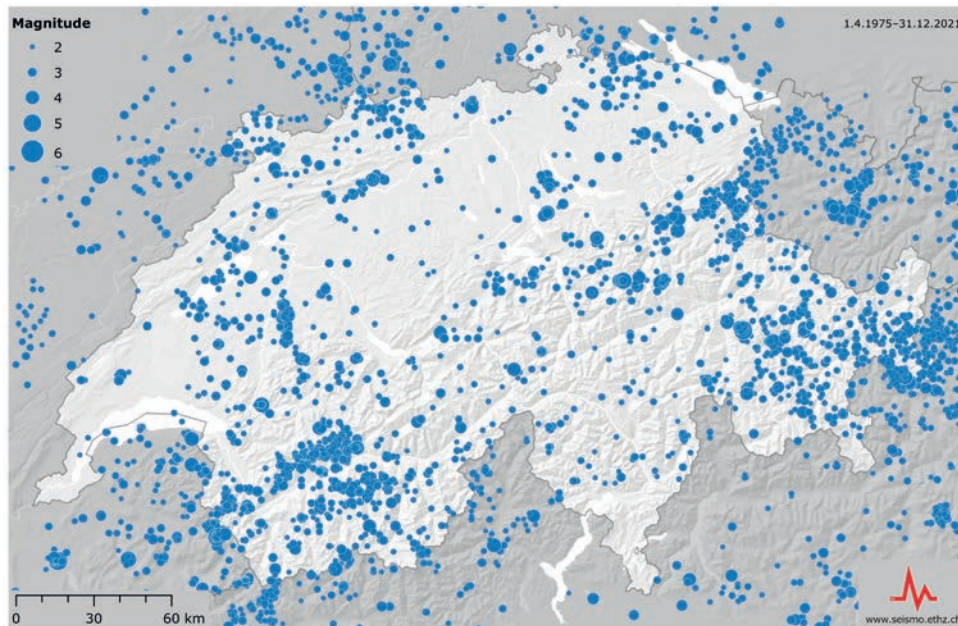




Schweizerischer Erdbebendienst
Service Sismologique Suisse
Servizio Sismico Svizzero
Swiss Seismological Service

ETH zürich

Earthquake Country Switzerland

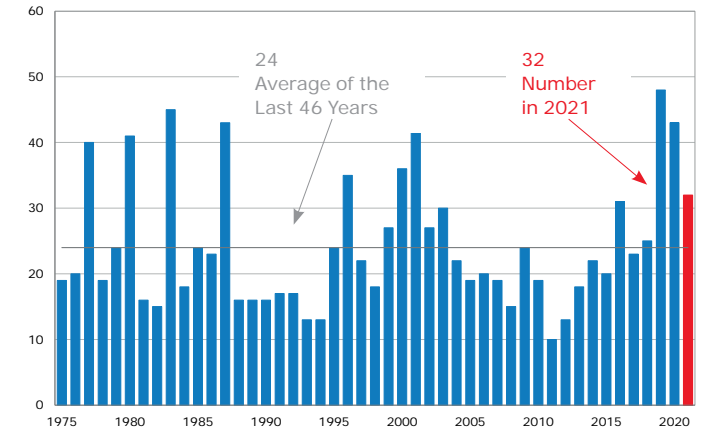


Map of earthquakes with a magnitude of 2 and above occurring in Switzerland and the neighbouring countries between 1975 and 2021.

Earthquakes in Switzerland

With its monitoring network of more than 200 seismometers, the Swiss Seismological Service (SED) at ETH Zurich records an average of between three and four earthquakes a day, or between 1,000 and 1,500 earthquakes a year, in Switzerland and its immediate neighbouring countries. Swiss citizens actually feel somewhere between 10 and 20 quakes a year, usually those with a magnitude of 2.5 or above.

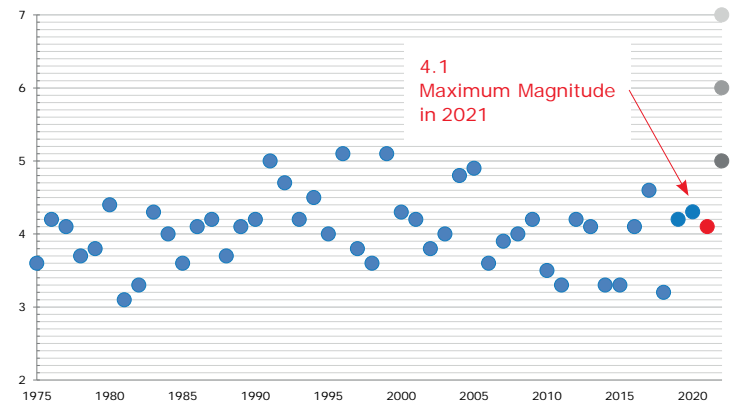
Number of Earthquakes with Magnitude 2.5 or Greater per Year



Earthquakes with a magnitude of at least 5 occur every 8 to 15 years. Larger earthquakes, with a magnitude of 6 or more, occur on average only every 50 to 150 years. The strongest ever historically documented earthquake in Switzerland, with a magnitude of about 6.6, occurred near Basel in 1356.

