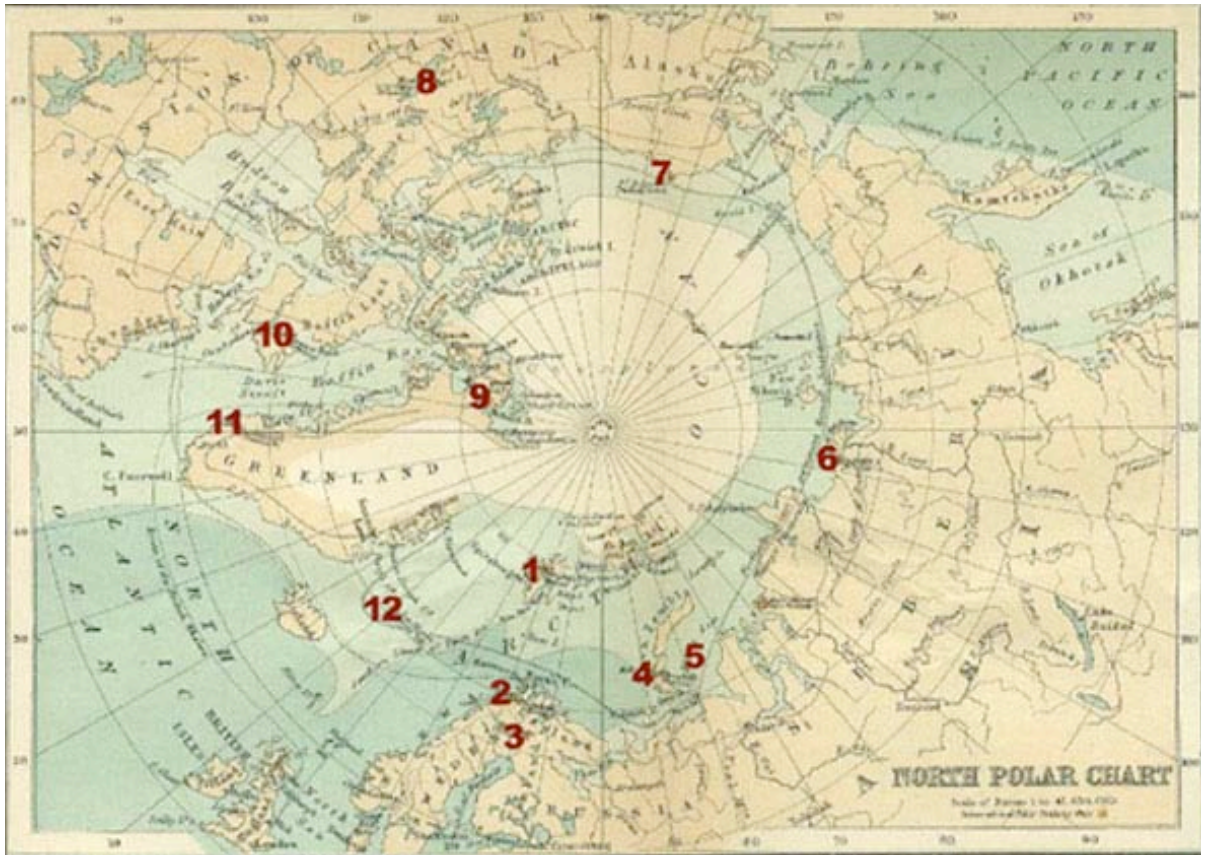
*e*GY

The Electronic Geophysical Year

W.K. Peterson, C.E. Barton, D.N. Baker
and the eGY Team

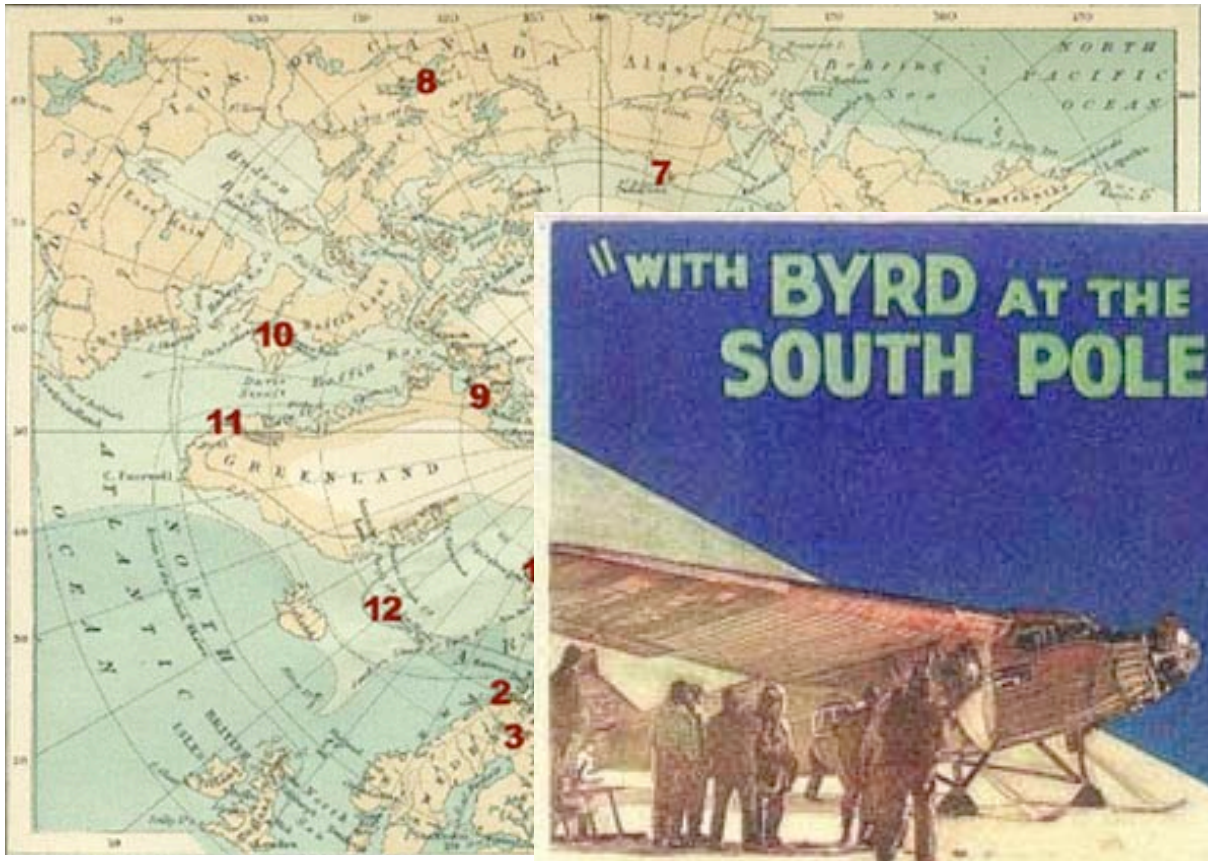
www.egy.org

*e*GY: A Strong Heritage



The First International Polar Year (1881-1884)

