

Earthquake Forecasting Around the World

Different countries have developed different strategies in earthquake hazard evaluation and forecasting.

For most of them, it is common to have a long-term earthquake forecasting model, while short-term forecasting is still impossible. Here, we will look at four seismically active countries, to see what kind of information on earthquake hazard and forecasting is provided to the public.

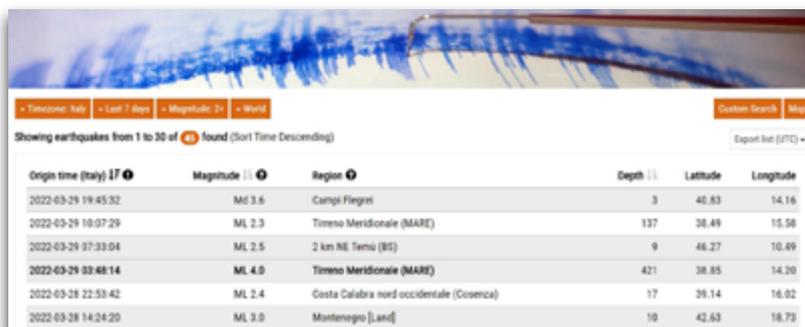
Greece

Greece is located in the most seismically active region in Western Eurasia. The national telemetric seismograph system is monitored by the public research centre named the Institute of Geodynamics, National Observatory of Athens (NOAGI). Key universities in the country also contribute to the work.



Real-time ShakeMaps released by [NOAGI](#)

The NOAGI is responsible for providing relevant earthquake information to the public and civil protection agencies. Usually, earthquake with an $M_w \geq 4$ magnitude will be announced to the public.



Origin time (Italy)	Magnitude	Region	Depth	Latitude	Longitude
2022-03-29 19:43:32	Ml 3.6	Campi Flegrei	3	40.83	14.16
2022-03-29 10:07:29	Ml 2.3	Tirreno Meridionale (MARE)	137	38.49	15.58
2022-03-29 07:33:04	Ml 2.5	2 km NE Tenu (IS)	9	48.27	10.49
2022-03-29 03:48:14	Ml 4.0	Tirreno Meridionale (MARE)	421	38.85	14.20
2022-03-28 22:53:42	Ml 2.4	Costa Calabra nord occidentale (Cosenza)	17	39.14	16.02
2022-03-28 14:24:20	Ml 3.0	Montenegro [Lanc]	10	42.63	18.72

Real-time earthquake monitoring by INGV

Italy

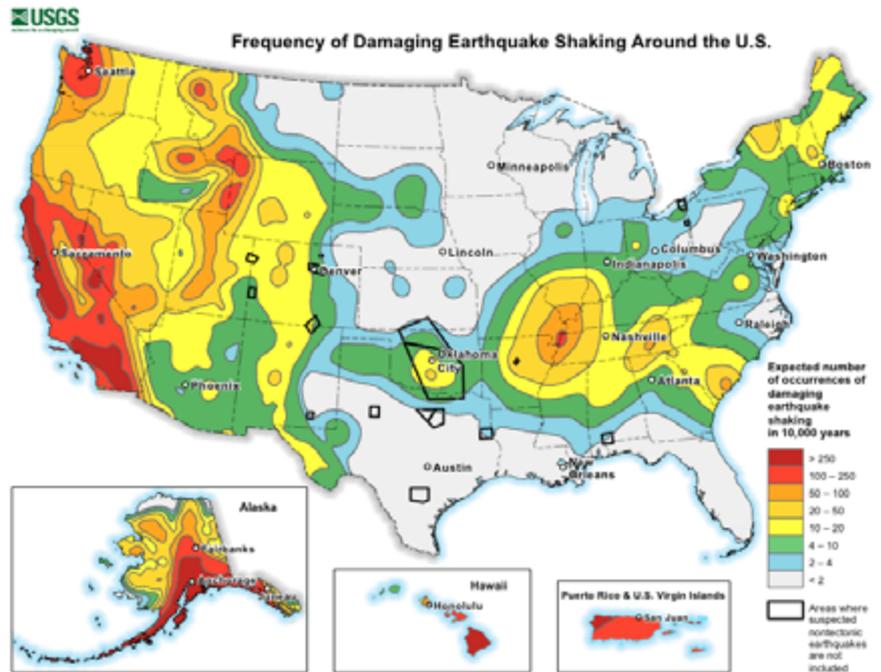
Italy is one of the most seismically active countries in Europe. The country's first Ministry of Civil Protection was founded in 1981, after the Friuli (1976) and Irpinia (1980) earthquakes.

Now, the civil protection service connects and coordinates the emergency responses from all public and private organizations, including fire

brigades, army, volunteers, communities, and local administrations. The main purpose of the service is to safeguard people's lives and health, to protect communities and environment, and national heritage sites from disasters. The National Institute of Geophysics and Volcanology (INGV) is part of this service, specialized in seismic and volcanic monitoring and hazard evaluation. Long-term seismic hazard maps are published by INGV for public use.

United States

In the United States, the U.S. Geological Survey (USGS) is responsible for earthquake monitoring, hazard assessment and forecasting. The National Seismic Hazards Mapping Project (NSHMP) provides long-term seismic hazard maps for the whole country. The maps are based on modelling of earthquake probability and are updated regularly according to latest information. The maps involve cooperation between the state geological surveys, academic organizations and map users of the hazard analysis.

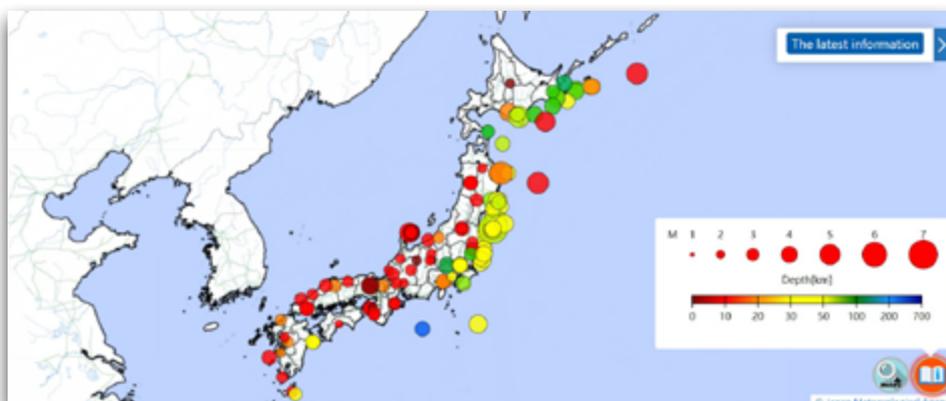


USGS National Seismic Hazard Map

People use existing faults to represent the most likely earthquake sources in these models. Especially for areas which scientists have a better understanding of e.g. around the Pacific-North America plate boundary zone.

Japan

Japan has suffered many earthquakes in its history. Research on earthquake forecasting and prediction was established as early as in 1868. Now, two government organizations have the responsibility for earthquake forecasting, the Japan Meteorological Agency (JMA) and Headquarters for Earthquake Research Promotion (HERP). JMA is in charge of earthquake early warning, aftershock forecasting, and tsunami warning. HERP is responsible for providing the public with information on earthquake risk. Based on data on seismic activity in Japan, HERP publish monthly reports, evaluation of earthquake risk, and national a seismic hazard map.



Real-time earthquakes map from JMA