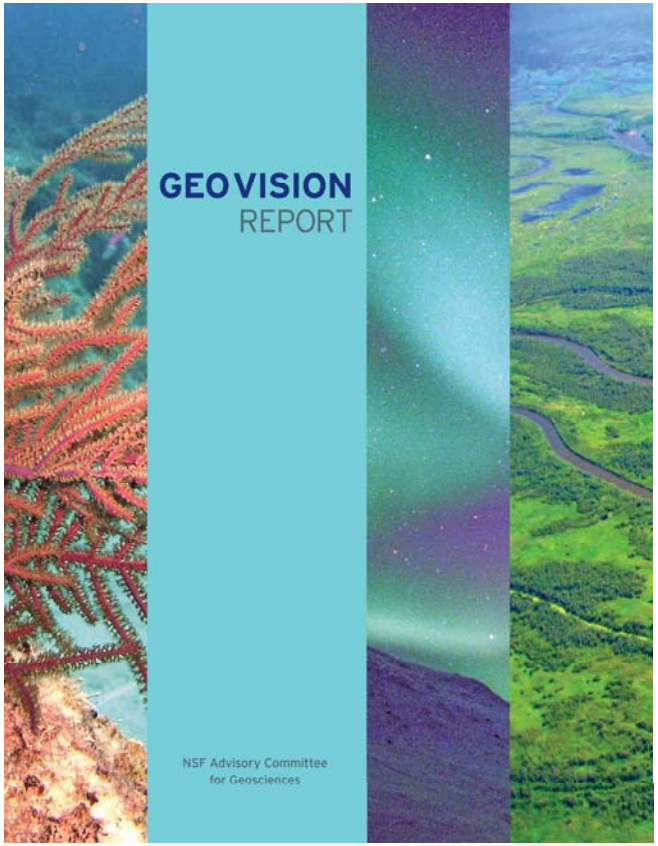
Bob Houtman, Integrative Programs Section, Ocean Sciences Division

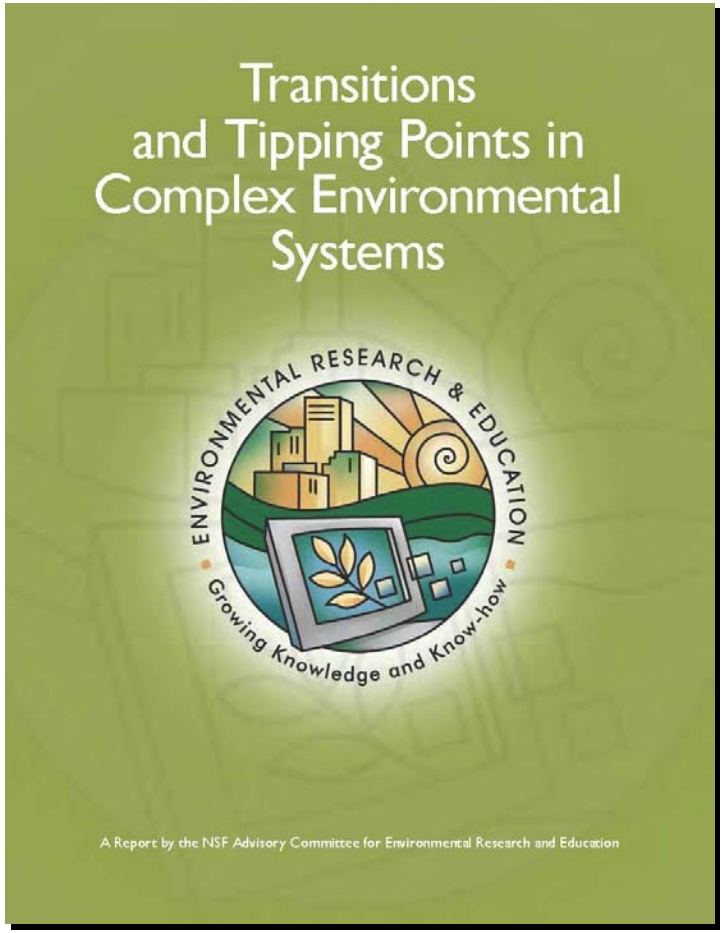
Overview of What's Next in the Geosciences?

