Climate

Although most of the state has a Mediterranean climate, due to the state's large size the climate ranges from polar to subtropical. The cool California Current offshore often creates summer fog near the coast. Farther inland, there are colder winters and hotter summers. The maritime moderation results in the shoreline summertime temperatures of Los Angeles and San Francisco being the coolest of all major metropolitan areas of the United States and uniquely cool compared to areas on the same latitude in the interior and on the east coast of the North American continent. Even the San Diego shoreline bordering Mexico is cooler in summer than most areas in the contiguous United States. Just a few miles inland, summer temperature extremes are significantly higher, with downtown Los Angeles being several degrees warmer than at the coast. The same microclimate phenomenon is seen in the climate of the Bay Area, where areas sheltered from the sea experience significantly hotter summers than nearby areas closer to the ocean.

Northern parts of the state have more rain than the south. California's mountain ranges also influence the climate: some of the rainiest parts of the state are west-facing mountain slopes. Northwestern California has a temperate climate, and the Central Valley has a Mediterranean climate but with greater temperature extremes than the coast. The high mountains, including the Sierra Nevada, have an alpine climate with snow in winter and mild to moderate heat in summer.

California's mountains produce rain shadows on the eastern side, creating extensive deserts. The higher elevation deserts of eastern California have hot summers and cold winters, while the low deserts east of the Southern California mountains have hot summers and nearly frostless mild winters. Death Valley, a desert with large expanses below sea level, is considered the hottest location in the world; the highest temperature in the world,[98][99] 134 °F (56.7 °C), was recorded there on July 10, 1913. The lowest temperature in California was −45 °F (−43 °C) on January 20, 1937 in Boca.[100]

The table below lists average temperatures for January and August in a selection of places throughout the state; some highly populated and some not. This includes the relatively cool summers of the Humboldt Bay region around Eureka, the extreme heat of Death Valley, and the mountain climate of Mammoth in the Sierra Nevadas.

Average temperatures and precipitation for selected communities in California[101]

Location	August (°F)	August (°C)	January (°F)	January (°C)	Annual Precipitation (mm/in)
Los Angeles	83/64	29/18	66/48	20/8	377/15
LAX/LA Beaches	75/64	23/18	65/49	18/9	326/13
San Diego	76/67	24/19	65/49	18/9	262/10
San Jose	82/58	27/14	58/42	14/5	401/16
San Francisco	67/54	20/12	56/46	14/8	538/21
Fresno	97/66	34/19	55/38	12/3	292/11
Sacramento	91/58	33/14	54/39	12/3	469/18
Oakland	73/58	23/14	58/44	14/7	588/23
Bakersfield	96/69	36/21	56/39	13/3	165/7
Riverside	94/60	35/18	67/39	19/4	260/10
Eureka	62/53	16/11	54/41	12/5	960/38
Death Valley	113/84	45/29	64/37	18/3	53/2
Mammoth Lakes	77/45	25/7	40/15	4/ –9	583/23

Ecology

California is one of the richest and most diverse parts of the world, and includes some of the most endangered ecological communities. California is part of the Nearctic realm and spans a number of terrestrial ecoregions.[102]

California's large number of endemic species includes relict species, which have died out elsewhere, such as the Catalina ironwood (*Lyonothamnus floribundus*). Many other endemics originated through differentiation or adaptive radiation, whereby multiple species develop from a common ancestor to take advantage of diverse ecological conditions such as the California lilac (*Ceanothus*). Many California endemics have become endangered, as urbanization, logging, overgrazing, and the introduction of exotic species have encroached on their habitat.

Flora and fauna

California boasts several superlatives in its collection of flora: the largest trees, the tallest trees, and the oldest trees. California's native grasses are perennial plants.[103] After European contact, these were generally replaced by invasive species of European annual grasses; and, in modern times, California's hills turn a characteristic golden-brown in summer.[104]

Because California has the greatest diversity of climate and terrain, the state has six life zones which are the lower Sonoran (desert); upper Sonoran (foothill regions and some coastal lands), transition (coastal areas and moist northeastern counties); and the Canadian, Hudsonian, and Arctic Zones, comprising the state's highest elevations.[105]

Plant life in the dry climate of the lower Sonoran zone contains a diversity of native cactus, mesquite, and paloverde. The Joshua tree is found in the Mojave Desert. Flowering plants include the dwarf desert poppy and a variety of asters. Fremont cottonwood and valley oak thrive in the