

Letter from Lynn Scarlett

Message from Acting Secretary Lynn Scarlett

One hundred years ago, a devastating earthquake changed the way the San Francisco Bay Area, Calif., and the United States think about the power and unpredictability of the planet on which we live. Although much of what we now know about earthquakes was learned after April 18, 1906, the U.S. Geological Survey was pondering seismic issues for over 25 years before the great quake.

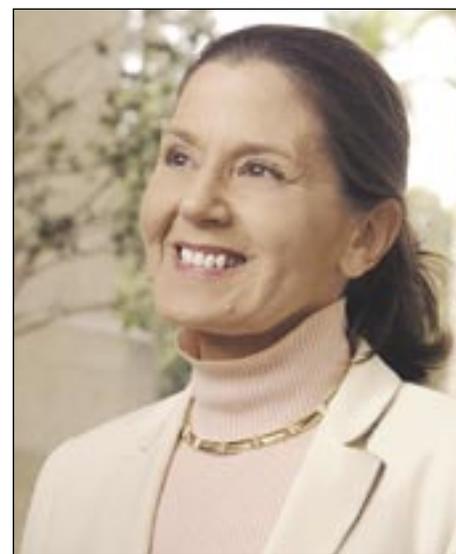
In fact, since its creation in 1879, the USGS has grown to become the nation's largest water, earth, biological science and civilian mapping agency. The USGS collects, monitors, analyzes and provides scientific understanding about natural resource conditions, issues and problems.

As part of these duties, the USGS plays a vital role in researching natural hazards and minimizing loss of life and property from the disasters they can lead to — from earthquakes to volcanic eruptions; from landslides and other forms of ground failure to geomagnetic storms; from floods, droughts, and coastal storms to wildfires; from fish and wildlife diseases to invasive species. USGS science assesses where natural hazards may occur and what the risks are to those who live near these hazards.

The USGS also works cooperatively with federal, state, tribal and local

agencies to assist in emergency response efforts when catastrophes strike. USGS science provides information needed by the public to understand the hazards that may exist in their communities and to help mitigate losses and damages when they occur.

USGS is now a world leader in the natural sciences thanks to its scientific excellence and responsiveness to society's needs. Throughout this publication, you will see how one remarkable and terrible event in U.S. history did so much to bring the USGS to the forefront of earth science exploration and to bring natural hazard concerns to the forefront of the American consciousness.



Lynn Scarlett
Acting Secretary

Letter from P. Patrick Leahy



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This special edition of *People, Land & Water* commemorates the 100th anniversary of the April 18, 1906, Great San Francisco Earthquake, which is deemed by many as the birth of earthquake science. Throughout the edition, you can enjoy stories about the history of seismology, survivor accounts, state-of-the-art developments in earthquake science, and profiles of USGS past and current premier earthquake scientists.

The 1906 earthquake and subsequent fire caused the loss of hundreds of lives, destroyed property and left approximately 225,000 people homeless.

From that moment, scientists and the public realized a compelling need to better understand the dynamic — and potentially hazardous — nature of Earth's seismic processes. Research began immediately, with scientists tackling what they saw before them — displacement of the ground along the San Andreas Fault.

From those seminal efforts, science has evolved from studying the effects of earthquakes to discovering the dynamics of plate tectonics, developing probabilistic earthquake hazard assessments, and installing sophisticated

instrumentation deep into the San Andreas Fault itself. Earthquake monitoring has grown from days of analyzing reports of earthquake activity using calculations on globes with tape measures and compasses to a 24/7, global seismic network of seismographs, satellites and computers that capture and report earthquake events anywhere in the world almost instantaneously.

Scientific research, monitoring and assessment have provided the framework for improving building codes to construct earthquake-resilient buildings and infrastructure. ShakeMaps, which graphically show the differing degrees of shaking from an earthquake, can be available online within minutes for use by emergency-response teams in deploying resources to areas hardest hit.

We have built strong partnerships with government and non-government scientists, academia and other organizations throughout the world to delve deeper into the causes of earthquakes. The public, too, has contributed by answering the question posed on our Web site, www.usgs.gov, "Did You Feel It?" — a citizen-based approach to defining the magnitude of shaking in areas that lack dense instrumentation.

Now, 100 years after the 1906 Earthquake, science and technology mark a milestone on a journey that has brought us far and will take us still further. Seismology is an example of science in the public service, relevant and keyed to making our lives safer. We are proud to provide you with this publication that shows where we've been and where we hope to go. We hope you enjoy it.

P. Patrick Leahy
U.S. Geological Survey