

## Appendices

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## Appendix A Hazards Not a Risk to Santa Cruz County

### **AVALANCHE**

An avalanche is defined as a mass of loosened snow, ice, or earth suddenly and swiftly sliding down a mountain. In general practice this is assumed to be a snow avalanche unless another term such as ice, rock, mud, etc., is used. The Sierra Nevada Mountains which are over 200 hundred miles from Santa Cruz County are the nearest area with a risk of avalanche. This is not considered a significant hazard risk.

Source: <https://avalanche.org/>

### **HURRICANES, TYPHOONS AND COASTAL STORMS**

A hurricane is a severe tropical storm that forms in the North Atlantic Ocean, the Northeast Pacific Ocean east of the dateline, or the South Pacific Ocean east of 160°. Hurricanes need warm tropical oceans, moisture, and light winds above them. If the right conditions last long enough, a hurricane can produce violent winds, incredible waves, torrential rains, and floods. In other regions of the world, these types of storms have different names. This is called a typhoon when they occur in the Northwest Pacific. A tropical storm becomes a hurricane when winds reach 74 mph. When hurricanes move onto land, the heavy rain, strong winds and heavy waves can damage buildings, trees, and cars. The heavy waves are called a storm surge. Storm surges are very dangerous as they threaten low-lying coastal lands with inundation.

Coastal storms in Santa Cruz consist of precipitation, occasional high winds, and heavy waves. Because the County is not in an area subject to hurricanes, the risks from coastal storms are generally limited to flooding and coastal erosion, which are discussed separately.

Source: National Hurricane Center, National Oceanic & Atmospheric Administration U.S. Department of Commerce

<https://www.nhc.noaa.gov/>

### **LAND SUBSIDENCE**

Land subsidence is defined as a settling, compaction, or caving in of land caused by subsurface mining, ground-water withdrawal, thawing permafrost, or pumping of oil and gas. Land subsidence occurs in Santa Cruz only in conjunction with severe coastal storms and earthquake and is addressed under those topics.

Source: [USGS, Water Resources, Land Subsidence](#)

### **WINTER STORMS and HAILSTORMS**

Severe winter storms and weather include extreme cold, heavy snowfall, ice storms, winter storms, and/or strong winds. In addition, winter storms may result in other hazards such as flooding, severe thunderstorms, tornadoes, or extreme winds.

Snow has been reported in nearly every part of California, but it is very infrequent west of the Sierra Nevada except at high elevations of the Coast Range and the Cascades. Santa Cruz County is in a mild coastal area without risk of heavy snowfall or ice storms.

Source: National Centers for Environmental Information, National Oceanic & Atmospheric Administration U.S. Department of Commerce  
<https://www.ncdc.noaa.gov/>

## **TORNADOS**

A tornado is a violently rotating column of air extending between, and in contact with a cloud and the surface of the earth. Tornadoes are often (but not always) visible as a funnel cloud. On a local-scale, tornadoes are the most intense of all atmospheric circulations with wind that can reach destructive speeds of more than 300 mph.

Since 1950, 292 tornadoes have occurred in 42 counties throughout California resulting in 103 injuries. However, since 1950, no deaths caused by tornadoes have been recorded in California. A search of NOAA Satellite and Information Service shows seven minor tornadoes in Santa Cruz on record since 1965. There were no deaths and only minor property damage.

Source: National Centers for Environmental Information, National Oceanic & Atmospheric Administration U.S. Department of Commerce  
<https://www.ncdc.noaa.gov/>

## **VOLCANOES**

Volcanoes are described as a vent in the Earth's crust through which molten or hot rock, steam, and ash reach the surface, including the cone built by the eruptions. At least ten eruptions have taken place in the past 1,000 years—most recently, the Lassen Peak eruption of 1914–17 in northern California—and future volcanic eruptions are inevitable. Based on the record of volcanic activity over the last five millennia, the probability of another small- to moderate-sized eruption in California in the next 30 years is estimated to be similar to the forecast for a magnitude 6.7 or greater earthquake specific to the San Andreas Fault in the San Francisco Bay region. The U.S. Geological Survey's (USGS) national volcanic threat assessment (Ewert and others, 2005; 2018) identifies eight young volcanic areas, designated as moderate, high, or very high threat, dispersed throughout the state—from the Oregon border southward to Mexico. All of these areas are relatively distant from Santa Cruz County, therefore, the risk to the County of significant impacts from volcanic activity is considered low.

Source: Mangan, M., Ball, J., Wood, N., Jones, J.L., Peters, J., Abdollahian, N., Dinitz, L., Blankenheim, S., Fenton, J., and Pridmore, C., 2019, California's exposure to volcanic hazards (ver. 1.1, December 2019): U.S. Geological Survey Scientific Investigations Report 2018–5159, 49 p.,  
<https://doi.org/10.3133/sir20185159>.