GEO Vision



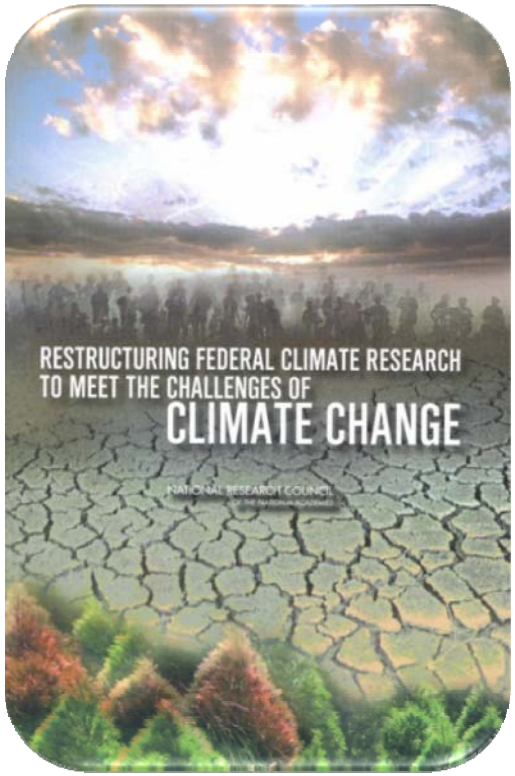
- GEO Advisory Committee (October 2009)
- Three main challenges to the for next decade
  - Understanding and forecasting the behavior of a complex and evolving Earth system
  - Reducing vulnerability and sustaining life
  - Growing the geosciences workforce of the future

Transitions and Tipping Points



- ERE Advisory Committee (September 2009)
- Environmental Complexity and the need to understand how social systems integrate with the rest of Earth's systems
- NSF should increase investments to:
  - Foster research that improves our ability to live sustainably on earth
  - Strengthen our understanding of the links between human behavior and natural processes

