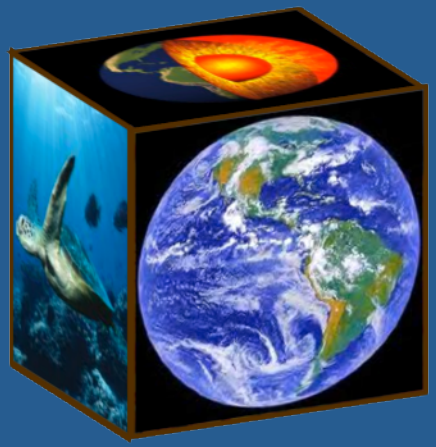
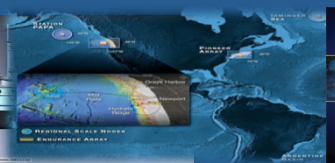
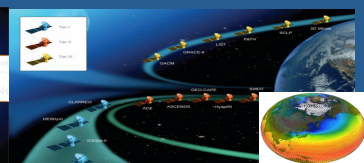
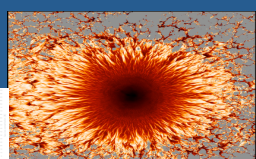


EARTHCUBE UPDATE

4/2/21/2013
Eva Zanzerkia, Barbara Ransom, Irene Lombardo, Leonard Pace
Lisa Boush, Bob Chadduck, Mark Suskin





