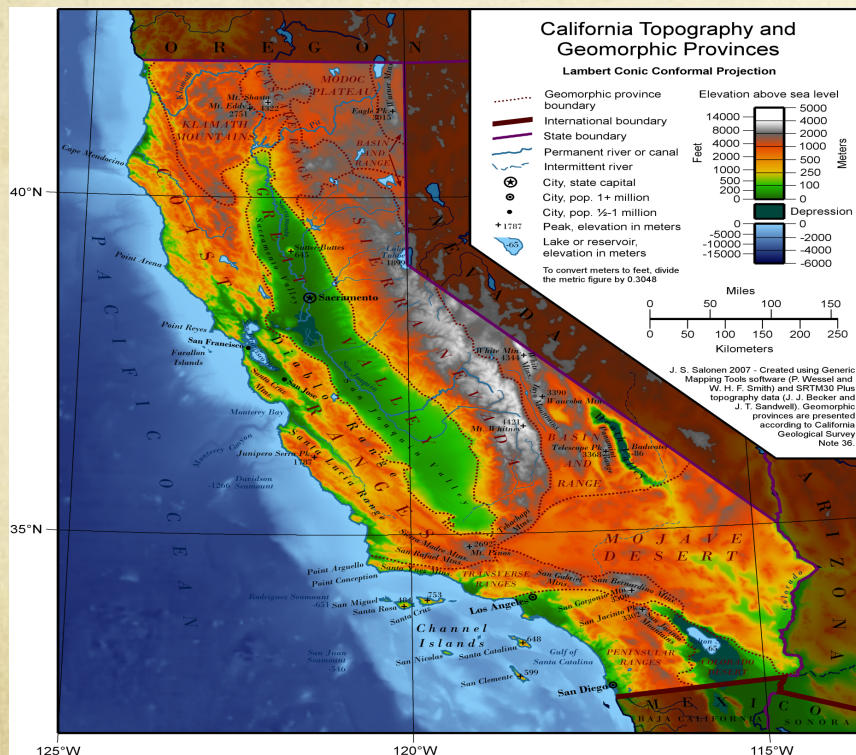


California – Land of Diversity

Diversity has been at the heart of California from its earliest beginnings – especially in terms of its geography and its people.

Geographical diversity -

California has the greatest variety of regional landscapes, climate zones, and flora and fauna in all of North America.