Maximum Magnitude (M) Measured per Year

- 0.1 % probability for a magnitude 7 earthquake in 2022
- 1 % probability for a magnitude 6 earthquake in 2022
- 0.1 % probability for a magnitude 5 earthquake in 2022



Hazard, Risk and Monitoring

Seismic Hazard

Compared to other European countries, Switzerland has a moderate seismic hazard, but displays regional differences, the canton of Valais being at most risk, followed by Basel, Grisons, the St. Gallen Rhine Valley, Central Switzerland and then the rest of the country. Every region of Switzerland is exposed to some degree of seismic hazard.

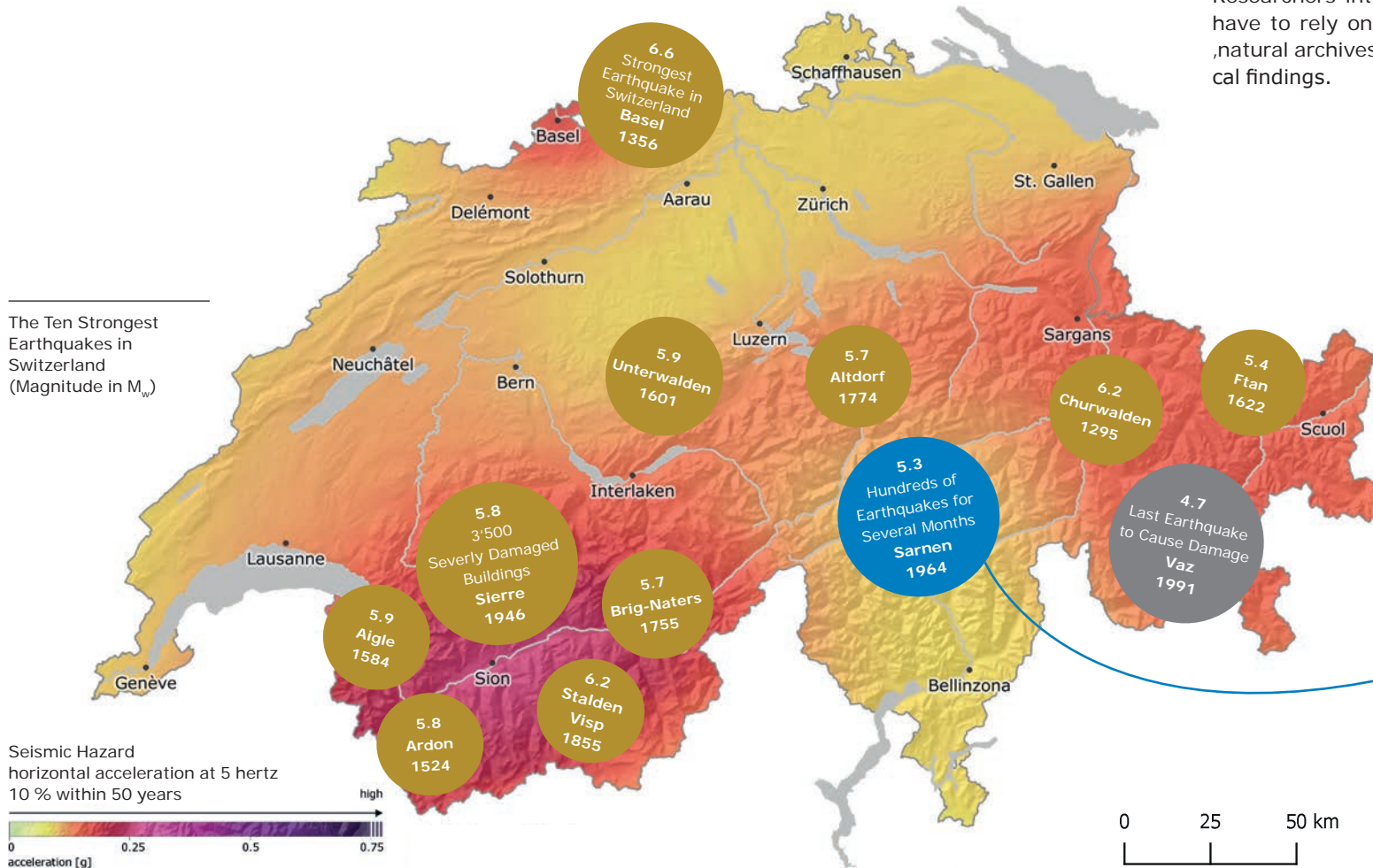
Seismic hazard maps show the expected horizontal acceleration caused by earthquakes within a certain period at a specific location.