NRC Recommendations for Restructuring Federal Climate Research

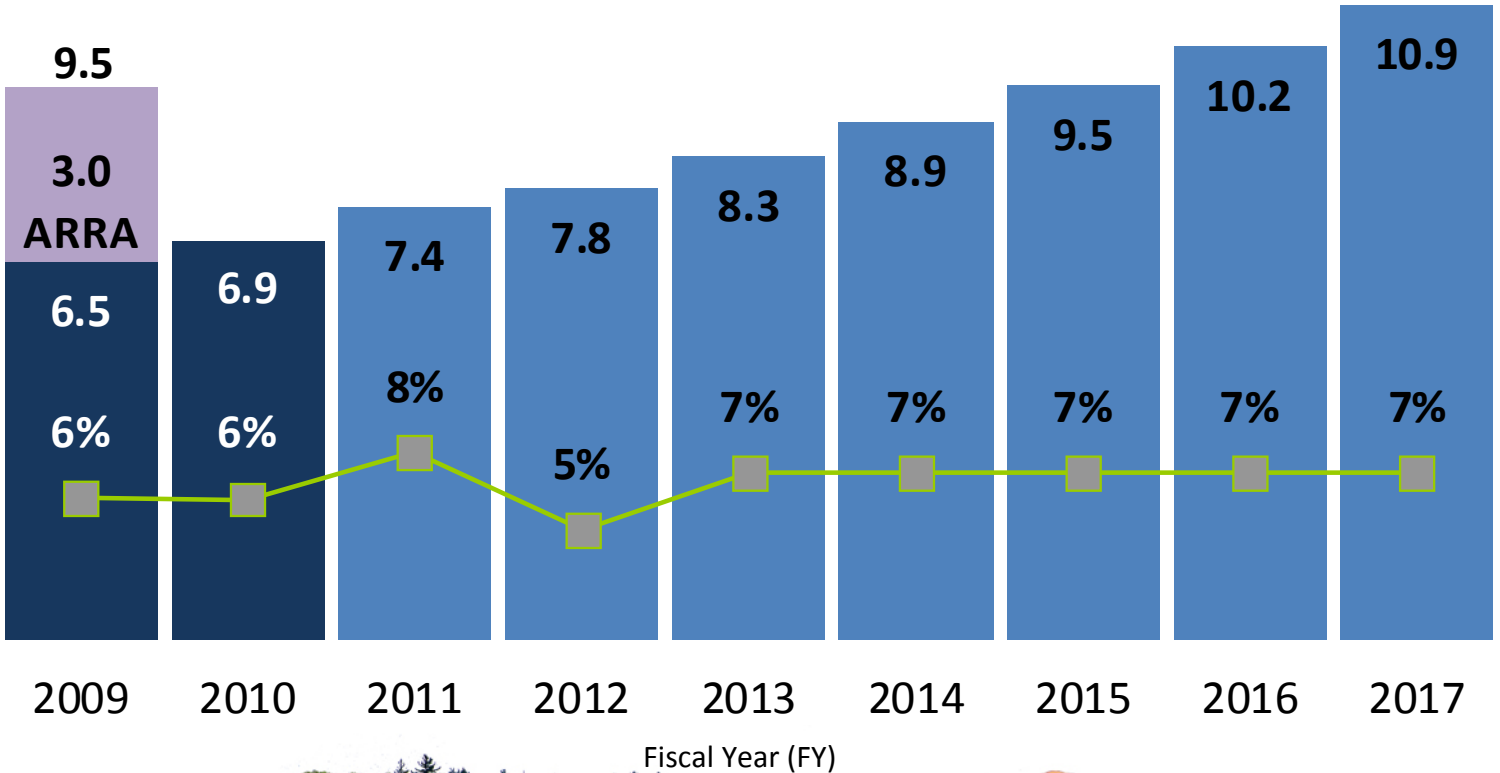


- Integrated scientific-societal issues
- Interactions among the climate, human, and environmental systems
- U.S. climate observing system including physical, biological, and social observations
- Coupled Earth system models
- Adaptation

President's Plan for Science and Innovation

Total NSF Funding:

FY 2006-FY 2020 (dollars in billions)



NSF Budget Estimate about $7B in FY 2010

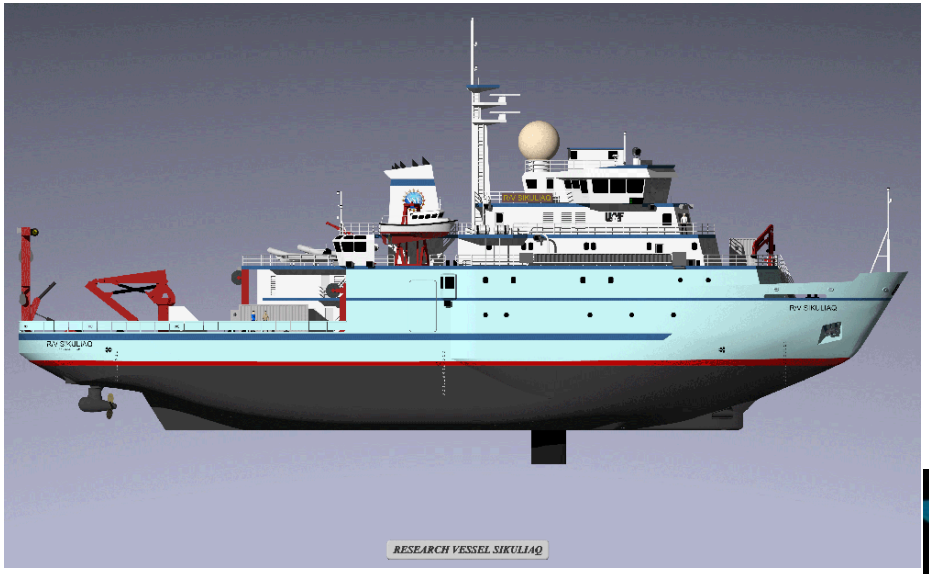
- Improve American Competitiveness through investments in science and technology to foster economic growth; improve the quality of life; and strengthen our national security.
- Support researchers at the beginning of their careers through NSF's Graduate Research Fellowship and Faculty Early Career Development programs.
- Educate science and engineering technicians through the Advanced Technological Education program, which focuses on two-year colleges
- Encourage promising high-risk research that could fundamentally alter our understanding of nature, revolutionize fields of science, and lead to radically new technologies.
- Make climate change research and education a priority. To predict future environmental conditions and to develop strategies for responding to global environmental change. Establish a climate change education program to help develop the next generation of environmentally engaged scientists and engineers.