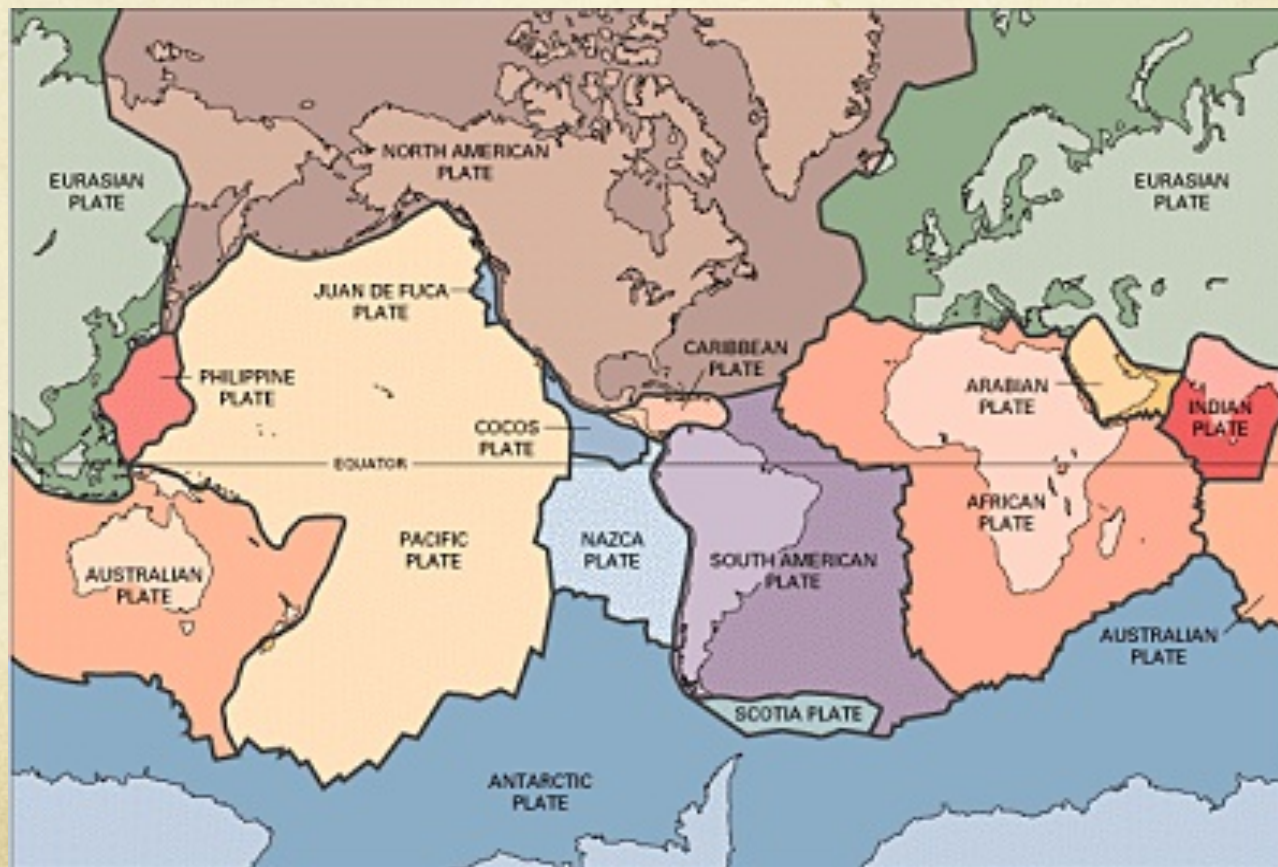
Human diversity –

From its earliest history, California's people have always had a huge variety of cultural, linguistic, and economic traditions.

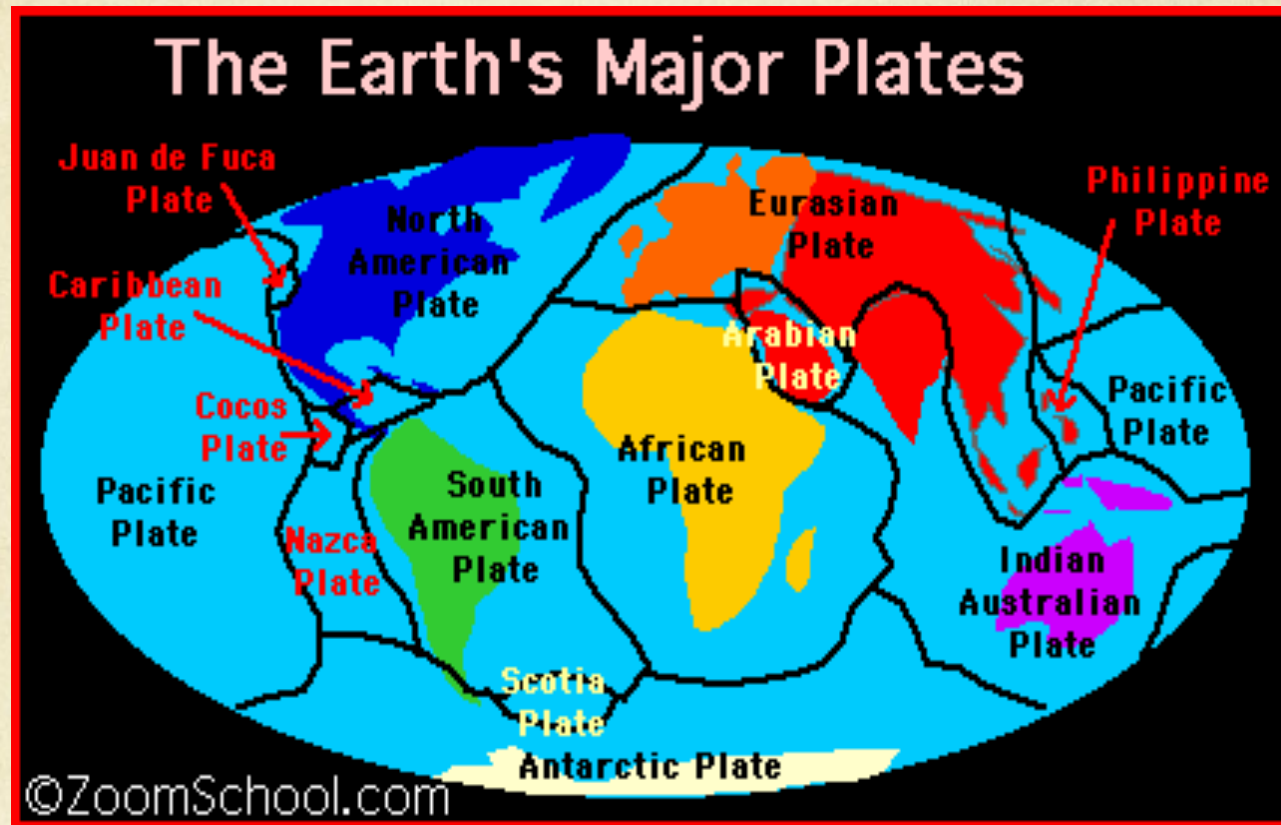


Geographical ties to Geology – the Scientific Origins of California

The geographical diversity of California is deeply tied to the geological theories of its scientific origins – especially its sculpting through the movement of **plate tectonics**.



