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A vision for, and progress towards EarthCube

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The National Science Foundation (NSF), a US government agency, seeks to transform the conduct of research in geosciences by supporting innovative approaches to community-created cyberinfrastructure that integrates knowledge management across the Geosciences. Within the NSF organization, the Geosciences Directorate (GEO) and the Office of Cyberinfrastructure (OCI) are partnering to address the multifaceted challenges of modern, data-intensive science and education. NSF encourages the community to envision and create an environment where low adoption thresholds and new capabilities act together to greatly increase the productivity and capability of researchers and educators working at the frontiers of Earth system science. This initiative is EarthCube.

NSF believes the geosciences community is well positioned to plan and prototype transformative approaches that use innovative technologies to integrate and make interoperable vast resources of heterogeneous data and knowledge within a knowledge management framework. This believe is founded on tsunami of technology development and application that has and continues to engulf science and investments geosciences has made in cyberinfrastructure (CI) to take advantage the technological developments. However, no master framework for geosciences was employed in the development of technology-enable capabilities required by various geosciences communities.

It is time to develop an open, adaptable and sustainable framework (an "EarthCube") to enable transformative research and education of Earth system. This will involve, but limited to fostering common data models and data-focused methodologies; developing next generation search and data tools; and advancing application software to integrate data from various sources to expand the frontiers of knowledge.

Also, NSF looks to the community to develop a robust and balanced paradigm to manage a collaborative effort and build community support. Such a paradigm must engage a diverse range of geosciences data collections and collectors, establish sustainable partnerships with other entities that collect data (e.g. other Federal and international agencies), the integrate simulations and observations, and foster symbiotic relationships with industry.

Two realize this vision, NSF posted open letters to the community, had several WebEx session, established a social network website to stimulate community dialog (EarthCube.ning.com), held a Charrette with broad community participation, and is accepting expression of interests from the community for the early development efforts of all or part the EarthCube framework.