



Seismological Society of America

Statement on Monitoring Earthquakes, Tsunamis and Other Hazards

From earthquakes and tsunamis to mine collapses and explosions, disaster can strike at any time. High-quality monitoring networks enable an immediate and informed response to the wide range of hazardous events that threaten public safety in the United States and around the globe.

These observing systems can detect earthquakes, tsunamis, landslides, volcanic eruptions and other naturally occurring events, as well as human-caused events like explosions and induced earthquakes.

The U.S. supports the following critically important monitoring and alerting systems:

- **The Advanced National Seismic System (ANSS):** delivers real-time earthquake-related information for the public, news media and emergency-response personnel. Comprised of a national backbone network and 15 regional networks of seismic stations, the ANSS provides data for **ShakeMaps**, which show the distribution of potentially damaging ground shaking and guide earthquake response efforts. Information from the ANSS informs the **National Seismic Hazard Maps**; these apprise the development of earthquake-resistant building codes, a major factor in reducing earthquake losses. The ANSS is also a vital component of the NOAA/National Weather Service's **Tsunami Forecasting and Warning Program**, which saves lives by enabling effective evacuations and speeds economic recovery by allowing protective actions of essential coastal and marine services. The ANSS is also used to track induced seismicity associated with energy extraction, production and sequestration (injection).
- **The Global Seismographic Network (GSN):** measures the vibrations of the Earth and transmits data to collection points across the U.S. The GSN has helped make the U.S. the international leader in providing real-time situational awareness of earthquakes and tsunamis anywhere on the globe. The network also strengthens the United States' efforts to track clandestine nuclear explosions and contributes to international efforts in support of the Comprehensive Nuclear Test Ban Treaty (CTBT).
- **The ShakeAlert Earthquake Early Warning system:** detects significant earthquakes within seconds and quickly provides alerts that allow individuals to seek cover and enables automated systems to reduce the likelihood of deadly repercussions such as gas fires and train derailments. The system is now operational in California, Washington and Oregon.

In addition, the U.S. operates instruments; some record damaging ground motions near active faults and in population centers in support of improved engineering, and others record changes in sea level to help **detect tsunamis, storm surges and other coastal hazards**. The nation's GPS networks and satellite systems monitor the movement of the Earth's surface and the strain in the upper few hundred meters of the Earth's crust. This information contributes to research into underlying physical processes of the Earth and aids seismic hazard assessment, earthquake early warning and earthquake monitoring. The U.S. also

contributes seismic and other data to the International Monitoring System sensor network, to detect and characterize nuclear explosions worldwide.

The U.S. can reduce the human and economic cost of earthquakes, tsunamis and other hazards by ensuring that these programs have the computing and human resources necessary for long-term reliability and stability.

For the safety and security of our nation and our world, the Seismological Society of America strongly recommends that Congress continue to support and improve all of these observing and hazard monitoring networks, alerting programs and products, as well as the qualified staff necessary to operate and maintain these networks.

Approved by the SSA Board of Directors, August 2021