21st Century Challenges and How Science Can Help

- Rising demand for limited resources -> Develop new resources, renewable resources
- Climate change disrupting stable society -> Advise on adaptation strategies
- Approaching thresholds of ecosystems -> Create methods for evaluating ecosystem services
- Increasing numbers of people in harms way -> Build more resilient communities
Mitigating and Adapting to Climate Change

- Glaciers Melting
- Earlier snowmelt
- Larger fires, long fire seasons
- Shifting ranges of species
- Ocean acidification
- Coral reef bleaching
Ecosystem Services

Goods and services of value to humans that come from natural systems are an essential ingredient in resiliency.

- Not fully valued in economic discussions, societal decisions.
- Markets insufficient to convey benefits of ecosystems.
Strategic Thinking On Critical Minerals – A Global Perspective

Evaluate the methodology for assessments of undiscovered resources

Improve understanding of global materials flow and recycling

Legislators rely on accurate mineral information presented in economic context to address national mineral needs.

Expertise and technology for processing minerals are just as vital as access to minerals.
Addressing the Nation’s Water Challenges: WaterSmart Initiative

- Groundwater recharge and storage
- Improved water use estimates, particularly for thermoelectric/irrigation (next slide)
- Ecological flows
- Estimates of streamflow at ungaged sites
- Evapotranspiration
- Assessments in areas with significant competition
- Seamless database housing water-availability indicators

USGS
Natural Hazards Risk Reduction: Bringing Science and Communities Together
Vulnerability of Coastal Environments

- Land Loss/ Erosion
- Water Use
- Infrastructure and Human Populations
- Severe Storms
- Sea-Level Rise
Coastal Science of Deltas and Mega-deltas: USGS Forecasts Mekong Project

Productive, Densely Populated, Hotspots for Vulnerability

Visualization Tool Development

Potential effects of dams

Apr. 2010 Vegetation Density
Geosciences and the Next Generation Workforce
A Global Perspective of Earth Science

The USGS has a significant role to play in contributing information and knowledge to address Earth science issues arising in and beyond U.S. national boundaries.