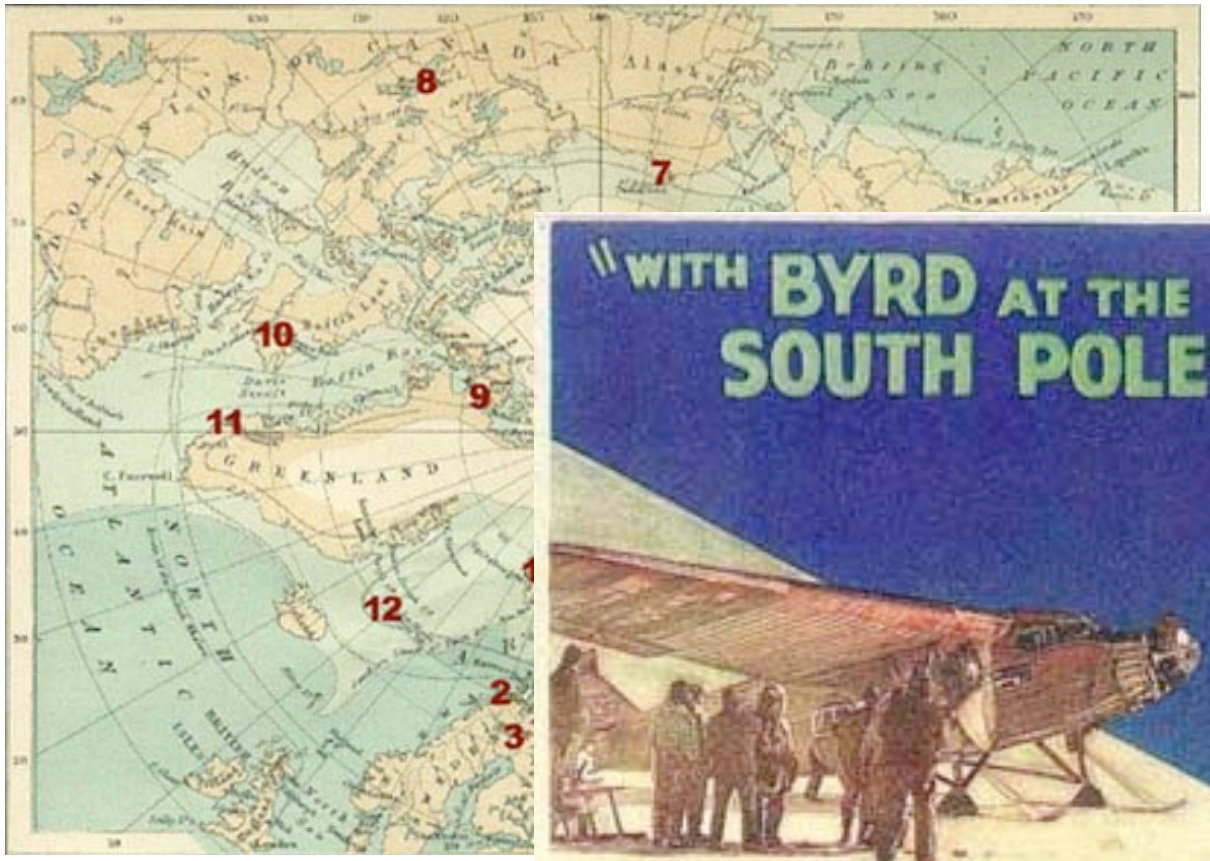
*e*GY: A Strong Heritage



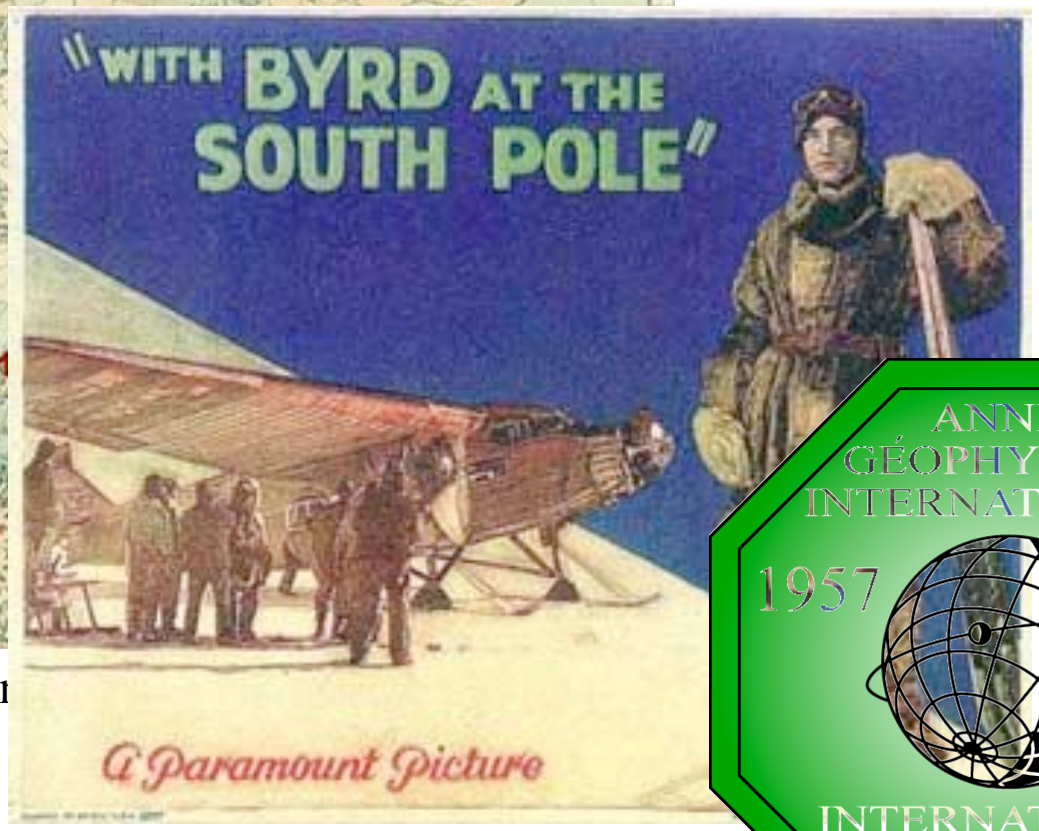
The First Internatio

The Second International Polar Year (1932-1933)

*e*GY: A Strong Heritage



The First Internatio

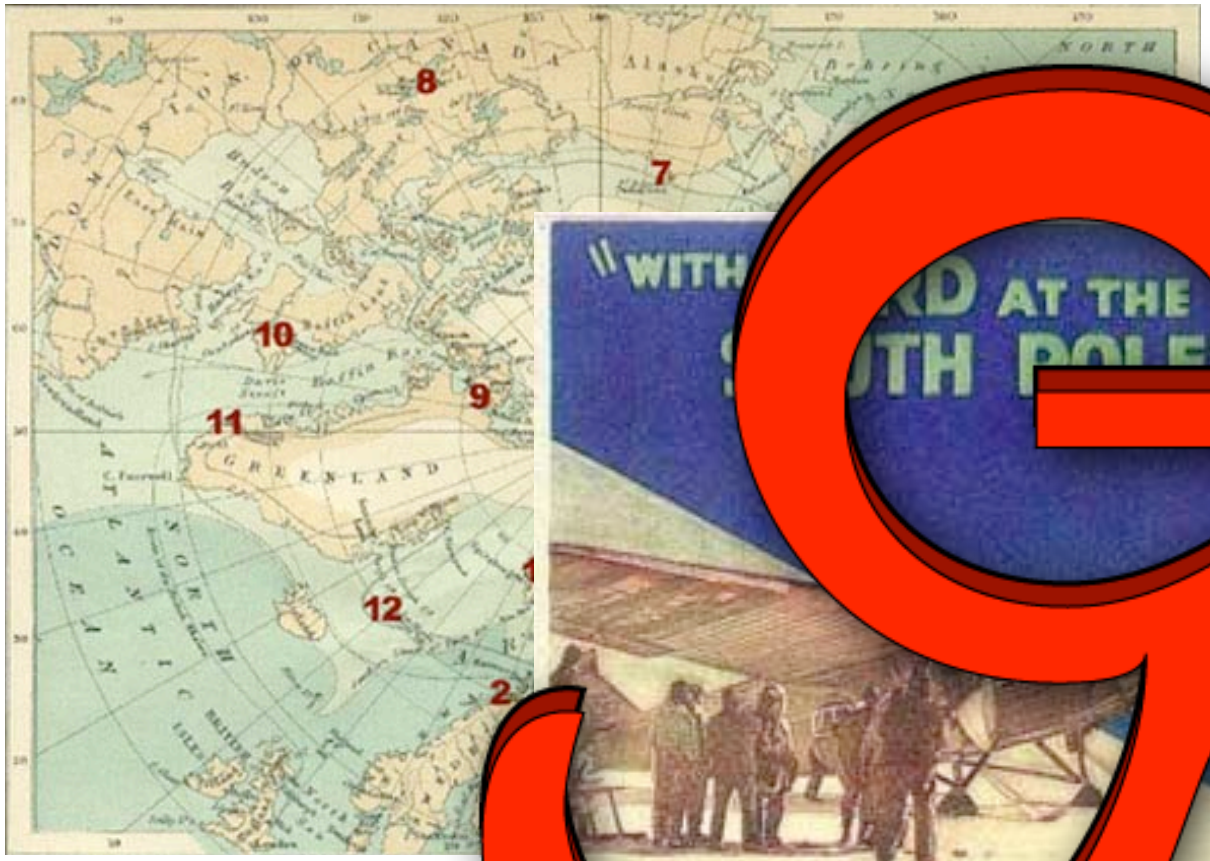


The Second International Polar Year (

ANNÉE GÉOPHYSIQUE INTERNATIONALE
1957
1958
INTERNATIONAL GEOPHYSICAL YEAR

(Third International Polar Year)

