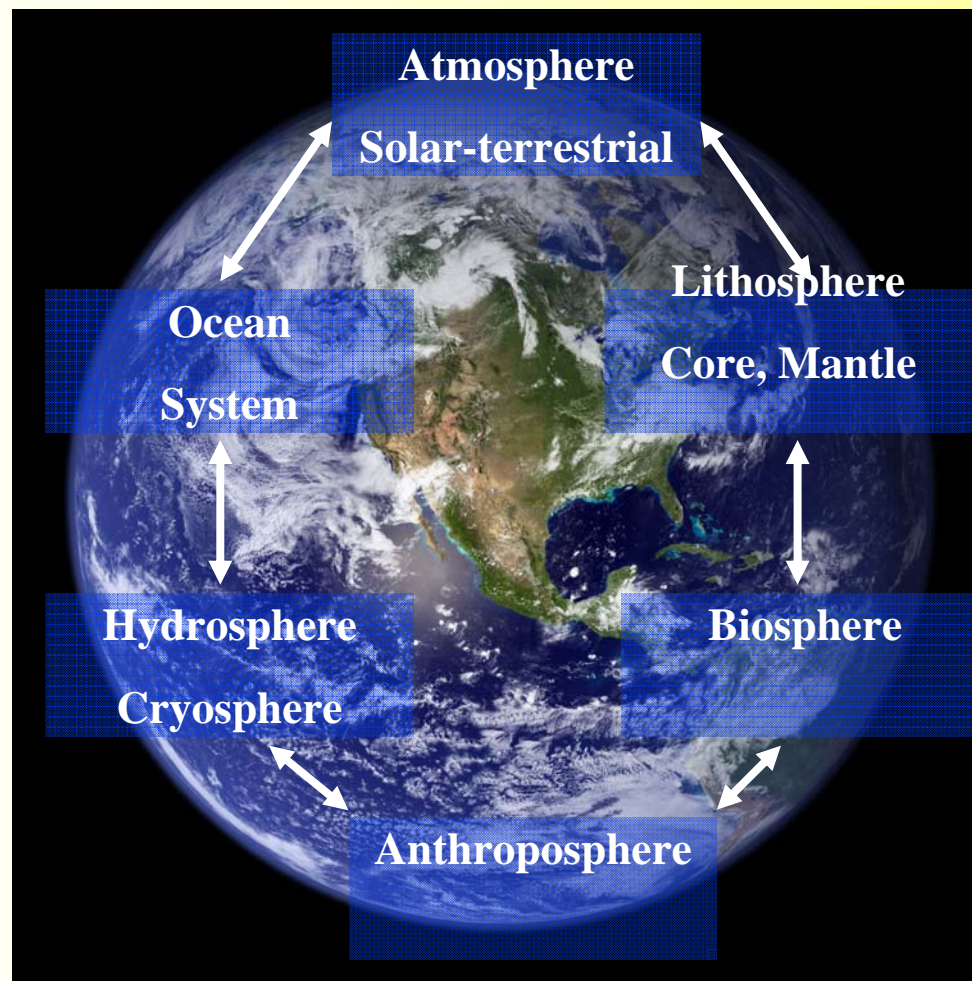


FESD: Frontiers in Earth System Dynamics



AGS: Farzad Kamalabadi, Brad Smull

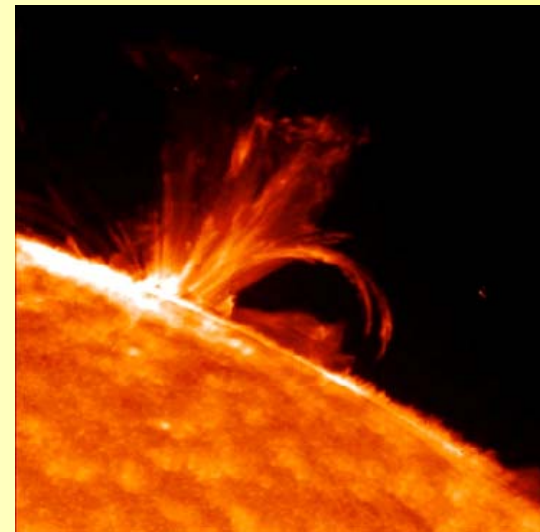
EAR: Robin Reichlin, Richard Yuretich

OCE: Simone Metz, Ian Ridley



The Opportunity

- Understanding Earth's dynamic systems has never been more important than it is today;
- Enormous strides have been made in understanding the dynamics of individual components of the Earth system;
- Modern experimental facilities and observing networks are providing unprecedented volumes of data;
- Advances in high performance computing are enabling the development of more realistic 3-D, time-dependent models of these systems.



Needs

- Many important scientific questions lie at the boundaries between traditional disciplines - mechanisms are needed to facilitate interdisciplinary research in these areas;
- Progress often requires teams of investigators for large, complex projects beyond the scope (in \$\$ and time) of those typically funded by GEO's core programs;
- Need to train the next generation of geoscientists in multidisciplinary and interdisciplinary approaches.





Goals for FESD

- **Foster an interdisciplinary and multi-scale understanding of Earth's dynamic systems;**
- **Catalyze research in areas poised for a major advance in understanding;**
- **Improve modeling capabilities to more realistically simulate complex dynamic Earth systems, couple across scales, and better forecast disruptive events;**
- **Improve understanding of the resilience of Earth systems.**



Program Characteristics

- **GEO-wide program involving AGS, EAR and OCE;**
- **Intra- or Inter- Divisional scope, but beyond purview of a single discipline**
- **Complements science funded through GEO's core programs;**
- **Provides support for 'mid-sized' activities that fall between core program and STC/MREFC scales**
- **Where appropriate, capitalizes on major facility investments NSF is already making;**
- **Promotes interdisciplinary study of interactive dynamics within the Earth system over a wide range of space and time scales;**
- **Program budget: Planning for \$28M per competition**
- **3 competitions FY11, FY13, FY15**



Program Elements

Two Types of Proposals will be solicited:

- **Type I- Frontier Research Projects: bring together interdisciplinary teams of researchers on a focused research question and provide sustained, higher levels of support than possible from a core program grant**
- **Type II- Collaborative Institutes or Synthesis Centers that promote interdisciplinary research and education at the community level, and facilitate integration and cross-validation of dynamic models with field and laboratory data**

Both Type I and Type II projects (total of 6-10 likely to be funded):

- **Award size: \$3-\$5M**
- **Duration up to 5 years**



Process for developing FREDs

- **Program Director Team- early March**
- **(Reichlin, Yuretich-EAR; Metz, Ridley-OCE; Smull, Kamalabadi-AGS)**
- **Input from PDs and management throughout GEO**
- **Drafting solicitation for release July 1, 2010**
- **Pre-proposals due October 1, 2010**
- **Panel review to select invited full proposals**
- **Full (invited) proposals due March 15, 2011**
- **Mail and Panel review of full proposals (~40-50)**



Criteria for Evaluating Proposals

Proposals MUST (explicitly):

- Involve high-risk, high-return research;**
- Require that this area of research be poised for a major advance in understanding (potentially transformative);**
- Require a multidisciplinary or interdisciplinary approach beyond the scope of a single core program;**
- Require coupling across temporal or spatial scales**
- Require a team approach with a higher level of sustained support not feasible through the core programs;**

General Requirements:

- An individual may serve as a PI on only one proposal**