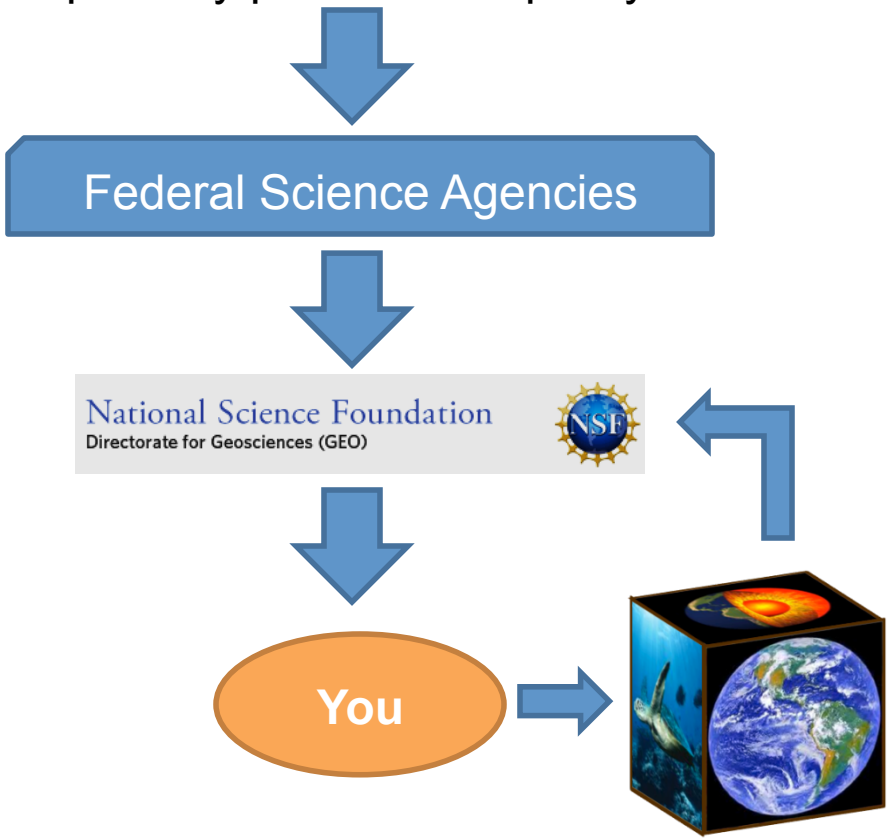



EarthCube Vision

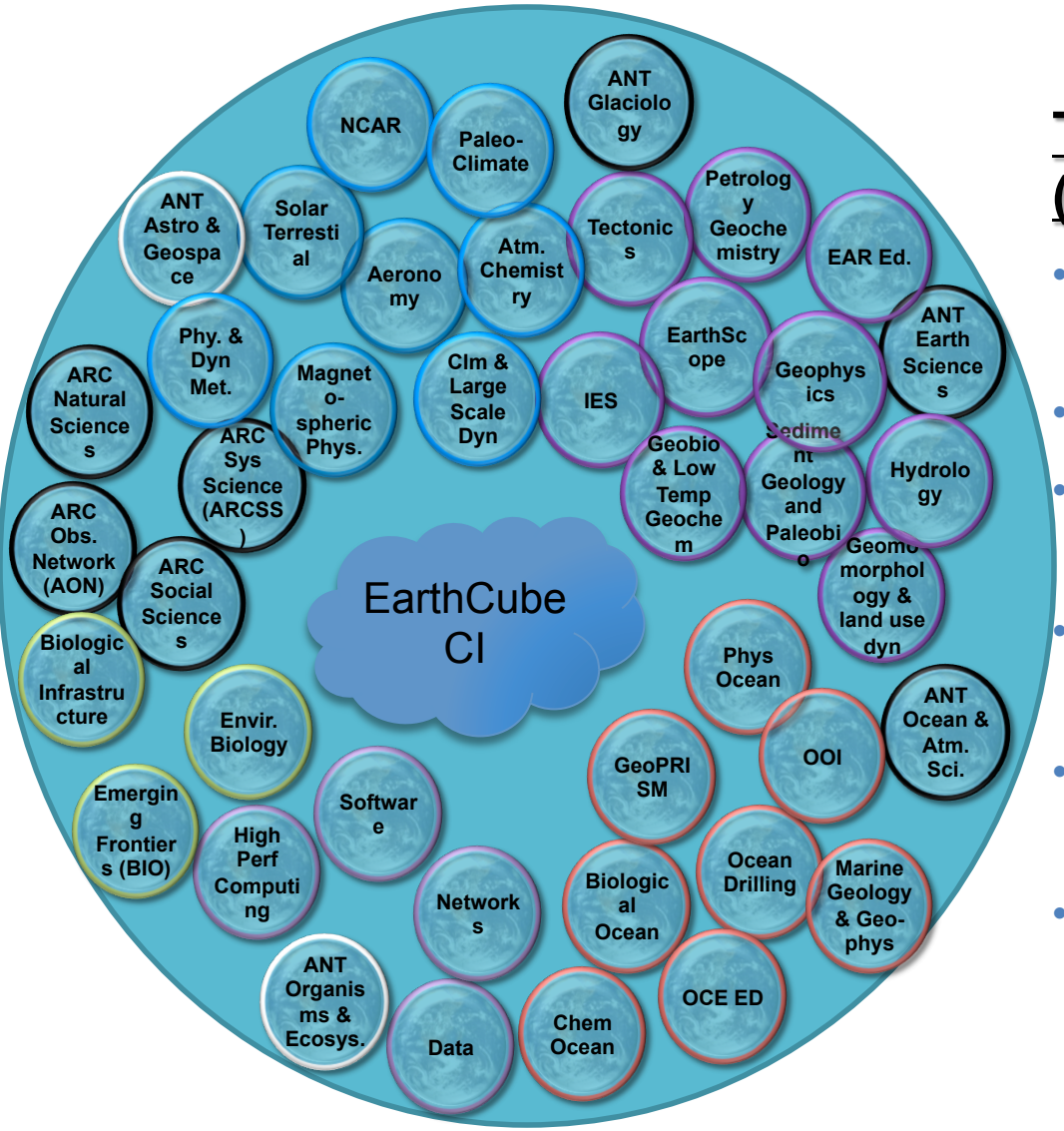
- **Transform the conduct of geosciences research with the next generation CI .**
- **Create effective community-driven cyberinfrastructure.**
- **Enable global data discovery within the geosciences**
- **Achieve interoperability and data integration across disciplines.**

Office of Science and Technology Policy

http://www.whitehouse.gov/administration/eop/ostp/library/publicaccesspolicy



Early Input on Motivations



Top Six Barriers to Sharing Data (survey):

- No time/Not enough time for QA/QC
- No repository or known repository
- Inadequate standards, standardized formats, etc.
- Want to publish first/not be scooped
- File size too large/server size too small
- No credit/incentive for sharing

Why is this all about Data?