*e*GY: A Strong Heritage



The First Internat

Th al Polar Year (1

ANNÉE GÉOPHYSIQUE INTERNATIONALE
1957
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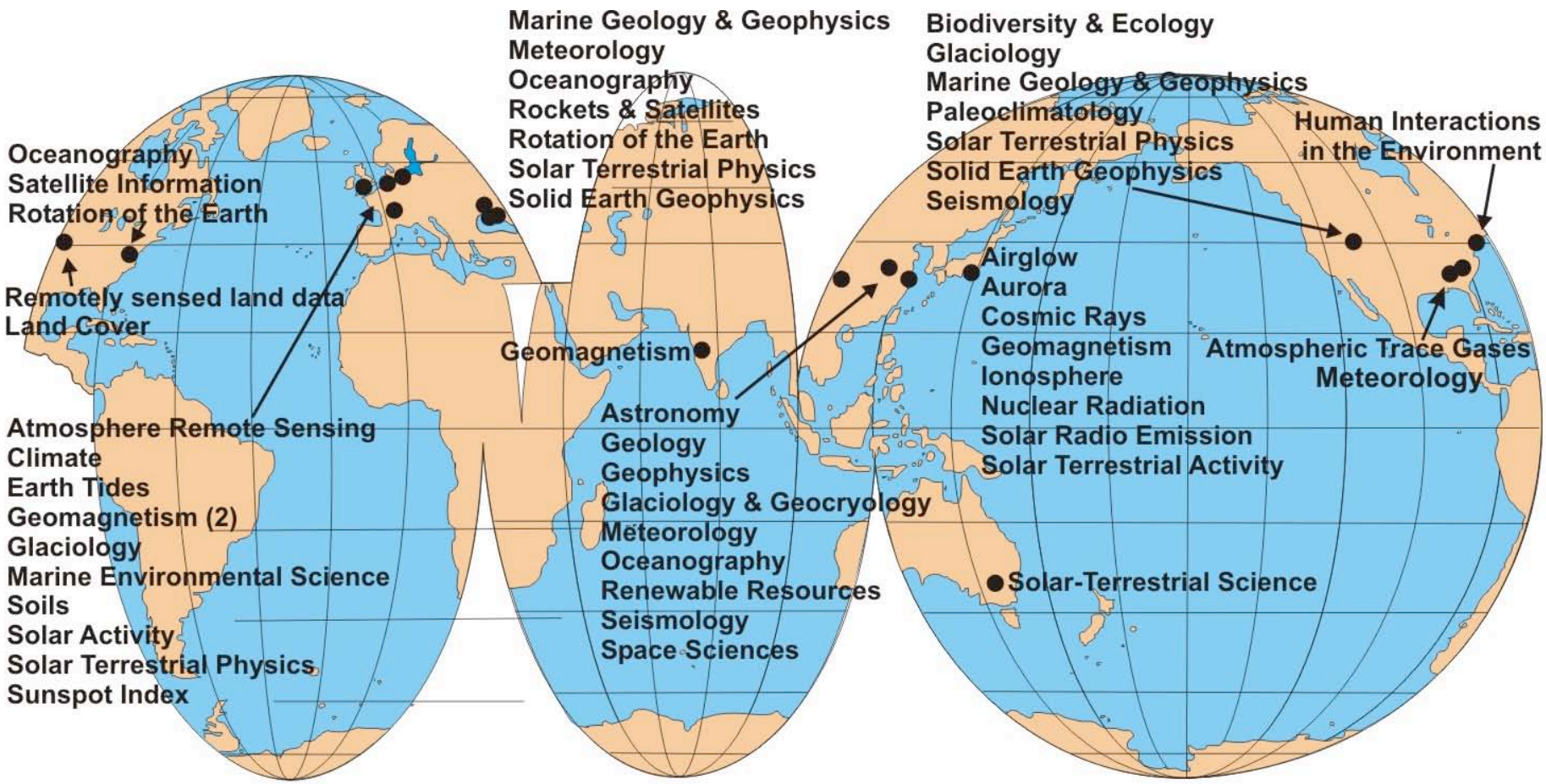
INTERNATIONAL GEOPHYSICAL YEAR

(Third International Polar Year)