When these crustal plates — or "shells" because each plate is curved, not flat — interact, the process is called **plate tectonics**.

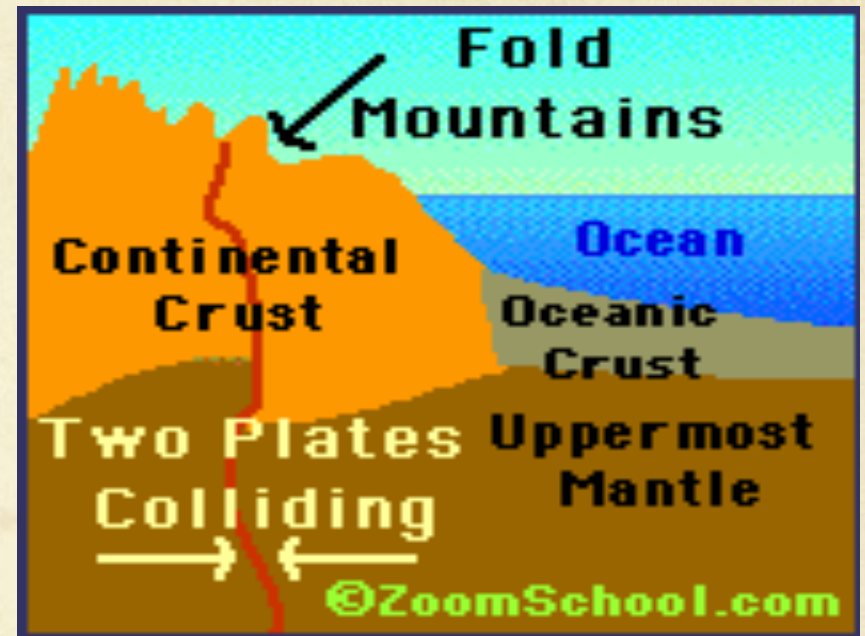


These plates lurch and grind against each other at a rate of what scientists believe to be a few inches each year. The Pacific Plate's collision with the North American plate is at the heart of the plate tectonics theory of the creation of California.

According to John McPhee, author of *Assembling California* (1993), “For an extremely large percentage of the history of the world, there was no California.”

So, what happened? Over millions of years, the eastward-moving Pacific Plate collided with the westward-moving North American Plate. In so doing, the Pacific Plate descended beneath the continent’s edge, plunging deep into the earth and melting during the process.

The molten rock cooled and formed the granite core of the **Sierra Nevada Mountains**. Erosion later removed the surface rock, allowing the mountains to become uplifted along **faults** – or deep cracks.



As the Sierra Nevada's rose in the interior, the western edge of the continental plate nosed out along the ocean floor. Sedimentary rocks and ocean-crust material that were churned up and piled along the continent's edge formed a low-lying range of mountains along the California coast – the **Coastal Range**.

The Coastal Range refers to a part of the series of mountain ranges that stretch along the west coast of North America from Alaska south to Baja California.



Between the newly formed Coast Ranges and the Sierra Nevada lay a deep trough that slowly filled with volcanic debris and sediments eroded from the surrounding mountains.

After more than 100 million years of accumulated fill, this trough became the great **Central Valley**.

Today, the 400-mile-long Central Valley supplies one-quarter of the food America eats.



These three regions – the Sierra Nevada, the Coastal Range, and the Central Valley – are just three of the diverse regions in California. However, their formation is essential to understanding the geographical origins of California.

So, let's see how scientists believe tectonic movement in these regions shaped California's geography.



About 30 million years ago, the movements of the Pacific and North American plates changed dramatically. While the process of collision and subduction ended, the two plates began sliding past each other in a lateral motion creating a half-mile-wide collection of ruptures called the San Andreas Fault zone.



