Geoscientists are using directional-drilling technology developed by the petroleum industry to reveal processes controlling earthquake generation at depths of almost 2 miles below the Earth surface as part of the San Andreas Fault Observatory at Depth (SAFOD) project.

Geochemists are growing large, high-quality synthetic diamonds with the prospect of widespread applications in everything from cutting tools to use in electronics. For example, the use of synthetic diamonds in laptops would allow for faster processing without the worry of excess heat generation.

Basic geologic mapping and seismic analysis helps determine fault locations. Geotechnical engineers use this information to create innovative designs to cope with potential movement. Such R&D paid off when the Trans Alaska Pipeline did not break but rather bent and slid in response to the ground movement caused by the 2002 Denali Fault Earthquake.

Geoscientists contribute the necessary knowledge of Earth processes to harness energy from alternative sources such as the sun, wind, geothermal, and waves. NSF sponsored researchers have developed these ocean buoys that convert wave movement into electricity.
SUPPORT GEOSCIENCES R&D

Steady federal investments in Earth and space science R&D will help:
- Keep the U.S. competitive in the global market and stimulate economic growth
- Provide for secure energy and water resources
- Sustain and maintain the environment
- Supply a skilled geoscience workforce
- Prepare for and respond to hazards while mitigating losses

National Science Foundation (NSF)
- Geoscience research advances our ability to deal with natural phenomena of economic and human significance, such as climate change, energy resources, and water resources.
- Support sustained increases that include the Geosciences Directorate and Polar Programs as part of the physical sciences competitiveness initiatives.
- **Support a budget of $7.767 billion for NSF in fiscal year (FY) 2012.**

United States Geological Survey (USGS)
- USGS provides critical information about natural resources and natural hazards
- **Support a budget of $1.2 billion for USGS in FY 2012** as requested by many stakeholders to sustain core programs of the Survey, including hazards, mineral resources, energy resources and water resources.

Department of Energy (DOE)
- Ensure robust and diverse research funding for alternative energy, fossil energy, and carbon capture and storage.
- The Office of Science is the single largest supporter of basic research in the physical sciences, which includes the geosciences. **Support a budget of $5.4 billion for the Office of Science in FY 2012.**

National Aeronautics and Space Administration (NASA)
- Return spending levels to FY 2000, eliminating a 30% reduction for the Earth sciences.
- Implement the priorities of the National Academies report “Earth Science and Applications from Space: National Imperatives for the Next Decade and Beyond”
- **Support a budget of $1.8 billion for Earth sciences in FY 2012** to meet priorities and ensure progress in the 21st century.

National Oceanic and Atmospheric Administration (NOAA)
- Complete an Organic Act for NOAA to codify its purpose and ensure strong R&D for the atmosphere and oceans
- Support the National Ocean Policy
- **Support a budget of $5.5 billion for NOAA in FY 2012.**

National Institute of Standards and Technology (NIST)
- Support funding for the National Earthquake Hazards Reduction Program (NEHRP). NIST is the lead agency for this cooperative program, which includes USGS, NSF and FEMA.

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