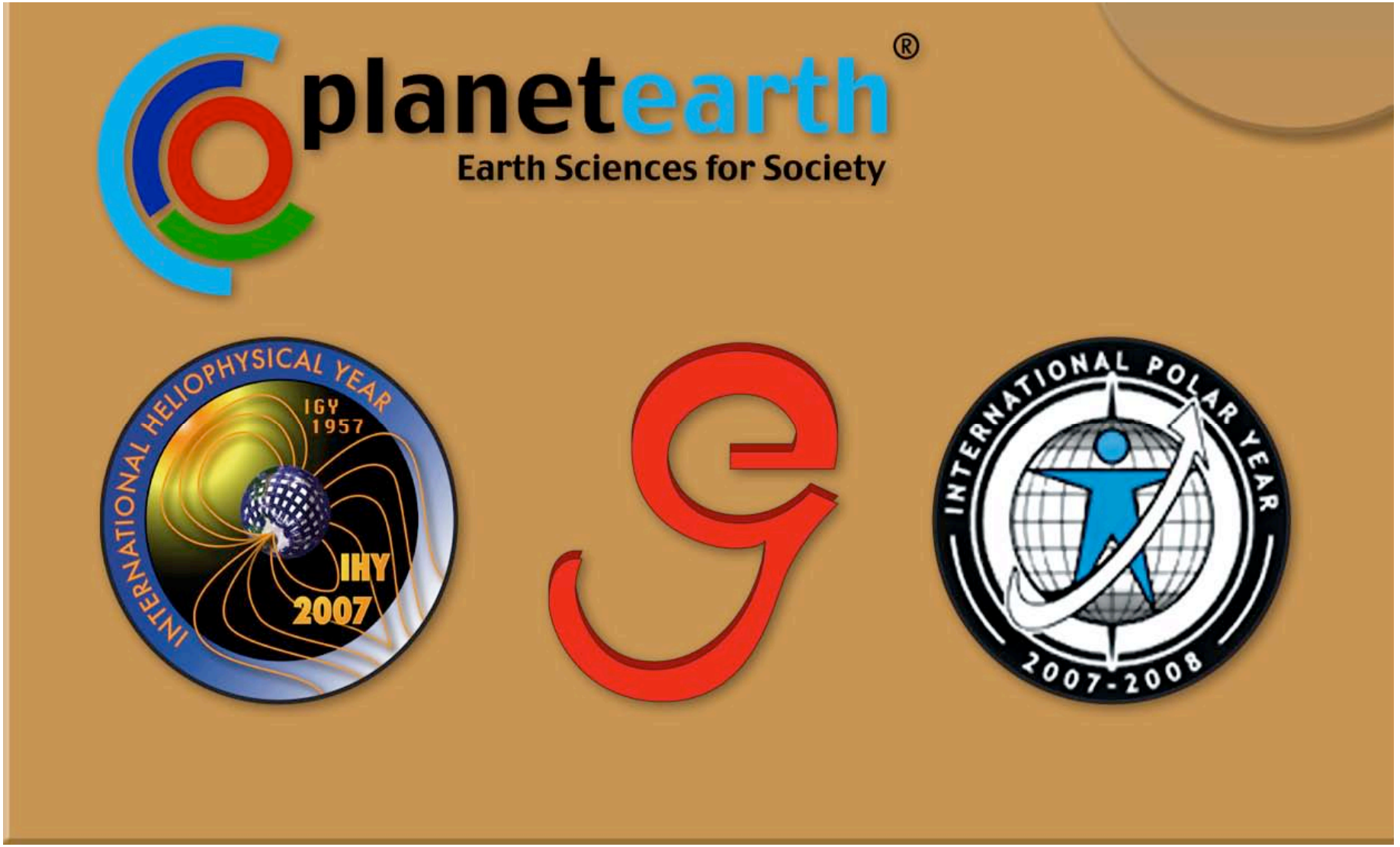
The Legacy of IGY



World Data Centers

February 2004

Science years 2007-2009

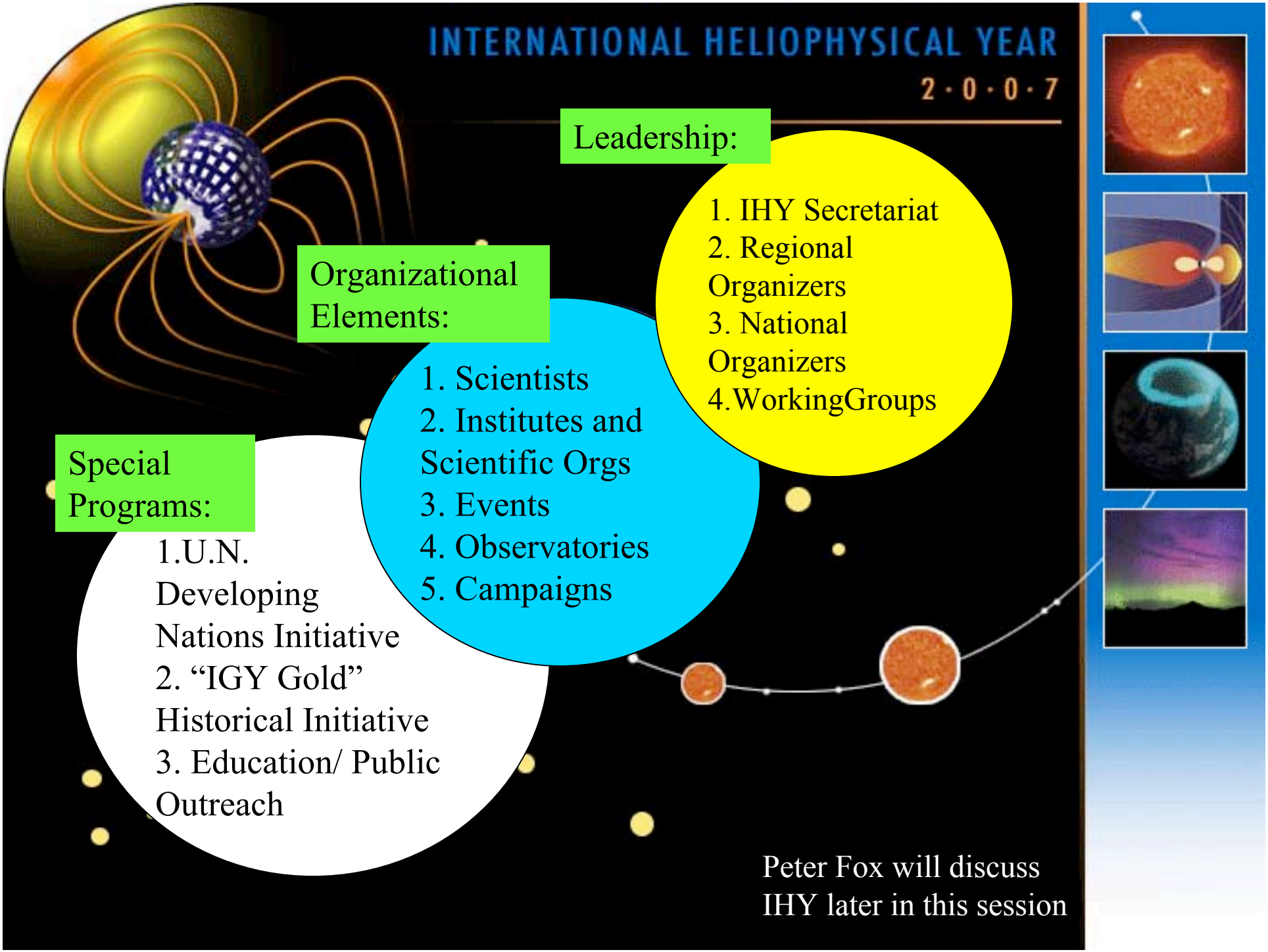


IPY 2007-2008

ICSU and WMO are co-sponsoring:

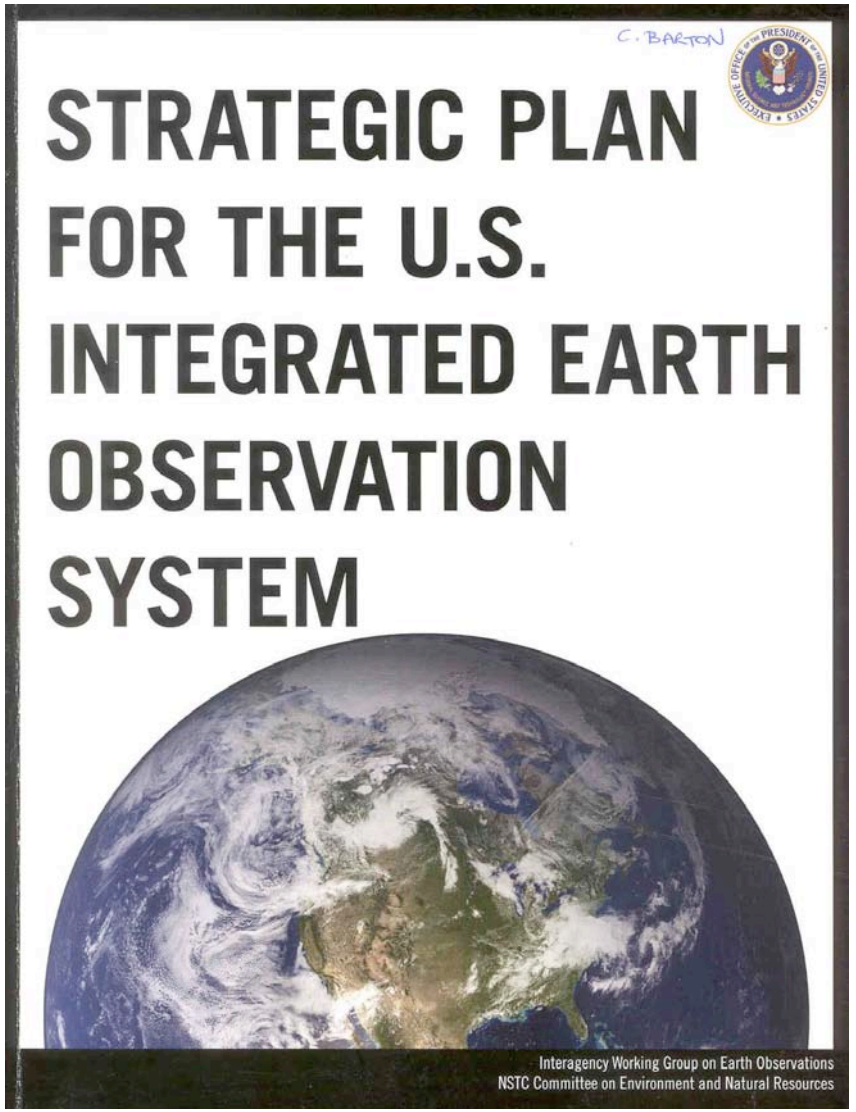
An intensive burst of internationally coordinated, interdisciplinary, scientific research and observations focused on the Earth's Polar regions starting in 2007

Sessions H1 and J1, Wednesday AM
International Polar Year Activities


INTERNATIONAL HELIOPHYSICAL YEAR
2·0·0·7
Leadership:
1. IHY Secretariat
2. Regional Organizers
3. National Organizers
4.WorkingGroups
Organizational Elements:
1. Scientists
2. Institutes and Scientific Orgs
3. Events
4. Observatories
5. Campaigns
Special Programs:
1.U.N. Developing Nations Initiative
2. "IGY Gold" Historical Initiative
3. Education/ Public Outreach
Peter Fox will discuss IHY later in this session