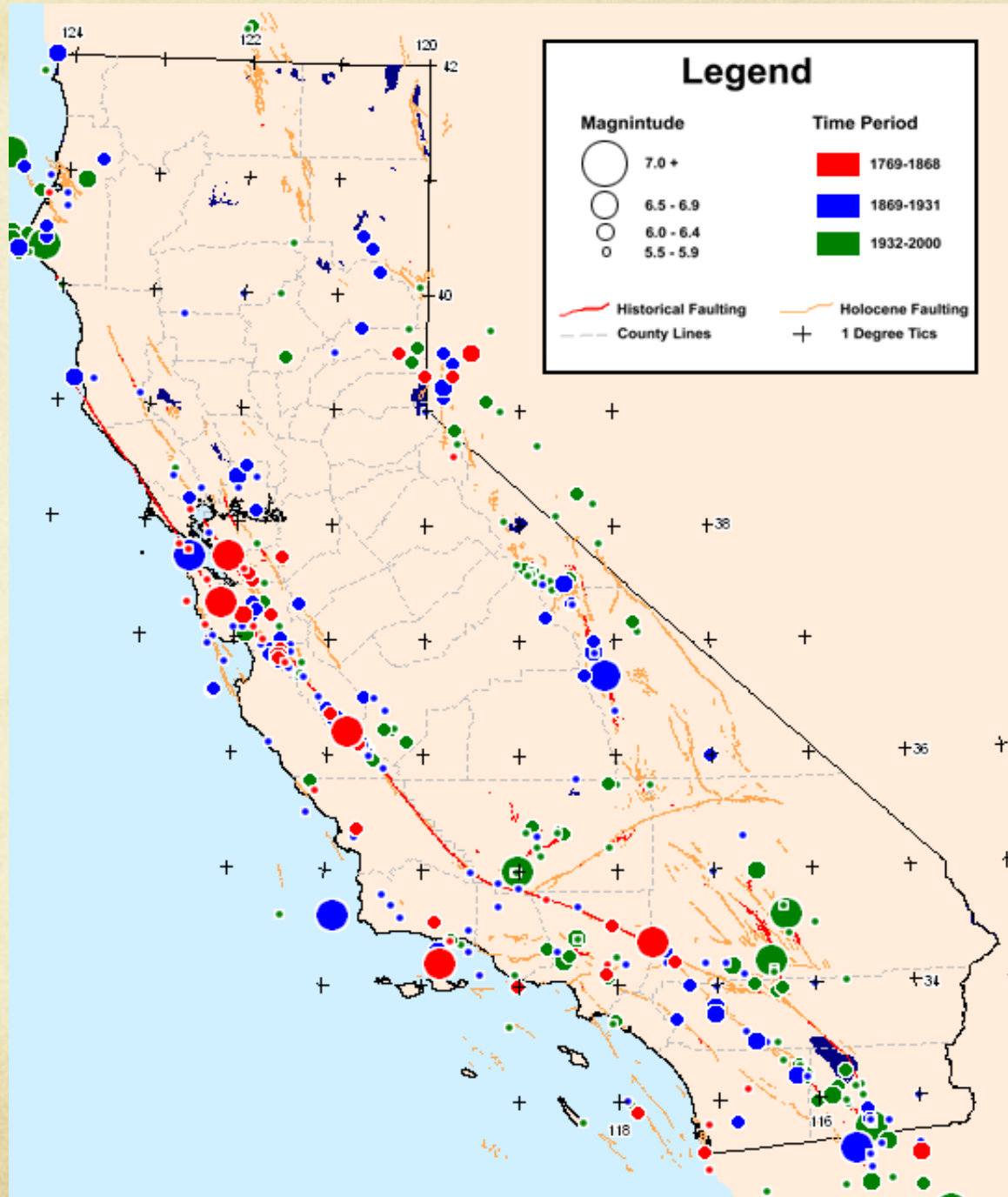
Land to the west began moving northwestward at the rate of a couple inches per year.