Seismic Risk

Estimating the seismic hazard is the first step in order to assess the seismic risk. The total risk for damage caused by earthquakes is a combination of the four factors local subsoil, building vulnerability, seismic hazard and value concentration. Despite the moderate hazard, earthquakes are still the natural hazard with the greatest damage potential in Switzerland.

Earthquake Monitoring

Instrumental monitoring of earthquake activity in Switzerland began at the onset of the 20th century. At the moment, over 200 seismic monitoring stations are operated by the SED. Researchers interested in the consequences of older events have to rely on historical accounts from previous centuries, 'natural archives', such as lake-bed sediments, or archaeological findings.



Earthquake Swarms

In so-called 'earthquake swarms', numerous earthquakes occur locally over an extended period without a clear sequence of foreshocks, main quakes and aftershocks. The SED registers several of earthquake swarms every year. They are therefore nothing extraordinary. Swarms usually end after a few days or months. Only seldom does the strength and number of earthquakes increase over time or do occur single, damaging events. How an earthquake swarm develops over time is just as difficult to predict as earthquakes are in general.

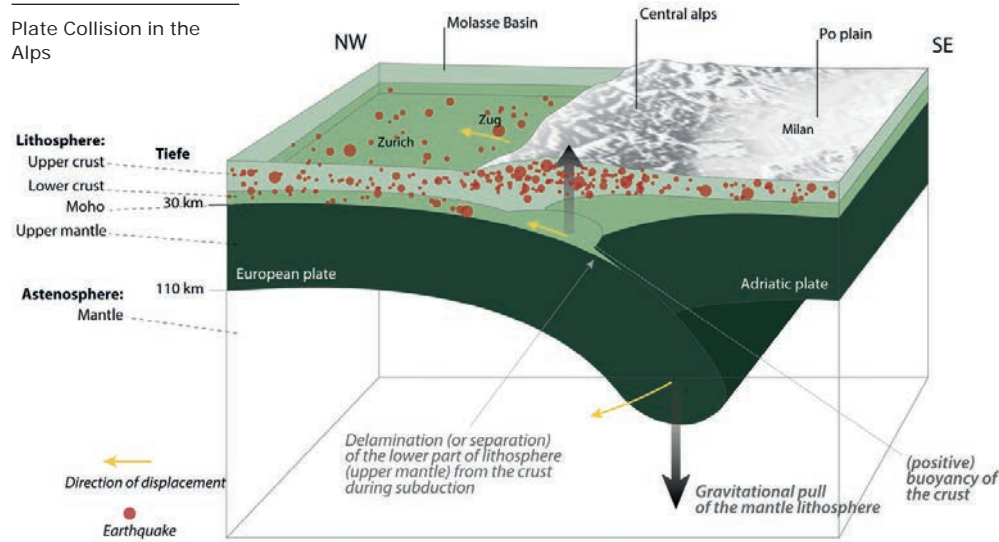
Causes of Earthquakes

Types of plate boundaries

convergent →←
 divergent ←→
 transform ↑↓

The Earth's crust consists of seven large lithospheric plates and numerous smaller plates. These plates move towards each other, apart or past each other. Most of the earthquakes occurring in Switzerland are caused by collisions between the European and the African lithospheric plates.

Plate Collision in the Alps



Earthquakes are caused by a sudden release of stress along faults in the earth's crust. The continuous motion of tectonic plates causes a steady build-up of pressure in the rock strata on both sides of a fault until the stress is sufficiently great that it is released in a sudden, jerky movement. The resulting waves of seismic energy propagate through the ground and over its surface, causing the shaking we perceive as earthquakes.

Earthquakes can also be triggered by human activity like tunneling, filling or emptying of reservoirs, geothermal projects, oil and gas production or mining.

Always Informed

The SED's Website

On our website you can find detailed information on current earthquakes in Switzerland and abroad, as well as a range of background information about all aspects of earthquakes.
www.seismo.ethz.ch

Did You Feel an Earthquake?

Enter your experiences into the online questionnaire on the SED website.
www.seismo.ethz.ch/earthquakes/did-you-feel-an-earthquake

@seismoCH_E

Follow us on Twitter and receive an immediate notification when an earthquake with a magnitude of 2.5 or greater has occurred in Switzerland or neighbouring countries.
www.twitter.com/seismoCH_E

Personal Earthquake Risk

Use our interactive tool to determine your personal earthquake risk based on four factors and find out how to reduce it.
www.seismo.ethz.ch/knowledge/seismic-risk-switzerland/seismic-risk-tool

Report an Earthquake

The SED's Earthquake Reports will be published in the Swiss natural Hazards Portal as well as in the MeteoSchweiz App (download via App Store, Google Play or Windows Store).
www.naturgefahren.ch

Earthquake Simulator

Switzerland has two simulators where minor and more major earthquakes can be experienced in complete safety. Visit the earthquake simulator at the *focusTerra* museum in Zurich or at the CPPS Centre in Sitten.
www.focusterra.ethz.ch/museum/simulator
www.cpps-vs.ch

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