Earth Observing Systems

GEO - Group on Earth Observations
GEOSS - Global Earth Observation System of Systems
GEM – Global Environment Modelling project
GMES – Global Monitoring for Environment and Security
IWGEO – Interagency Working Group on Earth Observation
IGOS – International Global Observing Strategy
IGOS-P - International Global Observing Systems Partners
IGOSS – International Global Observing System of Systems
IGGOS – Integrated Global Geodetic Observing System
GOS - Global Observing Systems
GCOS - Global Climate Observing System
GOOS - Global Ocean Observing System
GTOS - Global Terrestrial Observing System
GOSIC - The Global Observing Systems Information Center
GOS/GAW - Global Observing System/ Global Atmosphere Watch (WMO)
ESONET – European Sea Floor Observatory Network
EOSDIS – Earth Observing System Data and Information System



Effectively Infinite Information

Magnetic (PC and Tape) Media

1,066,000 terabytes/year

Print Media

240 terabytes/year

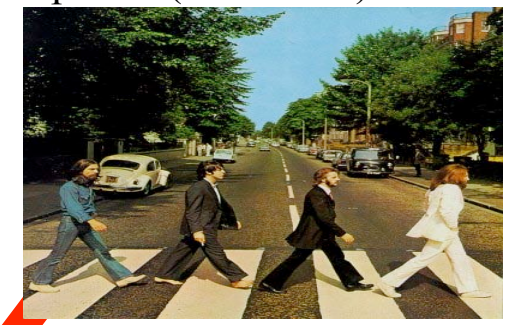
Film Media

427,000 terabytes/year

Magnetic (Server) Media

627,000 terabytes/year

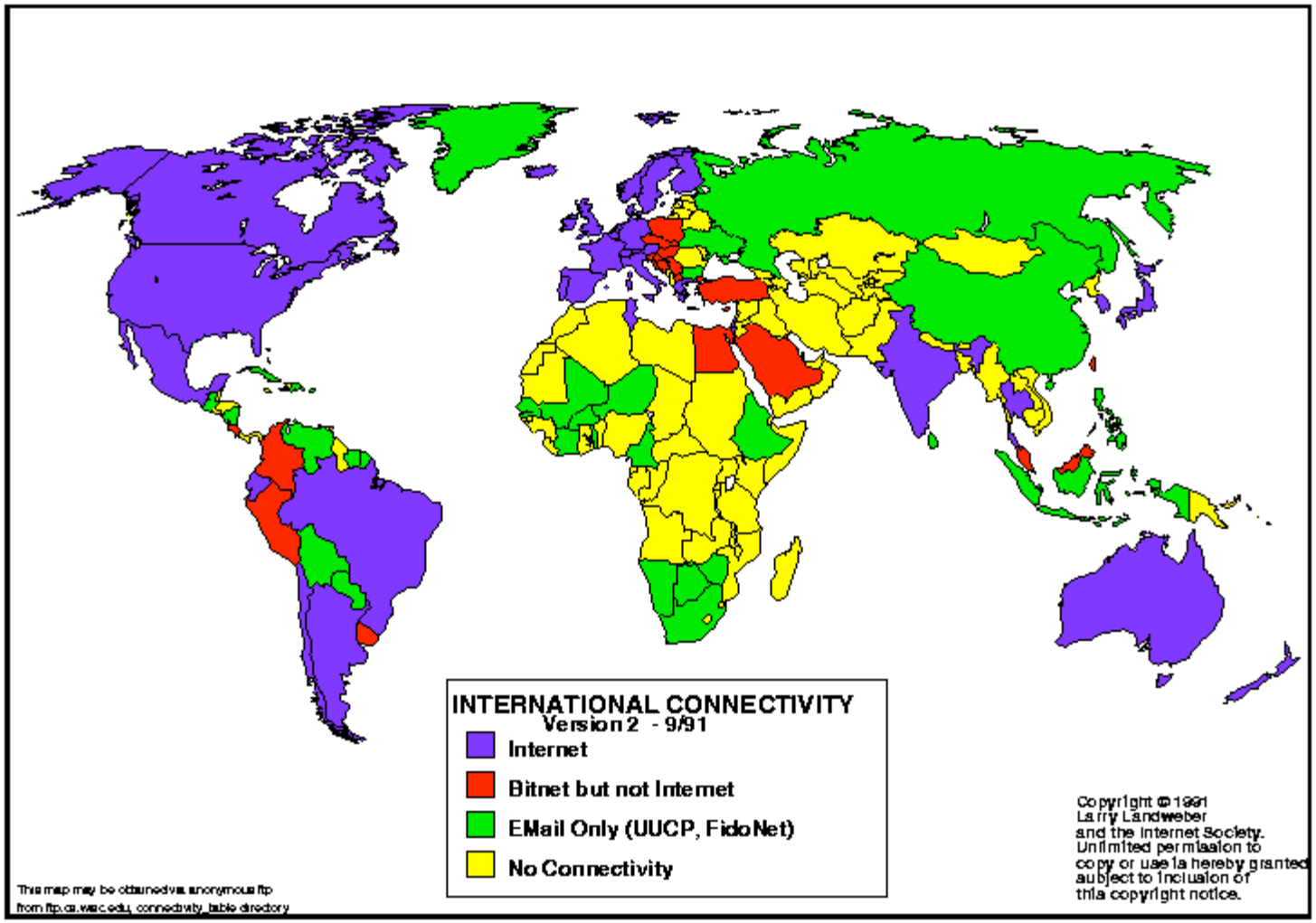
Optical (CD–DVD) Media



83 terabytes/year

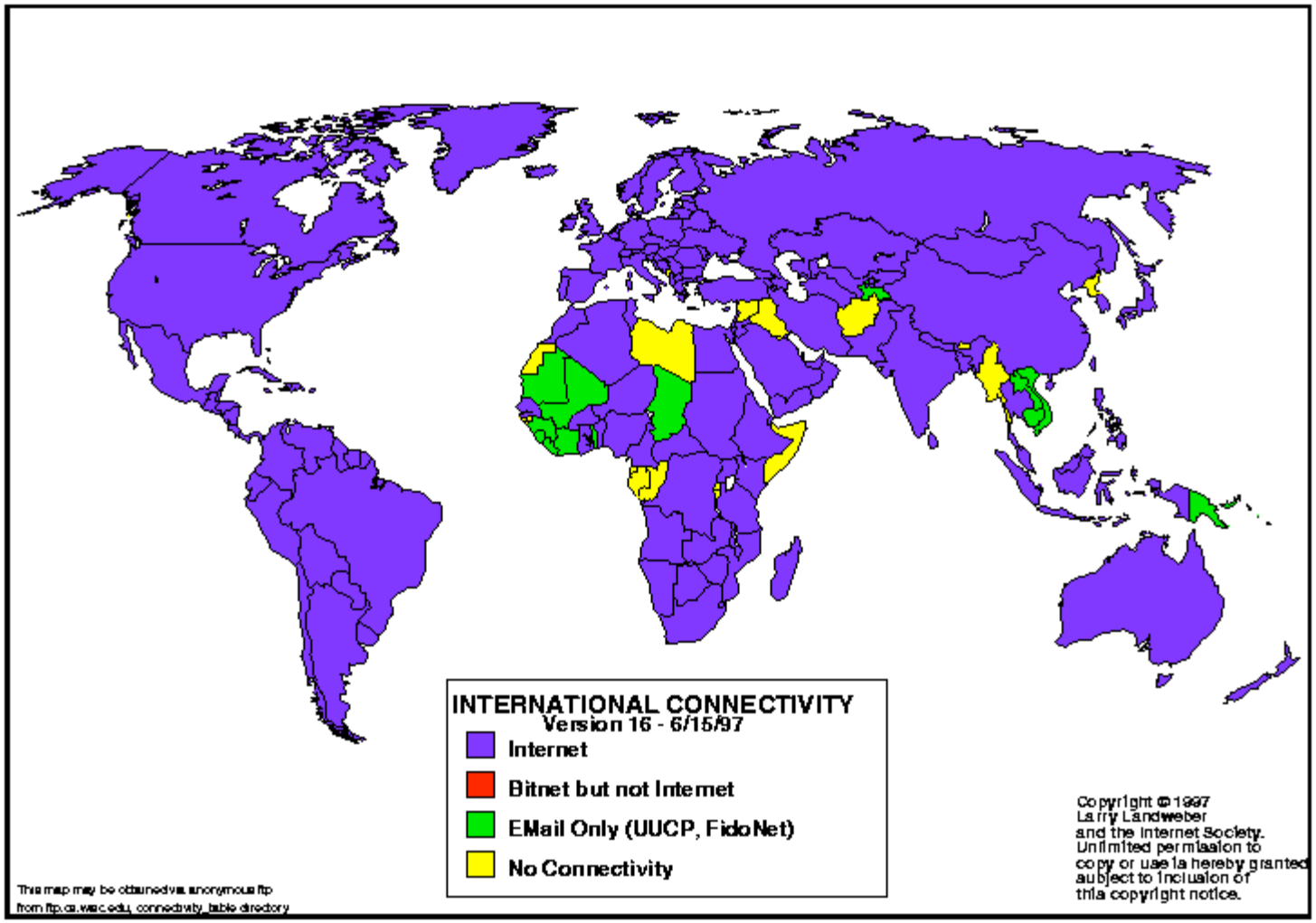
More than 20,000 petabytes of digital information are stored in various media in our world every year – and the rate is growing exponentially