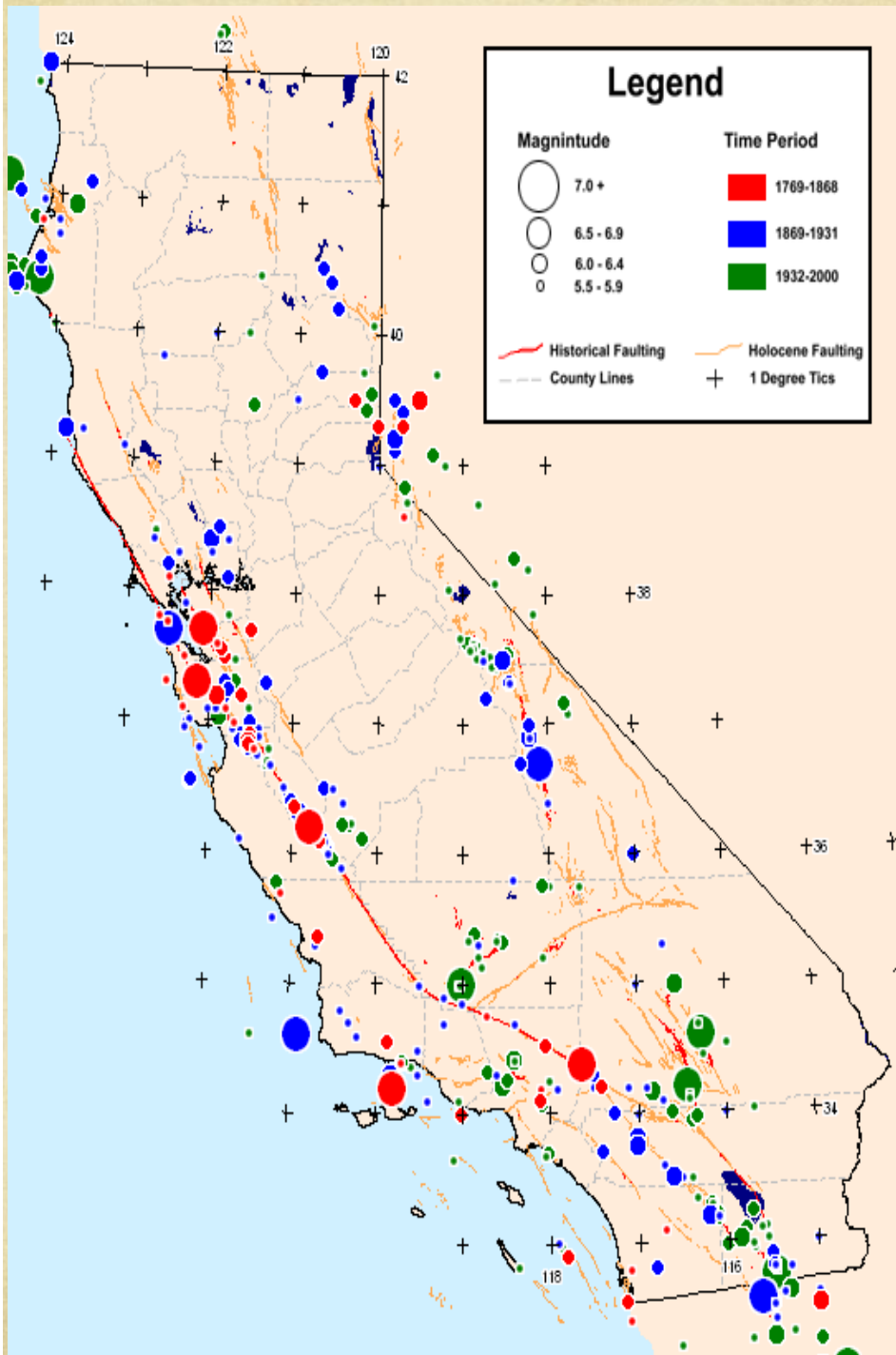
This lateral movement took place far beneath the surface where the earth was relatively pliable, but the rigid materials near the surface tended to lock and resist the movement. Whenever a sudden unlocking released stress along the fault, **earthquakes** shook the surface.

Currently, the **San Andreas Fault** is the border between the North American Plate and Pacific Plate: Los Angeles is located on the Pacific Plate and San Francisco is on the North American Plate Fault.