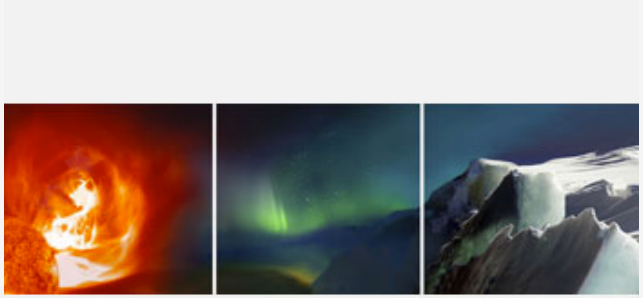
What About Modelers??

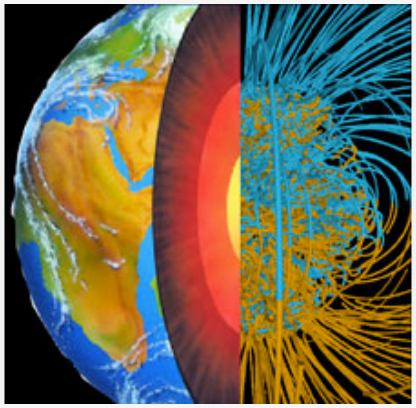
Modeling is critical to move from data access & discovery to scientific understanding

Modelers Already Value Data Sharing:

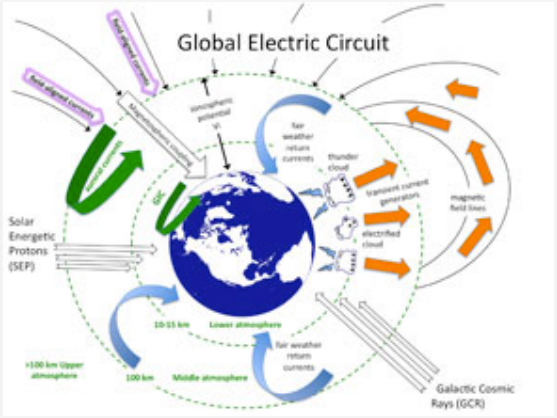
- Synthesize disparate datasets
- Deal with Big Data
- Calibration/Validation

