



# The Electronic Geophysical Year, 2007 – 2008

## e-Science for Geoscience

The Electronic Geophysical<sup>1</sup> Year, 2007-2008 is about developing a 21<sup>st</sup> Century “e-Science” approach to making past, present, and future geoscientific data<sup>2</sup> openly and readily available. *eGY* sets out to provide a cooperative international environment to achieve this through the capabilities offered by modern digital communications and information management technologies. A key feature of *eGY* is to promote the development of *virtual observatories* to complement in cyberspace the contribution from physical observatories.



A coordinated international effort spanning all geoscience disciplines will help us maximize the value to society of e-Science developments and to share the benefits equally between all nations.

## A Sequel to IGY

*eGY* marks the 50-year anniversary of the highly successful International Geophysical Year, 1957-1958 (IGY). By inspiring and coordinating geoscientific programs worldwide and establishing a global network of observatories and World Data Centers, IGY provided open access by the world community to comprehensive information about the Earth. *eGY* sets out to accomplish in 21<sup>st</sup>-Century terms what the IGY achieved 50 years ago.



## The International Science Years

*eGY* operates cooperatively with the three other international science year initiatives:

- IPY - the International Polar Year (2007-2008): [www.ipy.org](http://www.ipy.org)
- IHY - the International Heliophysical Year (2007): <http://ihy2007.org/>
- Planet Earth (2007-2009): <http://www.yearofplanetearth.org/>



<sup>1</sup> The term *Geophysical* is used to harmonize with the “G” in IGY, but the term *Geoscientific* is more appropriate as *eGY* spans all of the Earth Sciences and more.

<sup>2</sup> The term “data” is used here in a generic sense to cover the data-information-knowledge continuum.

## New Opportunities and Challenges

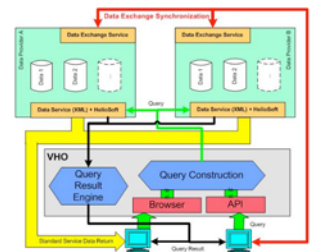
Two developments have brought us to the threshold of a new revolution in our understanding of the Earth and geospace. First, our ability to collect data has increased dramatically, with pervasive networks of observational stations on the ground, in the oceans, in the atmosphere, and in space. Second, modern digital communications and information management methodologies provide us with an unprecedented ability to access and share information and processing capability.

These developments coincide with a heightened awareness by governments of the need for sustainable management of the natural resources of our planet, the importance of understanding the Earth and its space environment as a complex system, and the central role that information and knowledge plays. This translates into a growing readiness to support e-Science and grid computing infrastructures.

## Objectives and Themes

The purpose of *eGY* is to provide a coordination framework to facilitate, inform, stimulate, encourage, and promote the following.

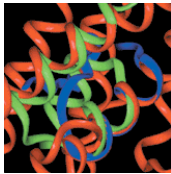
- Ready and open electronic access to geoscience data, information, and services; establishment of virtual observatories
- Data discovery: finding out who holds, what, where, and how; promotion of metadata usage and standards
- Data release: securing access permission; encouraging active rather than passive release of data
- Data preservation and archival: making old data accessible; preservation of existing data
- Data rescue: identification of critical data sets at risk; conversion of old data into modern digital form
- Data integration and knowledge discovery: support for information integration; development of information systems that enable the identification and understanding of relationships
- Capacity building: developing opportunities for growth of science and reduction of the ‘digital divide’
- Education and public outreach: raising awareness and informing students, scientists, decision-makers, and the public
- Cooperation among bodies and programs to reduce duplication and encourage common methodologies.