Growth of Internet Connectivity



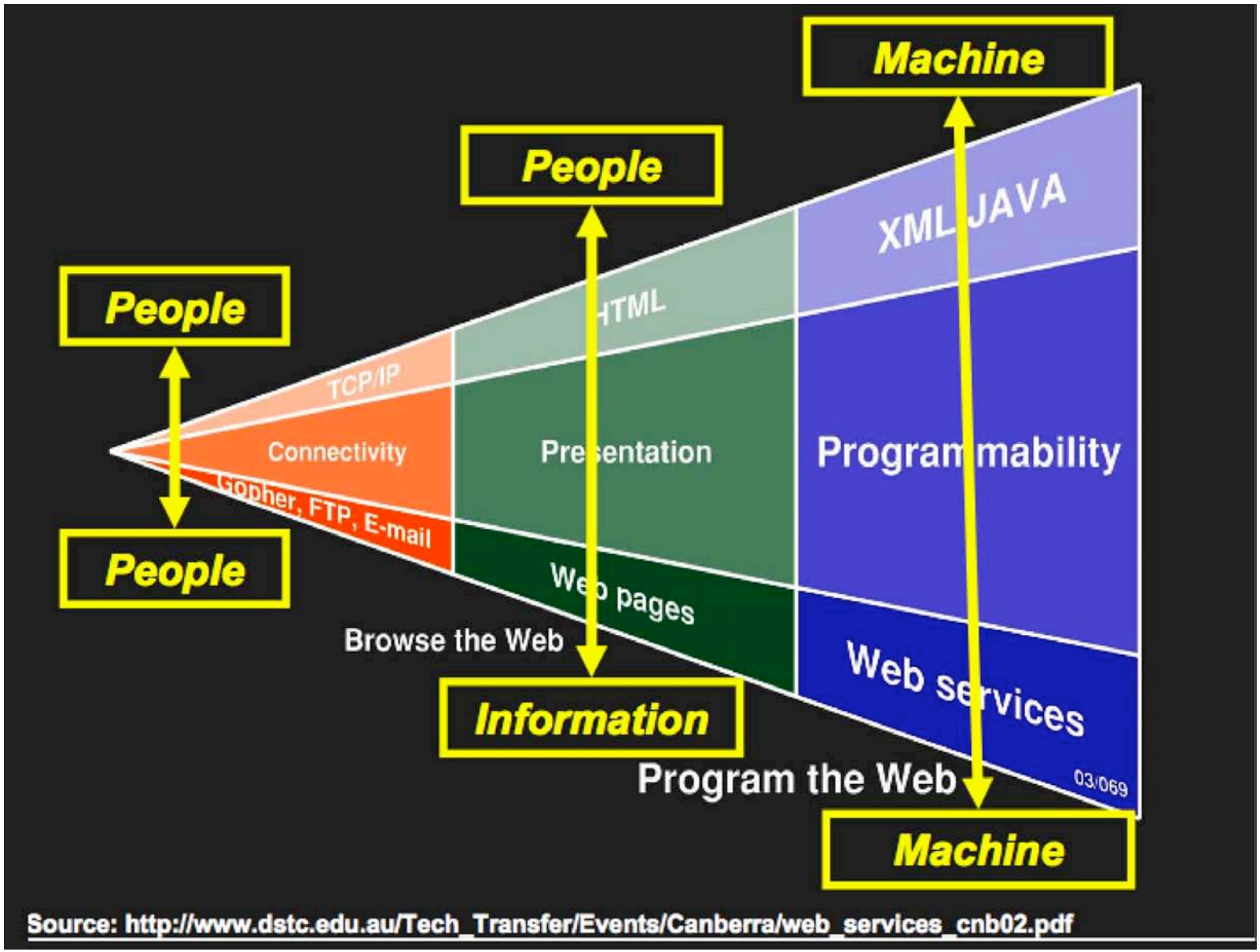
1991

Growth of Internet Connectivity



1997

Evolution of a Machine Readable Web



OUR GOAL: Transform Information into Wisdom

There is an incredible amount of data being collected and information being generated.

What will we do with it?

"Before you become too entranced with gorgeous gadgets and mesmerizing video displays,let me remind you that information is not knowledge, knowledge is not wisdom, and wisdom is not foresight. Each grows out of the other, and we need them all. "

Arthur C. Clarke

21st Century Science Drivers

- Complex System science
- Higher resolution – space and time
- Rapid response
- Data assimilation into models

Challenges: distributed data, cross-disciplinary data, large and complex data sets, open data access and sharing, data discovery, data preservation, data rescue, .. interoperability …

"What few things must be the same so everything else can be different."

Eliot Christian

"Knowledge is the common wealth of humanity."

Adama Samassekou, Convener of the United Nations World Summit on the Information Society

The Information Commons

"The Tragedy of the Commons"
Garrett Hardin (*Science*, 1968)

*e*GY Declaration

"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. In the geosciences, as elsewhere, 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 system phenomena that influence human survival.

Article 1: Data access

Article 2: Data release

Article 3: Data description

Article 4: Data persistence

Article 5: Data rescue

Article 6: Common standards and cooperation

Article 7: Capability building

Article 8: Education and public outreach

*e*GY Principles

Exploit evolving e-Science opportunities

- International cooperation and sharing
- Global, cross-disciplinary scope
- Free, universal, open access to data
- Timely and convenient access to data
- Data preservation
- Capacity building, especially in developing. countries
- Education and public outreach
- Data integration and knowledge discovery

Role

Provide an international, cooperative cross disciplinary, environment to

- facilitate
- inform
- stimulate
- encourage
- promote

Working Groups

- Virtual Observatory Working Group
  - Facilitating interoperability
  - Closely linked to the AGU focus group on informatics
- Best Practices for Data Management
  - What are the attributes of successful systems (including people)
  - Focus on access and usability
  - Initial effort sponsored by CODATA
- Data Integration and Knowledge Discovery
  - Truly interdisciplinary understanding of data and information
- Education and Outreach
  - Connecting teachers to virtual observatories

eGY Symposium Sessions

Next Big Things in Managing Data and Information:

50 Years after the International Geophysical Year

Tuesday: 14:30 - 16:00

- F1: Virtual Observatories in the Geosciences
- F8: Showcase Demonstration: “All-Hazards, All Media Public Warning