NSF Celebrating 60 Years of Discovery

GEO: The Big Picture

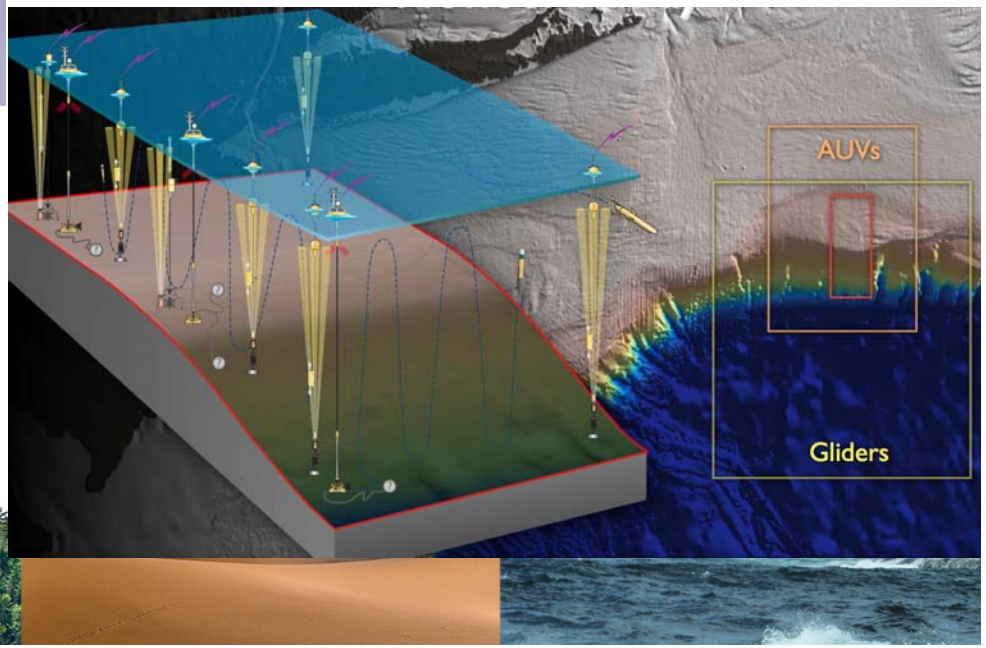
- American Recovery Act GEO investments: $601M
- FY2010: 10.2% increase over FY2009
  - Includes Agency-wide climate initiative
- FY2011: President's budget request includes a 7.4% increase for GEO

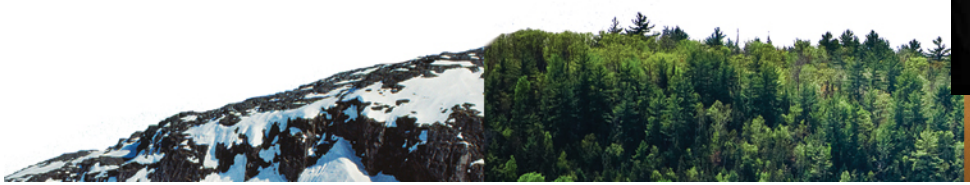
ARRA : GEO Infrastructure



R/V Sikuliaq: $148M

OOI: $106M





Climate Research: Special Emphasis Area in FY10 Budget

- $197M in funding in FY10 across NSF ($46M in GEO including $7M in EAR)
- 8 NSF Directorates involved in CRI
- $10M for New Climate Change Education in FY09/FY10 (in partnership with BIO, OPP and EHR)
- Increase NSF contribution to CCSP (to $299.91M)
- Solicitations to be issued in early 2010

FY2010 Climate Research Investment Solicitations ($197M across agency; $46M GEO)

- Decadal and Regional Earth System Modeling
- Water: Sustainability and Climate
- Ocean Acidification
- Dimensions of Biodiversity and Climate
- Climate Change Science Education

FY 2011 GEO Investments in Divisional Research and Education

- Atmospheric and Geospace Sciences: 8.1% increase
- Ocean Sciences: 8.3% increase
- Earth Sciences: 8.7% increase
- Education: 7.9% increase

2011 Research Themes

- Science, Engineering, and Education for Sustainability (SEES +$35M to $230M)
  - Follow-on to 2010 Climate Research activity
  - In 2011, GEO will support research to study regions that are highly susceptible to the impacts of environmental changes, such as:
    - coastal areas subject to sea-level rise
    - the Arctic, where warming temperatures and waning ice cover challenges communities and ecosystems

2011 Initiative: Dynamic Earth

- $28M over two yeas for new research program emphasizing change and complexity in earth system processes
- Goals:
  - inter-disciplinary & multi-scale understanding of dynamic systems
  - catalyze research in areas poised for a major advances
  - improve observing networks& modeling capabilities to realistically simulate complex earth systems and forecast disruptive events
  - improve understanding of the resilience and sustainability of earth systems following disruptive events.

2011 Education Themes

- Graduate Research Fellowships are increasing to $2.74 million from $1 million.
- ADVANCE is increasing to $4.28 million from $3.46 million (fostering women in science).
- GEOEd: About 100 proposals received
- Diversity: new strategic planning effort and Opportunities for Diversity in the Geosciences

Questions?