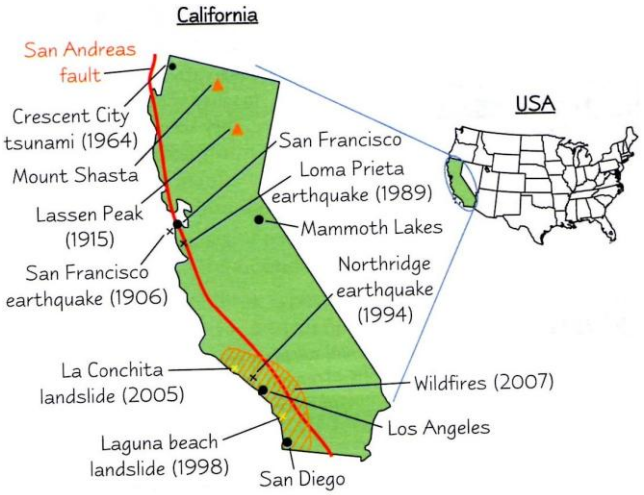
Disaster Hotspot Case Study – California

California is a disaster hotspot. Disaster hotspots are vulnerable places at risk from two or more hazards. The state of California in the USA has many highly populated towns and cities at risk from a variety of hazards. The map below shows examples and locations of past hazards that have caused disasters.



The Richter scale is a measure of the energy released during an earthquake.

1 Earthquakes

1. The San Andreas Fault runs the length of California – it's a conservative plate boundary
2. Earthquakes occur when pressure between the plates builds up and then is suddenly released as they jerk passed each other
3. California has 2 or 3 earthquakes each year that are powerful enough to damage structures (5.5+ on the Richter Scale)
4. Studies of their frequency and magnitude of past earthquakes show that there's a good chance of an earthquake of magnitude 7.0+ hitting the San Francisco Bay area before 2025
5. Past disasters include the San Francisco earthquake of 1906 (magnitude 7.8) which along with subsequent fires, destroyed much of the city

2 Droughts

1. Droughts in California can be caused by anticyclones (long-lasting periods of high air pressure with sinking, dry air. Dry, sinking air means no rain
2. Drought can also be caused by La Nina events (periods when the surface water in the eastern Pacific Ocean is cooler). This means less evaporation, so there's less precipitation.
3. Another cause of drought is increased wind blowing westward from the desert areas that are east of California, e.g. Arizona. The dry air has no moisture to cause precipitation.
4. The most devastating effect of drought in California is wildfires – dry vegetation is extremely flammable, so fires spread quickly over wide areas
5. The wildfires in Southern California in October 2007 killed 22 people and destroyed 1300 homes.

3 Tsunamis

1. A tsunami is a series of large waves that can flood coastal areas
2. They can be caused by earthquakes on the sea bed, or landslides into the sea
3. Earthquakes under the Pacific Ocean could cause a tsunami along the California coastline
4. An earthquake off the coast of Alaska in 1964 caused a tsunami to strike the coast of northern California, killing 12 people in Crescent City

4 Landslides

1. Landslides occur on unstable steep land. Land can be made unstable by coastal erosion or extreme weather (rainstorms). Landslides can also be triggered by earthquakes
2. The risk of landslide disasters in California is high because of building on and around steep slopes, as well as building on coastal land overlooking the ocean, E.g. La Conchita.

5 Volcanoes

1. There hasn't been a volcanic eruption in California since 1915 (Lassen Peak)
2. But there are volcanoes being monitored for potential eruptions, e.g. Lassen Peak, Mount Shasta, and the volcanoes around Mammoth Lakes.

California is wealthy but Parts of the Population are Vulnerable

1. More than **70%** of California's population live **within 50km** of a **fault line**
2. There's a lot of building on **unstable land** – this can lead to **soil liquefaction** during earthquakes (where the ground can become more like a **liquid**), which damages buildings and **increases** the **risk of landslides**. This was a major problem during the **Loma Prieta** earthquake in 1989
3. There are many buildings along the coast that are vulnerable to **tsunamis**
4. California is a **wealthy state**, but there are very **poor areas within it** – around **20%** of the residents in **Los Angeles** live **below** the official **poverty line**. These people have the **lowest capacity to cope** when affected by a hazard
5. California has a **massive economy**, so there are likely to be **huge economic losses** when a disaster occurs

Chris Cartwright – A2 Geography student.