

# **Climate**

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Weather is a dominant aspect of any outdoor experience. If you can relate a few simple facts about the weather that explain why it is foggy, windy, or raining, and how beneficial the effect is for the plants and wildlife, visitors may become so fascinated about the various factors at work that they may not mind that they are cold or soaking wet. If it's raining, explain to them that they're lucky because the beach will be so interesting. If it is one of those beautiful, clear days in February, exclaim about how fortunate they are that it's not raining. In other words, no matter what the weather is like, make visitors feel as though they came on the perfect day. Above all, act as though you are enjoying the weather, and visitors will respond in kind.

## ***Mediterranean Climate***

The central California coast has a Mediterranean-type climate, characterized by warm dry summers and cool wet winters. California shares this Mediterranean climate with only four other regions in the world—Chile, South and West Australia, South Africa, and the Mediterranean. In California, the cold Pacific Ocean currents, coastal deep-water upwelling, and coastal fog moderate this climate further. Temperatures are mild, with little daily or annual fluctuation. Extremes of heat and cold seldom occur, and usually last for only a short time.

The ocean's moderating influence is the greatest conditioner of coastal temperatures. The ocean varies only a few degrees annually, so it is cooler than land in the summer and warmer than land in the winter. This keeps the coastal area temperatures cooler in the summer and warmer in the winter than inland areas. In addition, the presence of the Coast Range affects the temperatures of the coastal area. In winter the Coast Range blocks warm coastal temperatures from moving inland, while in summer the Coast Range keeps the fog and cooler temperatures along the coast.

The warmest temperatures occur in the late summer and early fall (August-October), when the summer fog has diminished prior to the establishment of winter storm patterns. This is when the westerly winds weaken and fail to create fog. At these times, dry continental air blows in from the east, creating sunny skies and warm temperatures. In addition, the slow warming of the ocean tends to create a lag in the warming of coastal areas. As a result, September and October are usually the warmest months of the year.

In Half Moon Bay, maximum temperatures have been recorded in the mid-90s in summer. The minimum temperatures occur during the winter months. Temperatures of 30°F have been recorded in both December and January. The annual mean temperature is 55°F, ranging from an average maximum temperature of 68°F to an average minimum temperature of 43°F. Extreme temperatures tend to be short-lived.

## ***Precipitation***

Approximately 80% of the precipitation falls during the five-month period of November through March. Nearly all of this is in the form of rain. During the summer, the Pacific High, a great mid-ocean pressure ridge, steers Pacific storms far north of central California. The rains that keep coastal Oregon and Washington green year-round seldom visit the state during these months. During the winter, the Pacific High usually weakens or moves south, following the sun, and low-

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pressure systems dominate this region, bringing clouds and precipitation. The prevailing westerly winds normally steer these storms onto the California coast, bringing to this region (and to the Sierra Nevada as well) a large amount of precipitation. If the Pacific High remains strongly in position and blocks off needed rain, California can have one or more dry years.

The average annual precipitation at Half Moon Bay is 23.5 inches. Because of the high incidence of fog and close proximity to the ocean, the amount of water lost to evaporation is low.

Therefore the coast can support more lush vegetation than inland areas with comparable amounts of precipitation.

## **Wind and Fog**

### **Wind**

The general prevailing wind in San Mateo County is from the west. The intensity of the winds varies depending on the location and season of the year. The westerly winds are greater along the coast and at higher elevations because of the greater exposure. The intensity of the westerly winds decreases on the eastern side of the Santa Cruz Mountains.

During the spring and summer months the westerly, landward winds are stronger because of a seasonal pressure difference between air masses over the ocean and land. In March, April, and May a high pressure forms, resulting in westerly or northwesterly winds, which cause an upwelling of cold waters, which in turn causes the air temperatures to drop as noted above. In the interior of California the opposite is occurring; low pressures form along with unusually high temperatures. This great difference in air pressure between land and sea intensifies landward movement of air.

### **Fog**

The high incidence of fog along the San Mateo coast in the spring and summer is directly related to the increased northwest and west winds, which are caused by the pressure differences existing between inland and coastal areas. The northwest winds over the ocean cause an upwelling of cold subsurface waters. The cold, upwelling water decreases the air temperature and, since cold air holds less moisture than warm air, condensation results and fog is created.

Some background information may help you understand the phenomenon of coastal fog more clearly. Cold air is heavier than warm air, so cold air sinks and warm air rises. The molecules in cold air are not as active as those in warm air and are closer together. Therefore, cold air exerts more pressure on a surface than does warm air. This explains why a mass of cold air is referred to as a high-pressure region and why a mass of warm air is called a low-pressure area.

Warm air can hold more water vapor than cold air can. As warm, moist air cools, the water molecules move closer together and form water droplets. This is known as condensation, and can be demonstrated in a number of ways. Warm air rising from a pan of boiling water produces steam. This steam is a small cloud, resulting from the condensation of water droplets from the warm, moist air meeting the cooler air of the room.

The strong westerly winds during spring and summer carry the fog landward. Warm air in the upper atmosphere blocks the movement of the cold air upward. Fog is most common in the mornings, late afternoons, and early evenings. Often the fog will remain on the coast throughout

the day, without burning off by the early afternoon. It is not uncommon for summer fog to remain unbroken for several days.

## **Seasons**

Although the seasons may not be as dramatic as those experienced in other parts of the United States, coastal California does experience more subtle changes throughout the year because of climatic factors discussed above. Those clear, warm fall days find the hills brown, creeks barely running, migrations of birds and monarch butterflies, and coyote brush in full bloom. After the first winter rains, the hills begin to change color as new grass shoots appear. A season of renewal is in progress during the first of the year—leaves begin to appear on the trees and wildflowers begin to bloom. Spring marks the appearance of a succession of blooming flowers, nesting birds, and insect population peaks. By early summer the hills are again turning brown, and the summer flowers are in bloom. In mid to late summer, migratory shore birds begin to appear on the beach and marsh. And thus the cycles move through time