Design for the Virtual Heliophysical Observatory

## Drivers

- The universal benefits of open access to data, information, and services
- Growth of data volumes, with higher space-time resolution
- Demand for real-time response and warning systems
- Need for a multi-disciplinary/ multi-institutional approach to understanding the complex Earth-space system
- Data assimilation and integration requirements for modeling and knowledge development
- Availability of interoperability solutions
- The benefits and economy of cooperation and sharing across the many different programs and initiatives with similar data stewardship requirements
- The need to communicate with non-specialist audiences
- Concerns about the growth of the ‘digital divide’



- International science associations and organizations:
- National Academies of Science
- National science agencies: NSF, NASA, BGS, USGS, et al.
- Geoscience Societies: AGU, AOGS, EGU, SEG, et al.
- e-Science, digital information networks, and virtual observatory programs
- Global observing system bodies and initiatives, e.g., IGOSS, GEO/GEOSS, IRIS, et al.
- Industry and the private sector

## Structure

*International Coordination Office* – the secretariat that conducts eGY business, with a resident Executive Director (Dan Baker), Secretary (Bill Peterson), Communications Manager (Marissa Rusinek), and a Media and Outreach Manager (Emily CoBabe-Ammann). The ICO is hosted by the Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder, USA.

*International Committee* – a steering committee drawn from main participants, stakeholders, and national/regional representatives, chaired by Charles Barton.

*Regional/National/Program/Agency committees or representatives* - to liaise, stimulate, and interact with national/regional initiatives in each particular constituency.

*Working Groups* (Chairs)

- Best Practices and Standards (Eric Kihn)
- Data Integration and Knowledge Discovery (Paul Berkman)
- Data Rescue and Preservation (Jeff Love)
- Education and Public Outreach (Emily CoBabe-Ammann)
- Virtual Observatories (Peter Fox).

## Get Involved

The website ([www.egy.org](http://www.egy.org)) and the electronic newsletter, eGY News, provide information and news about eGY developments, activities, opportunities, meetings, and so on. A list of suggested activities for eGY participants can be found on the website. News items on any issues related to eGY themes are welcome. The editor and website custodian is Marissa Rusinek ([Marissa.Rusinek@lasp.colorado.edu](mailto:Marissa.Rusinek@lasp.colorado.edu)).

You may subscribe to the eGY email list server by signing on as a Team member (for people helping to organize eGY), a Participant (for those interested in undertaking eGY activities), or as an Observer. Refer to the eGY website for details about how to subscribe.

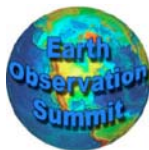
**Visit:** <http://www.egy.org>

**Contact:** [Bill.Peterson@lasp.colorado.edu](mailto:Bill.Peterson@lasp.colorado.edu)



## Declaration for a Geoscience Information Commons

“Knowledge is the common wealth of humanity”<sup>3</sup>



The Electronic Geophysical Year joins with the International Council for Science, the World Summit on the Information Society, the Earth Observation Summits, and many other bodies in recognizing that knowledge is the common wealth of humanity. We have a shared responsibility to create and implement strategies to realize the full potential of digital information for present and future generations. In the 21st century and beyond, access to digital information and new technologies for information integration and knowledge discovery will influence the free and productive development of societies around the world. Providing ready and open access to the vast and growing collections of cross-disciplinary digital information is the key to understanding and responding to complex Earth phenomena that influence human survival. In the geosciences, as elsewhere, the issues of concern are set out in the eight articles of the ‘Declaration for a Geoscience Information Commons’ – see [www.egy.org](http://www.egy.org).



## Participants

Participants in eGY and signatories of the Declaration for a Geoscience Information Commons are drawn from and extended to:

- ICSU and its bodies – CODATA, WDC Panel and others
- The World Data Centers and ICSU’s WDC Panel
- The GeoUnions - a consortium comprising:
  - IUGG—International Union of Geodesy and Geophysics
  - IUGS—International Union of Geological Sciences
  - IUSS—International Union of Social Sciences
  - IGU—International Geographical Union
  - ISPRS—International Society. for Photogrammetry & Remote Sensing

<sup>3</sup> Adama Samassekou, President of the Preparatory Committee for Phase I of the UN World Summit on the Information Society.