before Present
Era	**Period**	**Epoch**	
CENOZOIC	*Quaternary*	Holocene	0.011
		Pleistocene	2.6
	Tertiary	Pliocene	5.3
		Miocene	23
		Oligocene	34
		Eocene	56
		Paleocene	66
MESOZOIC	*Cretaceous*		145
	Jurassic		201
	Triassic		252
PALEOZOIC	*Permain*		299
	Carbon-ferous *Pennsylvanian*		323
	Carbon-ferous *Mississippian*		359
	Devonian		419
	Silurian		444
	Ordovician		485
	Cambrian		541
PRECAMBRIAN			

Map compilation and text by David L. Wagner. Graphics by Dinah D. Maldonado. California Geological Survey. Geologic time scale ages updated 2014.