
Earthquake facts you may not know

An earthquake is when the ground starts shaking caused by a sudden slip on a fault. Stresses in the earth's outer layer push the sides of the fault together. Stress builds up and the rocks suddenly slip releasing a lot of energy in waves that travel through the earth's crust and cause the shaking that every human feels during an earthquake.

Faults are caused by the tectonic plates grinding and scraping against each other as they continuously and slowly move. In California, for example, there are two plates which are the: Pacific Plate which extends from western California to Japan, including much of the Pacific Ocean and finally the North American Plate which is most of the North American continent and some parts of the Atlantic Ocean. The Pacific Plate moves northwestward past the North American Plate along the San Andreas Fault at a rate of two inches per year.

Parts of the San Andreas Fault system adapt to this movement by the constant creep resulting in a lot of tiny shocks and a few earth tremors. In other parts, strain can build up for hundreds of years, producing very big and great earthquakes. Large and small earthquakes can also occur on faults not previously recognized. The magnitude of an earthquake is related to the area of the fault on which it occurs the larger the fault area, the larger the earthquake can be. The San Andreas Fault is about 800 miles long and only about 10 to 12 miles deep, so that earthquakes larger than magnitude 8.3 are extremely unlikely to happen.

The largest earthquake ever recorded by seismic instruments anywhere on the earth was a magnitude of a 9.5 the earthquake was in Chile on May 22, 1960. That earthquake occurred on a fault that is almost 1,000 miles long and 150 miles wide, dipping into the earth at a shallow angle. The magnitude scale is open ended, meaning that scientists have not yet put a limit on how large an earthquake could be, but there is a limit just from the size of this earth. A magnitude 12 earthquake would need a fault larger than the earth itself.

Earthquakes can strike at any location and at any time. But history shows they mostly occur in the same patterns over time, principally in three large zones of the earth. The world's greatest earthquake zone which is the circum Pacific seismic belt, it's found along the rim of the Pacific Ocean, where about 81 percent of the world's largest earthquakes occur there. That belt extends from Chile, northward along the South American coast through Central America, Mexico, the West Coast of the United States, the southern part of Alaska, through the Aleutian Islands to Japan, the Philippine Islands, New Guinea, the island groups of the Southwest Pacific, and finally to New Zealand.

The second most important belt is the, Alpide, extends from Java to Sumatra through the Himalayas, the Mediterranean, and out into the Atlantic. This belt accounts for maybe about 17 percent of the world's largest earthquakes ever, also including some of the most destructive ones. The third prominent belt follows the submerged mid Atlantic ridge. The remaining shocks are scattered in a lot of various areas of the world. Earthquakes in these prominent seismic zones are taken for granted, but damaging shocks occur occasionally outside those areas, for example in the United States, New Madrid, Missouri, Charleston, and South Carolina. Many decades to centuries, usually elapse between destructive shocks.

Though well known, the magnitude 7.8 San Francisco earthquake and ensuing fire killed about 3,000 and razed some large sections of the city of San Francisco. It was the most deadly in the United States. history, but that doesn't mean it's the worst the world has seen. The deadliest earthquake recorded in history struck Shensi province in China in 1556, killing approximately 830,000 people. The 1976 magnitude 7.8 earthquake which struck Tangshan, China killed in between 250,000 and 800,000 people. In 2003, the magnitude 6.5 earthquake in Bam, Iran killed more than 40,000 people.

The earthquake in Chile on May 22, 1960, was the strongest to be recorded in the entire world with a magnitude of 9.5, and killed more than 4,000 people. For the record, the largest U.S. earthquake occurred on March 28, 1964, in Alaska. It was a magnitude 9.2 quake and took about 131 lives.

Alaska registers the most earthquakes in a given year, with California placing second place, until 2014 when a sudden increase in seismicity in Oklahoma pushed it well past California as the second most active in terms of magnitude 3.0 and greater earthquakes. In 2014 there were 585 M3 and greater earthquakes in Oklahoma and about 200 earthquakes in California. As of April 2015 Oklahoma 260 events is still well ahead of California's 29 events. California, however, has the most destructive earthquakes, including a M6.0 earthquake near Napa in August 2014, because of its greater population and extensive infrastructure. Most of Alaska's large earthquakes occur in locations such as the Aleutian Island chain. Florida and North Dakota have the fewest earthquakes each year in the world.