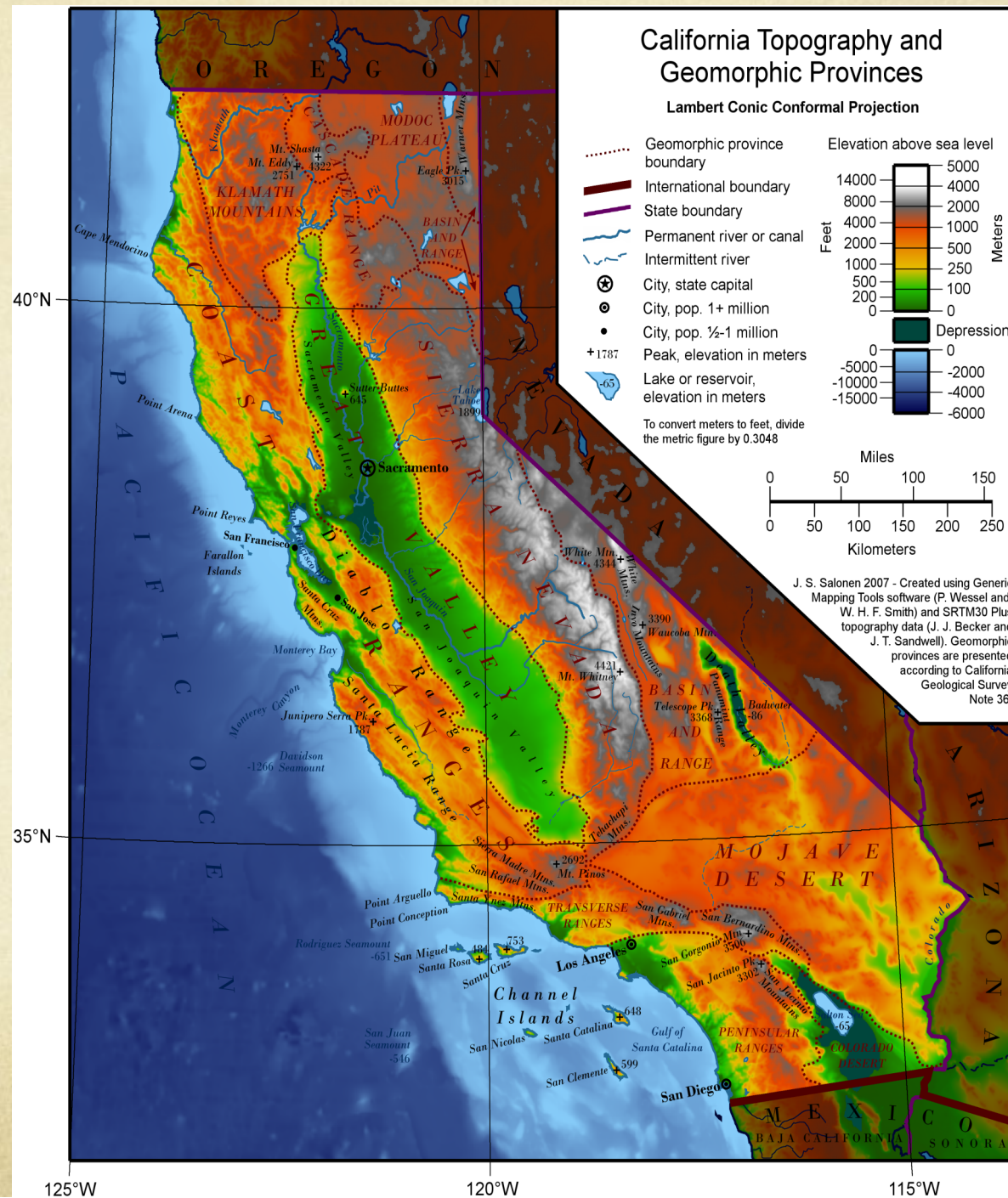


California is in the highest earthquake risk category in the nation. The frequency of earthquakes in our state is 10 times higher than for the world as a whole.





Geographical Diversity

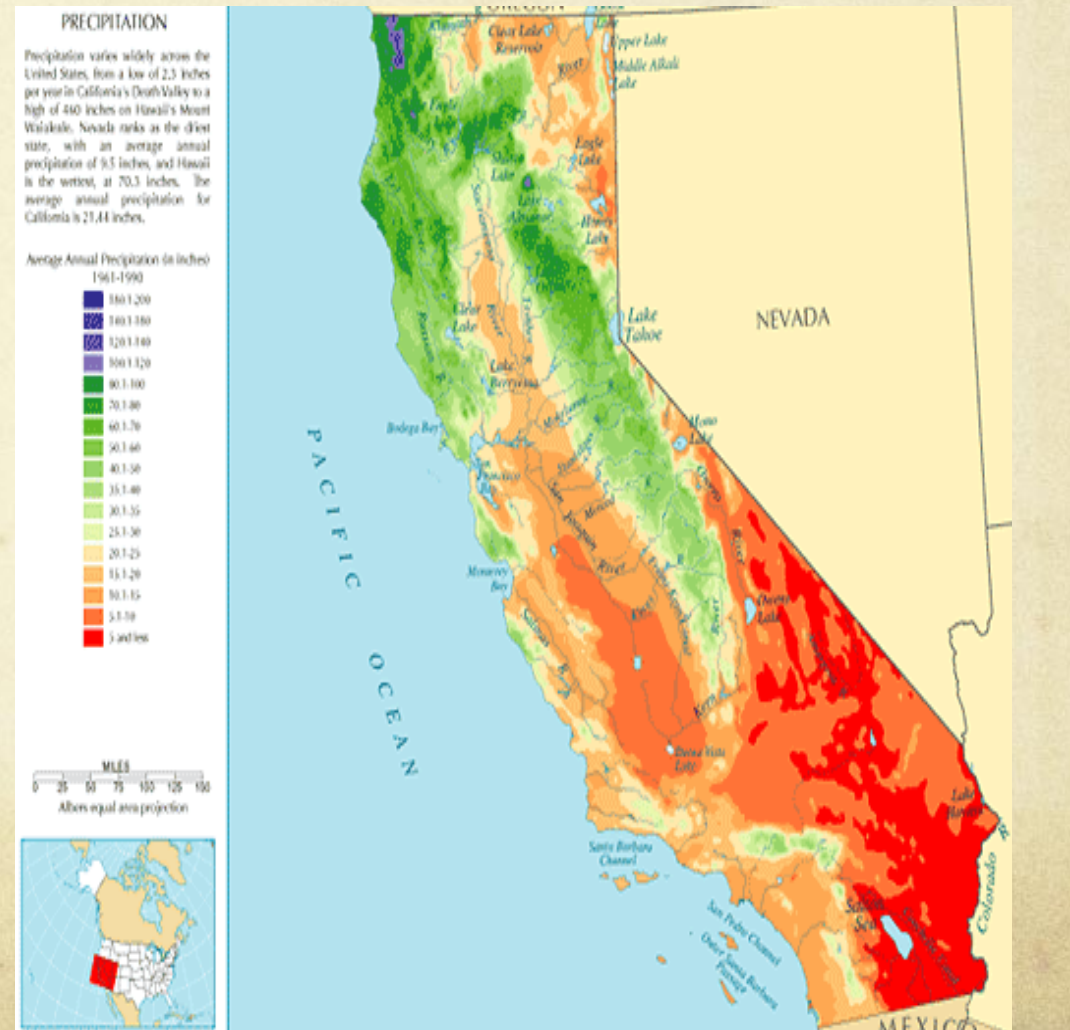
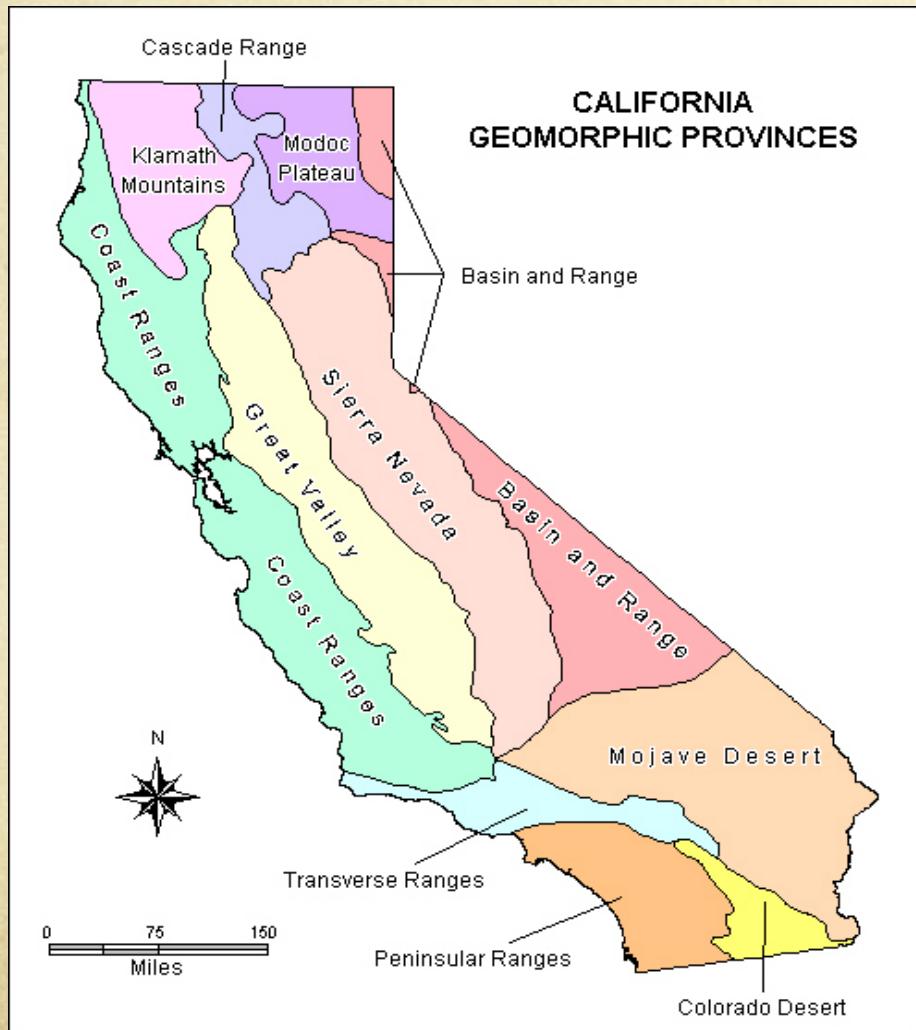