Tuesday 16:30 - 18:00

- G1: Best Practices for Scientific Data Stewardship

Wednesday Morning

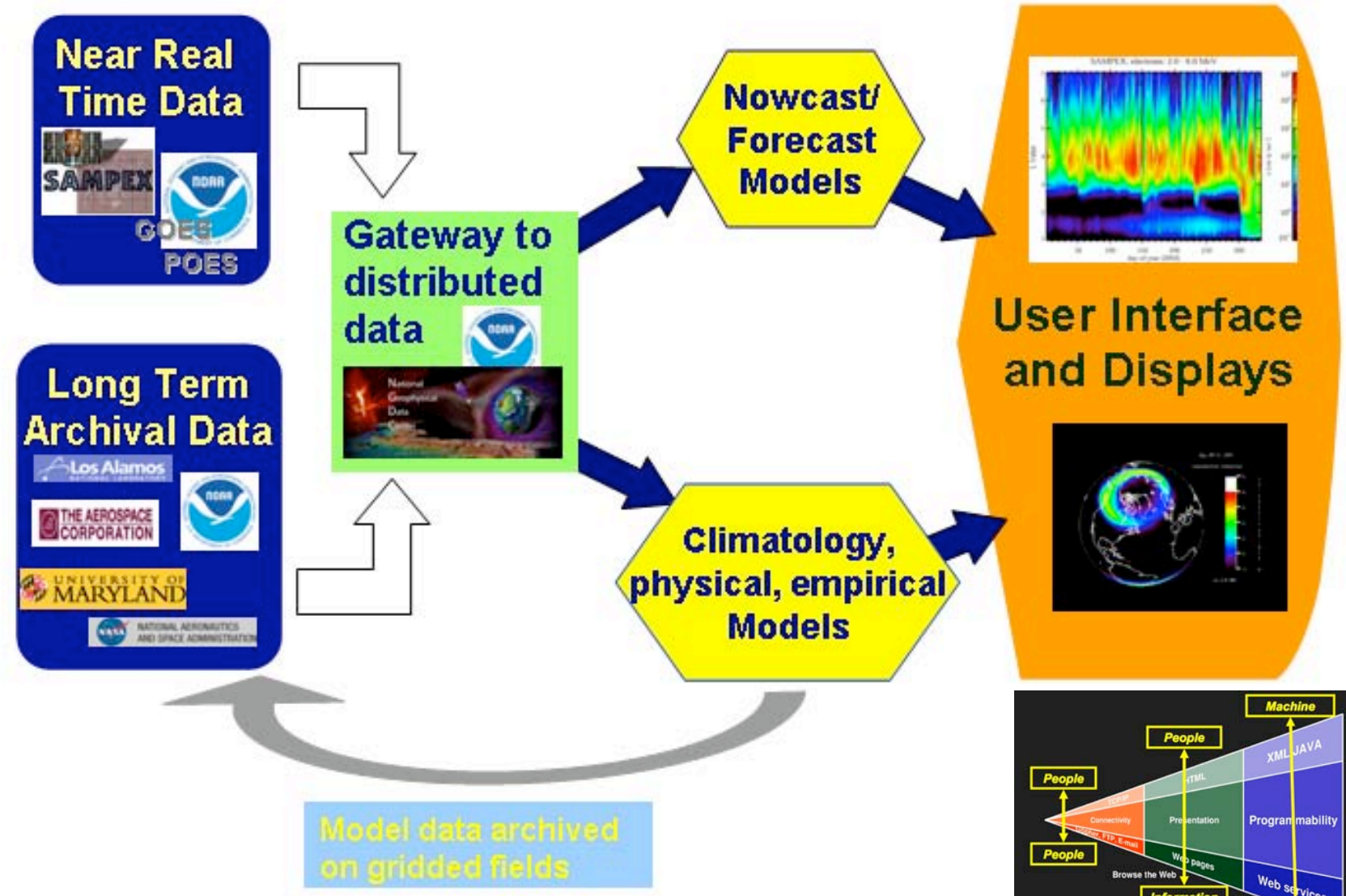
- H1 and J1: International Polar Year Activities

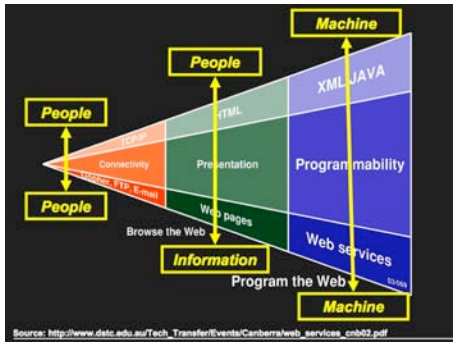
Wednesday 16:00 - 17:30

- L1: Workshop on "*The New Frontier in Defining the Data to Knowledge Paradigm"*

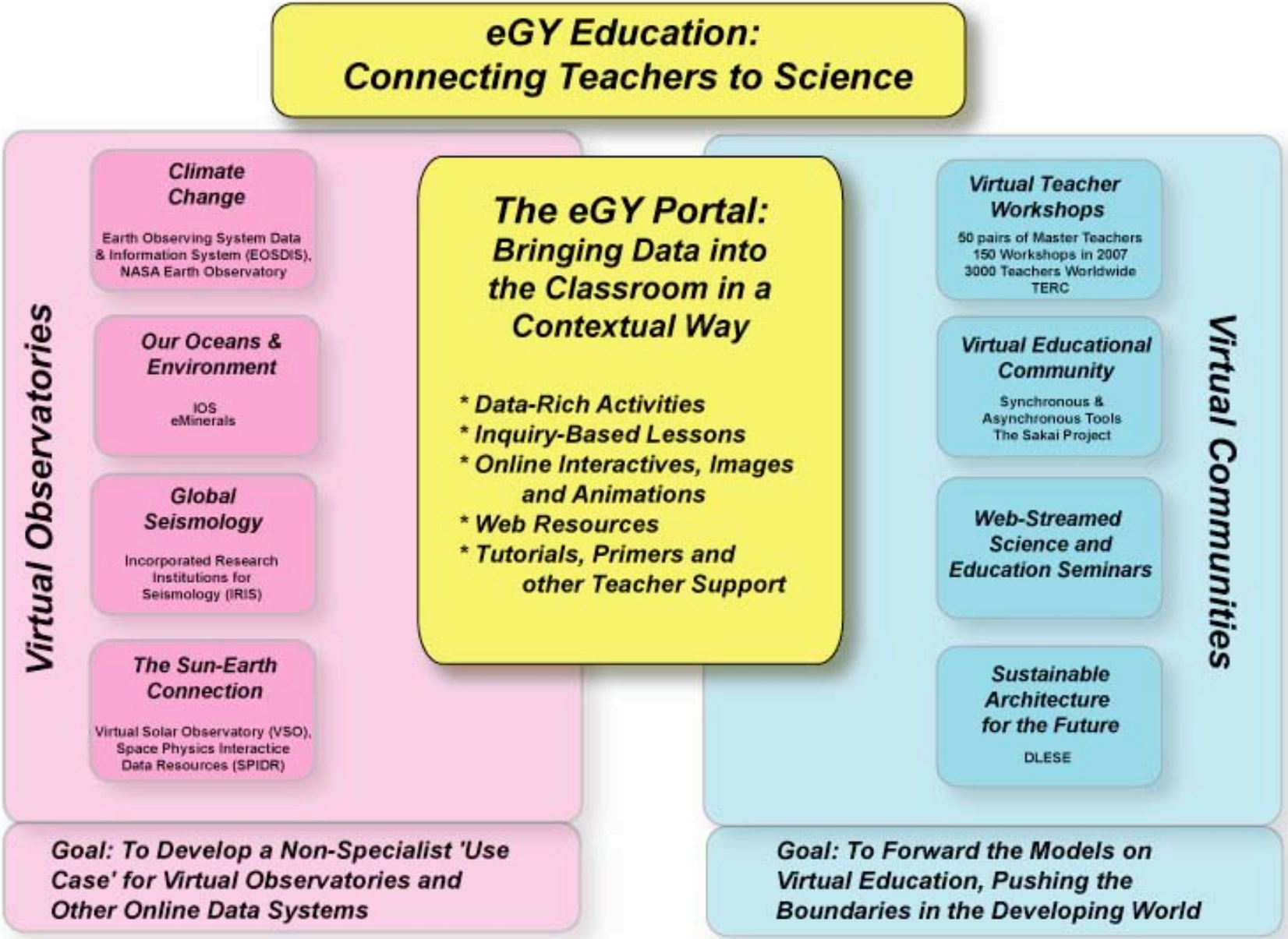
ViRBO – The Virtual Radiation Belt Observatory

Using the power of machine to machine protocols

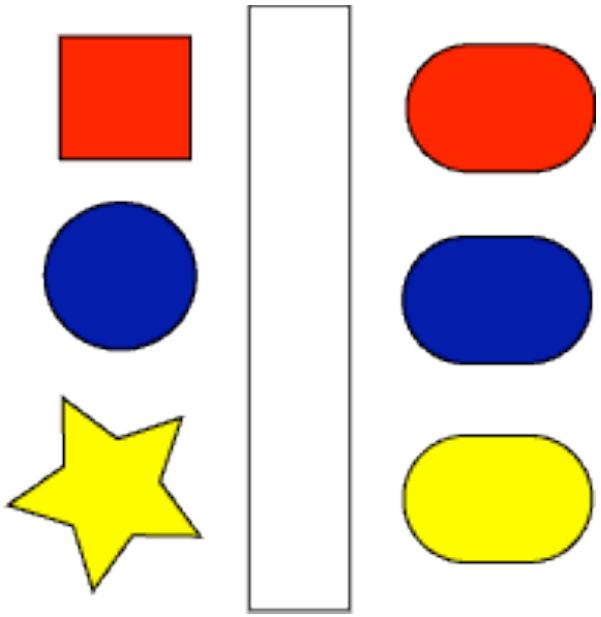




The General Use Case



Connecting It All Together…
What are the Architectural Barriers?