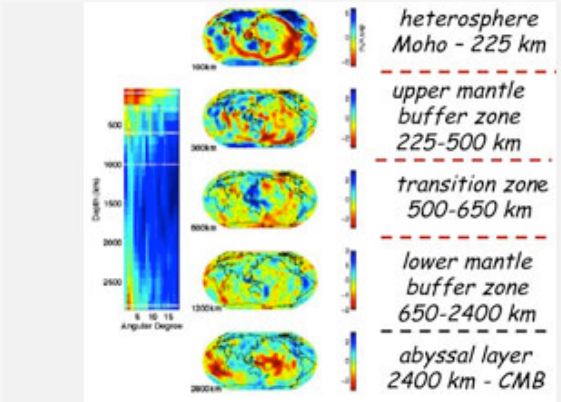
Frontiers in Earth Systems Dynamics

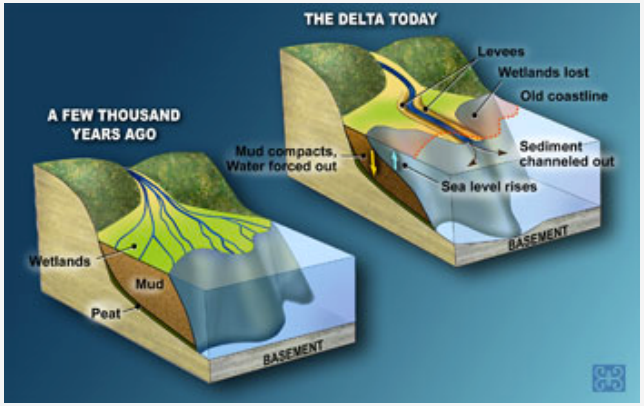




Data + Teams + Models







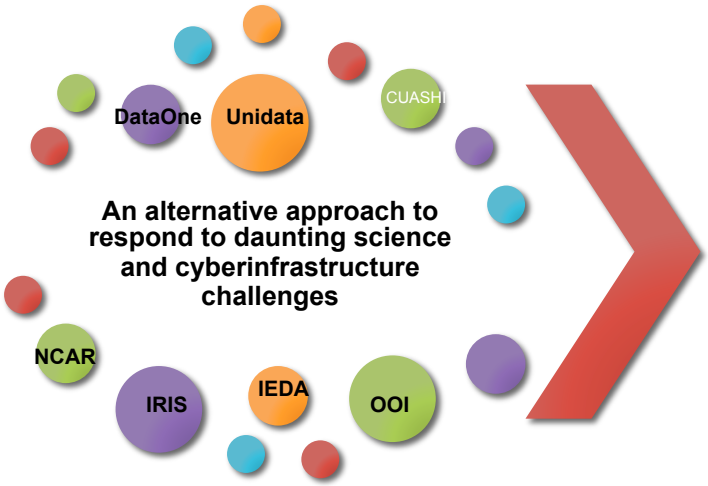
Motivations for Community Modeling

What are the barriers?

- Interdisciplinary teams?
- Access to resources?
- Visualization and analysis tools?
- Sharing codes?
- Community standards?

What are the solutions?

The EarthCube Strategy



EarthCube is an outcome and a process

EarthCube: next generation CI to transform the conduct of geosciences

The process must

- Engage all stakeholders: Geosciences end-users
  Geosciences and CI facilities
  CI and Computer Science specialists

- EarthCube built on existing resources, understanding that different geosciences communities are not uniformly served

- Build EarthCube iteratively, with community input and assessment in yearly intervals

FY13 Themes: Engage Stakeholders

Geoscientists

Geosciences Facilities

Industry

Computer Scientists

CI Experts Builders

Academic Researchers

Students

Geo-ed

Geosciences Cyberinfrastructure

CI Resources

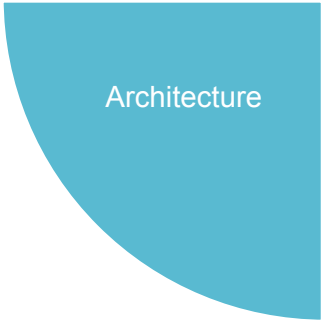
Data Providers

EarthCube Amendment II

- Deadline May 22

  - Building Blocks
    - CI Integration and development to better connects current resources
    - Domain and technical collaboration
    - Serving a **broader** community
    - Initial work on potential building blocks of EarthCube

  - Conceptual Designs
    - Initial planning stage for Architecture
    - Understand the landscape of existing resources
    - Consider innovative designs for an evolving system



Software Opportunities

- Software Infrastructure for Sustained Innovation
- http://www.nsf.gov/publications/pub_summ.jsp?WT.z_pims_id=503489&ods_key=nsf13511

- 3 classes for community software development
  - 1. **Scientific Software Elements (SSE)**
  - 2. **Scientific Software Integration (SSI)**
  - 3. **Scientific Software Innovation Institutes (S2I2)**

Blue Skying the EarthCube Future

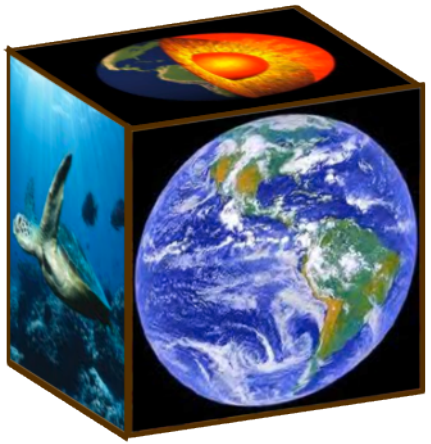
Tools you use now:

