

The February 28, 2001 Nisqually earthquake:
GPS Geodesy and quantifying seismic hazard.

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Topic: *Life in the Subduction Zone: The recent Nisqually Earthquake and Federal Efforts to Reduce Earthquake Hazards*

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Abstract

Because of dramatic growth in our understanding of seismicity in the Pacific Northwest over the last decade or more, scientists were not surprised by the February 28, 2001, Mw = 6.8 Nisqually earthquake. Continued integration of scientific results into urban planning and risk mitigation requires enhanced support for the new technologies that can help scientists map the likely locations, size and frequency of future earthquakes on shallower faults, which pose much more serious risk to life and property. Recent technological advances include the use of GPS to study how the planet Earth's tectonic plates deform in real time and the millimeter level. With NSF, NASA, USGS, and Sun Microsystems support, the Pacific Northwest Geodetic Array (PANGA) has piloted applications of this technology in the Pacific Northwest. PANGA has responded to the Nisqually earthquake by installing seven new stations in the Puget Lowlands region. This has been undertaken with NSF support and in partnership with the geodetic investigator community including the Southern California Earthquake Center, UNAVCO, and the U.S. Geological Survey. The scientific community is poised to dramatically extend our knowledge base by implementing these technologies at an unprecedented scale in planned projects such as Earthscope, which has been approved by the National Science Board. Through Earthscope, the scientific community will provide meaningful constraints for urban planning and emergency response measures, in addition to advancing our basic research in the areas of earthquake physics, the physics of deforming volcanoes, and the forces that drive plate tectonics and mountain building within the continents.