Geographical Facts

- California is 770 miles long and 250 miles wide at its most distant points; it has a land surface of 100 million acres. California's coastline is 1,254 miles long.
- California is bordered by Oregon to the north. In the south, California shares an international border with Mexico. To the east, Nevada and Arizona share the California border. California meets the Pacific Ocean on the west.
- California covers 163,707 square miles, making it the third largest of the 50 states. 155,973 square miles are land areas. 7,734 square miles of California are covered by water.
- The highest point in California is Mt. Whitney at 14,494 feet and the lowest point is in Death Valley which lies 282 feet below sea level and is also the lowest point in the United States. Mt. Whitney and Death Valley are only 80 miles apart.

California's geographical diversity can especially be seen in two areas:

- Regional landscapes
- Climate



Regional Landscapes

California is huge – the third largest of the 50 states – with a land surface of 100 million acres, and a coastline of 1,264 miles. Within this area are a greater range of landscapes than in any area of comparable size in all of North America.

Altitudes vary from 14,495 feet at the top of Mt. Whitney – the highest point in the continental U.S. – to 282 feet below sea level at Badwater in Death Valley – the lowest point in the U.S. - although Mt. Whitney and Death Valley are only 80 miles apart.

California contains 11 diverse regions with diverse landscapes.



Regions

The **Sierra Nevada** occupies 1/5 of the state's total surface and extends 400 miles along California's eastern border.

The **Great Basin**, a desolate area of mountains and high desert valleys, is beyond the eastern slope of the Sierra Nevada.

The **Cascade Range**, a mountainous region north of the Sierra Nevada, includes one of the least settled areas of the state and two volcanic peaks – Mt. Shasta and Mt. Lassen.

