Protecting Lives, Infrastructure and Country: Statement on the Importance of Seismic Research and Monitoring for National Defense

Scientists at federal agencies, national labs and universities in the U.S. conduct seismic research and operate global and regional seismic monitoring networks that play a key role in the protection of our nation and its citizens. The Seismological Society of America (SSA) urges Congress to make policy and funding decisions that support and strengthen these critically important global watch and national monitoring systems.

Federally funded seismic networks provide close and continuous monitoring of the natural movements of the Earth, helping communities and decision-makers prepare for and respond to seismic events before they become disasters. Seismic monitoring also helps track movements of people, vehicles and drones, explosions, and other ground-based activity worldwide so that U.S. defense and intelligence agencies can assess human made threats and respond accordingly.

Seismic research/monitoring provides information about enemy activity in the battlefield environment, ceasefire compliance in international peacekeeping efforts, the security of U.S. borders, terrorist attacks and major accidents around the globe (e.g., the 2020 Beirut explosion and the 2022 Nord Stream pipeline sabotage). Sensitive seismic instruments, with artificial intelligence and other advanced processing technologies developed by national labs, enable the detection of potential nuclear tests in foreign countries (e.g., North Korea), signaling violations of nuclear-test-ban treaties. This federally funded research is vital to the ongoing refinement of these tools and their capability to continue identifying such emerging threats.

International monitoring networks supported by federal funds also enable the ongoing exploration of the cause and effect of such powerful natural seismic events as the 2022 Hunga Tonga – Hunga Ha‘apai volcanic eruption/tsunami that posed a disruption risk to flights and U.S. Navy vessels across the Pacific, and an unprecedented 2023 mega-tsunami triggered by a landslide in Greenland that rocked a major cruise ship route.

Scientific understanding of ground movements are important factors in determining the safest placements for military bases, as well as the transoceanic fiber optic cables that carry U.S. defense communications. Recently captured and analyzed seismic data has uncovered new findings about submarine landslides, which can damage seabed cables and moorings. These scientific efforts are fundamental to U.S. building codes and land-use planning, helping protect military personnel and assets from seismic hazards.

A major earthquake has the potential to damage infrastructure and energy systems, including oil and gas pipelines, refineries, nuclear reactors and power grids, with far-reaching consequences. Federally funded earthquake scientists also conduct the risk assessments that guide and inform the creation of necessary preparedness plans at all levels of government. These efforts have yielded important public safety initiatives such as the ShakeAlert early warning system, which can provide emergency responders, as well as military and other defense-critical public and private sector facilities, with seconds of notice before the earth shakes.

Robust seismic research and monitoring systems enhance national security, enabling informed decision-making, emergency preparedness, disaster mitigation and compliance with international security agreements. Supporting these investments protects American lives, infrastructure and our nation itself.

Approved by the SSA Board of Directors, June 2025