



A Geosciences Vision for the United States

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Start
with Science

U.S. Department of the Interior
U.S. Geological Survey

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

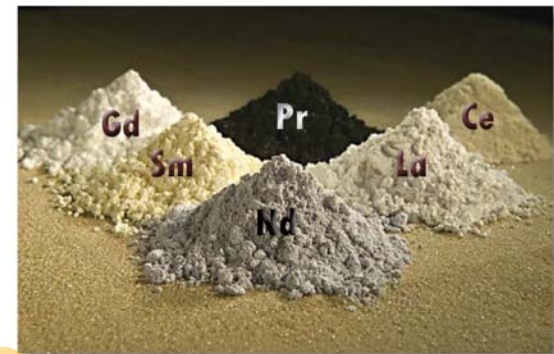
Improve understanding of global materials flow and recycling

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.



The Principal Rare Earth Elements Deposits of the United States—A Summary of Domestic Deposits and a Global Perspective



Scientific Investigations Report 2010–5220

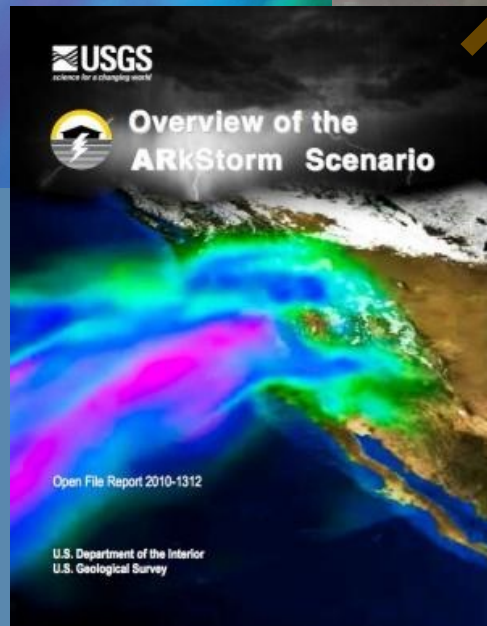
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Addressing the Nation's Water Challenges: WaterSmart Initiative

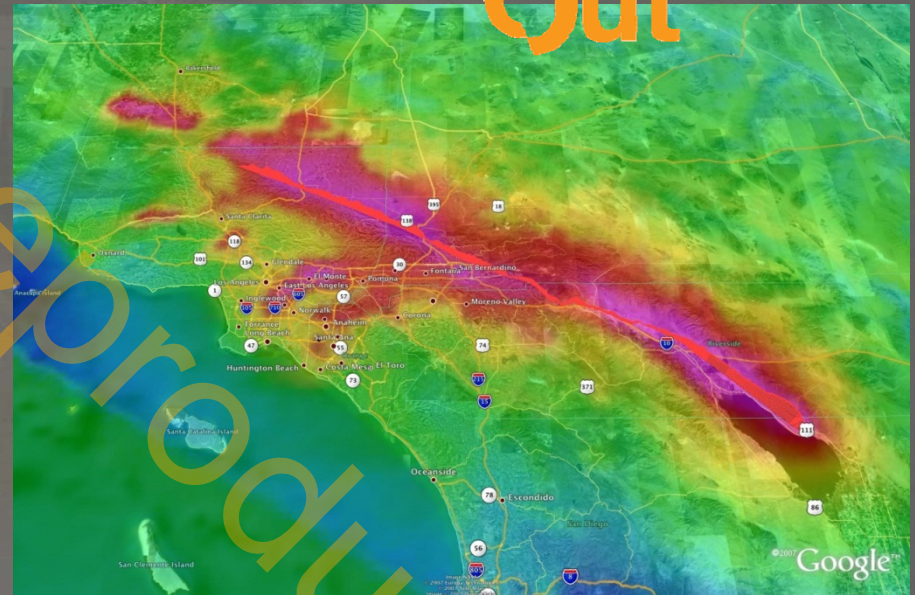
- Groundwater recharge and storage
- Improved water use estimates, particularly for thermoelectric/irrigation (next slide)
- Ecological flows
- Estimates of streamflow at ungaged sites
- Evapotranspiration
- Assessments in areas with significant competition
- Seamless database housing water-availability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



Natural Hazards Risk Reduction: Bringing Science and Communities Together



The Great
Southern California
Shake Out



Vulnerability of Coastal Environments

Land Loss/ Erosion

Water Use

Infrastructure and
Human Populations

Severe Storms

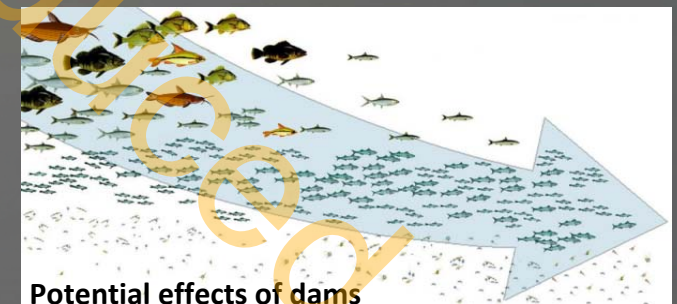
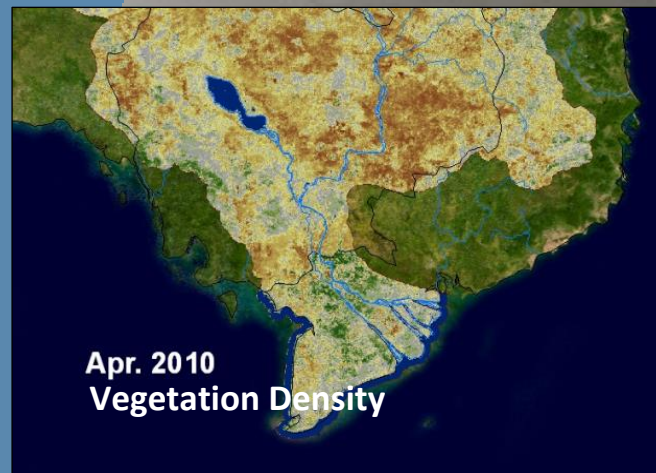
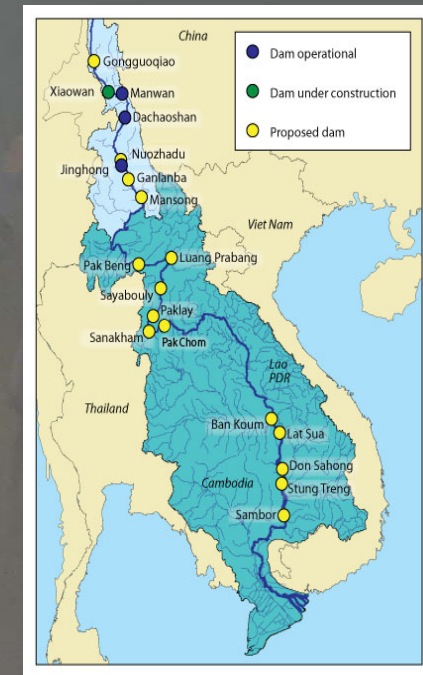
Sea-Level Rise



Coastal Science of Deltas and Mega-deltas: USGS Forecasts Mekong Project

Productive, Densely Populated, Hotspots
for Vulnerability

Visualization Tool Development



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.

National Academy of Sciences, 2012.

