

Appeared in **THE WALL STREET JOURNAL** on Wednesday, March 23, 2011

OPINION

Budget Cuts and the Next Earthquake

Will Washington save money by nixing high-tech disaster-warning systems?

The Japanese earthquake, tsunami and nuclear power-plant crisis were merely the latest recent events to remind us of the dangers posed by natural and manmade disasters. Before them were the earthquakes in Haiti and Chile, the volcanic eruption of Eyjafjallajokull in Iceland, the oil spill in the Gulf of Mexico, and the earthquakes in New Zealand. They all underscore the need to develop prevention technologies—and yet Washington, in its frenzy over budget-cutting, seems not to have noticed.

Consider what might result from a large earthquake off the shore of Oregon or along the San Andreas Fault in California, or even from a smaller event, like those in New Zealand, occurring under downtown Los Angeles or St. Louis. Imagine a Mt. St. Helens-style eruption of Mt. Rainier, which sits 45 miles from Seattle. We need only remember the 1989 Loma Prieta earthquake, which caused over \$6 billion in economic losses, and the 2004 Northridge earthquake (over \$40 billion)—both of which were relatively small events.

Mitigating against future disasters depends on monitoring hazardous regions (earthquake faults, volcanoes, landslides and so on) and preparing to survive and recover once catastrophe strikes. Japan's recent experience demonstrated the success of early-warning systems, as sensors close to the earthquake's epicenter alerted locations farther away, such as Tokyo. These systems saved lives by alerting people to take cover before the shaking began, to slow down and even stop high-speed trains, and to seek higher ground because of the tsunami threat.

In the same vein, U.S. scientists at universities and government agencies are developing applications that exploit sensors in your cell phone or computer, treating them as a huge earth-monitoring system—a wonderful example of crowd sourcing. Combined with conventional seismographic and permanent GPS networks, such new technologies can provide robust early-warning, assessment and response systems for earthquakes and tsunamis.

But here's the reality check: Under the White House's proposed budget for fiscal year 2012, the U.S. Geological Service would experience a 9% cut in its earthquake programs budget.

Another crucial federal agency in this regard is NASA. Its orbiting satellites can monitor movement of the Earth's surface with exquisite fidelity. Properly equipped, they could identify elastic strain in tectonic plates (which will inevitably be released in earthquakes) and moving magma in the Earth's crust (which can lead to volcanic eruptions). These satellites also have global sweep and promise to provide highly detailed maps of post-disaster devastation spanning hundreds or even thousands of miles. They could even track oil slicks after drilling accidents.

But at present, the U.S. doesn't have a radar satellite with the appropriate imaging characteristics for these applications. In fact, the National Research Council has said that a U.S. radar mission, the DESDynI radar satellite, should be a top priority for NASA. In addition to helping us mitigate against earthquakes and the like, such a mission would also revolutionize our ability to predict the fate of the polar ice caps and monitor carbon stock held in the Earth's biomass.

The DESDynI mission was well along in the planning stages at NASA, with funding provided in the 2010 and proposed 2011 budgets and a realistic launch date set for 2017. But in the White House's 2012 budget proposal, all funding for the DESDynI radar satellite mission was cancelled for the foreseeable future.

Advanced technologies are not cheap, and in this time of financial austerity their urgency can be forgotten as our focus wanders away from the disaster du jour and back toward the stresses of our everyday lives. This tendency to forget is understandable.

But we have entrusted our elected representatives with being more vigilant about our long-term security. It's time to remind them to make the investments necessary to keep our nation as resilient as possible. Nobody wants another Hurricane Katrina experience.

Mr. Simons is a professor of geophysics at the California Institute of Technology.