- laptops and WiFi - 22 yrs ago
- cell phones – 20 yrs ago
- GPS - 10 yrs ago
- smartphones- 5 yrs ago
- tablets – 2.5 yrs ago

Imagine:

- How have these tools transformed your life/science?
- How different will it be with the next advance?
- What discoveries would you do?

Questions and Comments?



earthcube@nsf.gov

Governance

Enterprise Governance

- Coordinate, organize and set priorities for a complex set of activities that will change over time
  - Build consensus; set priorities; foster collaboration
  - Geosciences Community Engagement
  - Coordinate discussion of architecture for EarthCube
  - Work with existing organizations and institutions within the Geosciences

- http://www.nsf.gov/geo/earthcube/docs/EarthCubeGovernanceFramework.pdf
- http://www.nsf.gov/geo/earthcube/docs/EarthCubeGovernanceRoadmap.pdf

Phased Approach

1. Planning

- Outreach
- Scope
- Governance Models
- Terms of Reference

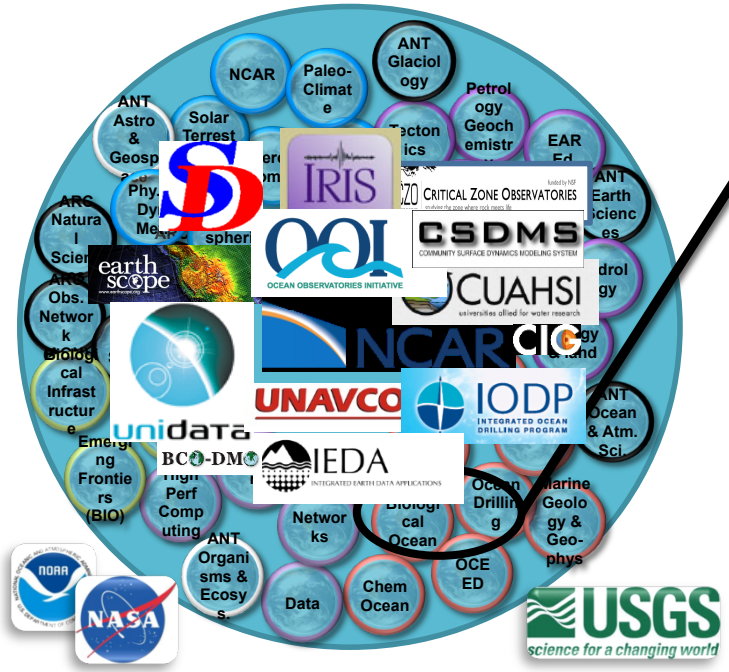
NSF Review

2. Demonstration

NSF Review + Peer Reviewed Competition

3. Enterprise Governance

Community Engagement



1. Domain WS

Science, challenges, resou
Through 2013
Contact your NSF PO
Connect to CI experts

Building Partnership

ning.earthcube.com
Executive Summaries
Common Needs/Goal

2. EarthCube RCN

Community Engagement

Research Coordination Networks

- Planning activity for geosciences communities
  - Shared resources
  - Representative plans for needed CI
  - Data/CI standards
- Multi-disciplinary is preferred
- Communication and Participation Required
- Not designed to build CI or groups planning to build CI

What the Geosciences Need

- Getting Science done now and in the future
  - Science drivers and aspirations
- Identifying and addressing barriers and challenges
  - Similar barriers with diverse solutions but no cross-communication
- Assessing the distribution of resources (data and CI) and access to them
  - EarthCube must address the needs of big, medium, and small science activities.
- Developing a systematic approach to the multifaceted and multivariate conduct of research within the geosciences
  - NSF can act as a facilitator