To the east of the Cascades lies the rugged **Modoc Plateau**, a forbidding region almost completely covered with lava flows and igneous rocks.



Regions

In the northwestern corner of the state are the **Klamath Mountains** through which the Klamath and Trinity Rivers have cut deep and twisting gorges as they rush to the sea.

The **Coast Ranges** extend from north to south while averaging less than 4000 feet in height. In the mountains are the last stands of coast redwoods – the tallest trees in the world.

Lying between the Coast Ranges and the Sierra Nevada is the **Central Valley** which yields more agricultural products than any other comparable world region. More than 400 miles long and 50 miles wide, it extends north from Sacramento to Bakersfield.



Regions

The **Transverse Ranges** lie at the south end of the Central Valley. They stretch along an east-west axis for about 250 miles and extend offshore to form the Santa Barbara Channel Islands.

The **Peninsular Ranges** extend to Baja California and include the coastal plains at Los Angeles and San Diego.

The eastern half of Southern California is a large desert triangle, the **Mohave Desert**, covering 25,000 square miles including Death Valley.

To the south is the **Colorado Desert** which extends to the Gulf of California.



Regional Diversity and Geographical Obstacles

Such regional diversity contributed greatly to the fact that European settlement of California began quite late.

At least three of the the regions formed formidable geographic obstacles to overland migration: the southern deserts formed a dangerous barrier to 18th Century migration as did the steep eastern face of the Sierra Nevada in the 19th Century.

While the Spanish founded their first settlement on the Pacific coast in 1519 at Panama, it was not until 1769 – two and a half centuries later – that they found their first settlement in Alta California at San Diego.



Climate

California's climate emerged a few thousand years ago, arising from the interaction of ocean currents and temperatures, air-pressure systems, wind and storm patterns, and the location of mountains and valleys.

California's climate differs greatly from the geographical landscapes and locations of neighboring states, largely because of its dominant maritime influence. The California Current carries a stream of relatively cool water from the northwestern Pacific Ocean southeastward along the coast, while prevailing westerly winds keep the coast cool in the summer and somewhat warm in the winter.



California has four of the five major types of climate found around the world – only the hot and rainy tropical climate is not represented. Most common is the **Mediterranean climate** zone with its relatively warm, dry summers and mild winters. However, there are important variations in this zone:

- Along the coast, marine air and fog keep temperatures more moderate than in the Central Valley where summers are generally hot and cloudless.



- The Coast Ranges and the foothills of the Sierra Nevada experience an intermediate version of the Mediterranean climate

Further climate diversity is found in the **semiarid climates** in much of the San Joaquin valley. Notable for its sunny summers, pleasant winters, and little rain, this area is often referred to as the sun belt.



Desert climates cover the southeastern third of the state, east of the Sierra Nevada and Peninsular ranges. Cut off by mountains from any moisture-laden Pacific storms, the region receives very little rain. Summer temperatures are the highest in the state - over 100 degrees in Death Valley in July.



Climate contrasts are enormous:

- **The northwest coast has one of the coolest average summer high temperatures – rarely more than 70 degrees – and one of the highest average annual rainfalls – often more than 100 inches.**
- **The Imperial Valley in the southeast is one of driest places in the Western Hemisphere with summer temperatures exceeding 120 degrees and annual rainfall averages of less than three inches.**
- **On a hot summer day in Los Angeles, beach temperatures can be 75 degrees, while a few miles away in Westwood it would be 85 degrees, downtown 95 degrees, and in the San Fernando Valley, it could be as high as 105 degrees.**

With diverse and often fickle climates comes another issue – widely diverse access to scarce water resources

- **Historically, water was virtually nonexistent in the southern regions of Spanish, Mexican, and early American California; conversely, it was plentiful in the northern regions.**
- **Today, about 75% of the water supply originates in the northern third of the state (north of Sacramento), while 80% of the demand occurs in the southern two-thirds of the state.**
- **California's fickle climate historically led and contemporarily leads to extended periods of drought followed by flooding.**
- **These basic problems have been remedied in large part by the construction of the most complex and sophisticated water storage and transport system in the world. An integrated system of dams, reservoirs, pumping plants, and aqueducts transport about 50 percent of the state's water up to hundreds of miles.**

As many historians have observed, California is a place of the extreme, the unusual, the spectacular. As Rice, Burroughs, and Orsi claim, “Throughout its human occupation, California’s exceptional landscapes, climates, and life forms have bred distinctive economies and cultures.”

In geographical terms, by 1705 California was a very old place.

- through millions of years of tectonic plate movements, it had become a land of rich diversity, and**
- for thousands of years, it had been home to many different American Indian Nations with diverse cultural, spiritual, political, and economic traditions.**

And from the 18th century forward, California’s geographic diversity would begin to be matched by its human diversity.