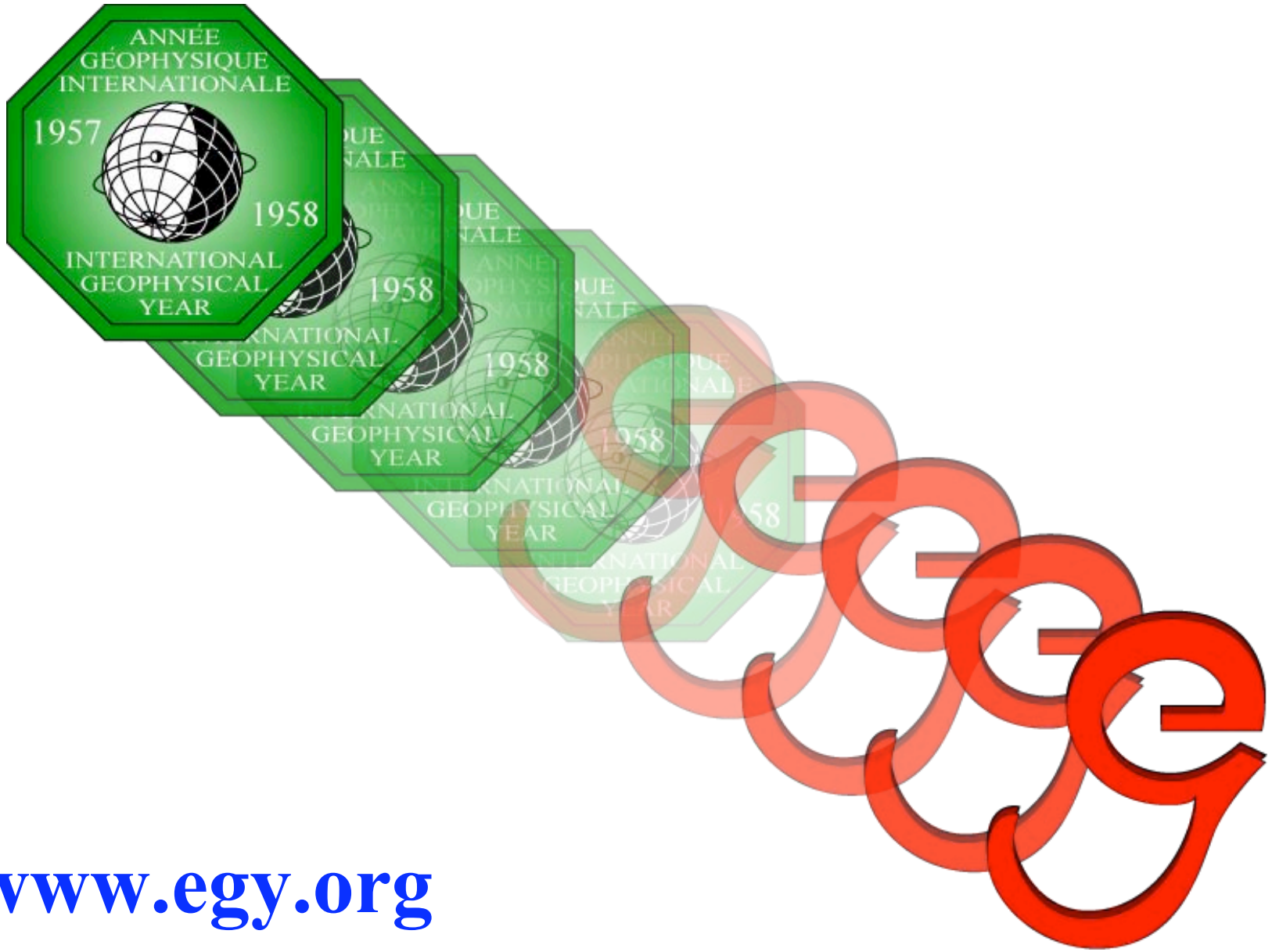


- **Each Virtual Observatory has its own structure for interfacing with the outside world – Both in terms of how users defined their requests and how products are delivered**

- **Very few of the VOs have an interface that allows ready access for the general public (including teachers)**

We will work with the VOs to develop, through the eGY portal, a way for teachers (and the general public) to access data in a constrained and contextual way.

From IGY to *e*GY



www.egy.org

Summary

- The IGY of 1957-58 established effective, powerful principles of free and open data exchange in geoscience
- The last decade has seen development of new, cost-effective ways to acquire, store and exchange data
- Virtual Observatories offer the kind of forward impetus today that World Data Centers and the IGY offered 50 years ago
- Data access, sharing, and display are the common themes across all of the “International Years” (IYPE, IHY, IPY)
- The electronic Geophysical Year (*e*GY) is being incorporated into all the I*Ys and addresses key issues of data release, data discovery, and data preservation

Extra Slides

Structure

Executive

Key persons who are the architects of business

International Coordination Office

Secretariat to conduct *e*GY business

Scientific Advisory Committee

Policy, planning, opportunity identification, scientific links (representatives from key participants, e.g., WDCs)

National/Regional/Partner committees

To liaise, stimulate, and interact with national/regional initiatives

Thematic Working Groups

VOs, data discovery, release, preservation, standards, DCs

Structure

International Coordination Office (Secretariat, Boulder)

To conduct business

Executive Director - Dan Baker

Secretary - Bill Peterson

Communications and Marketing - Marissa Rusinek

International Committee

Policy, planning, opportunity identification, scientific links

Chair: Charlie Barton

Representatives from stakeholders and key participants

Working Groups (thematic)

Knowledge Integration; E/PO; Best Practice; Virtual Observatories

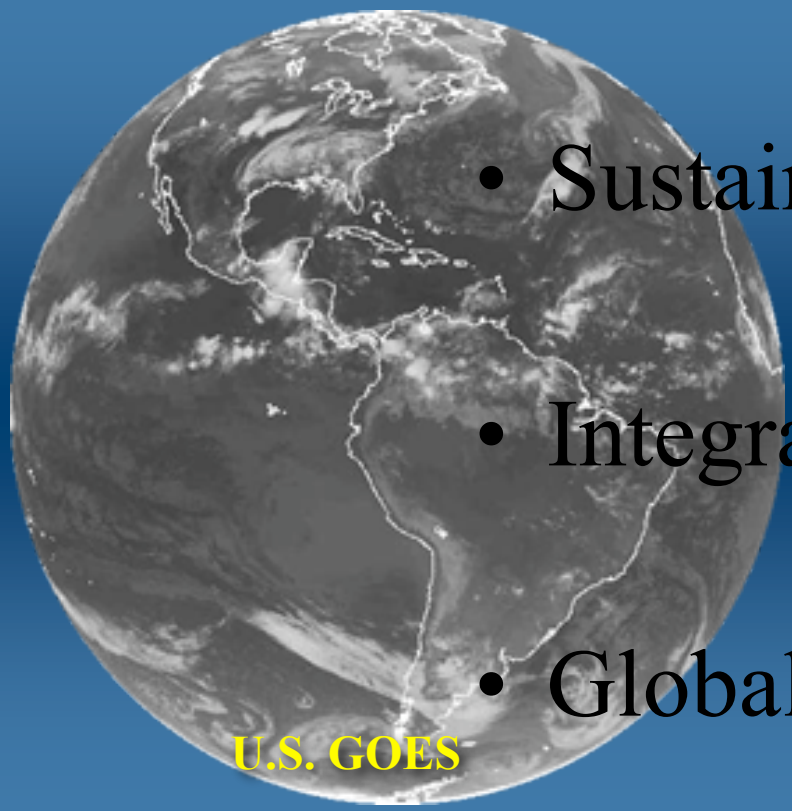
National-Regional-Body Reps/Committees

To liaise, stimulate, and interact with national/regional initiatives

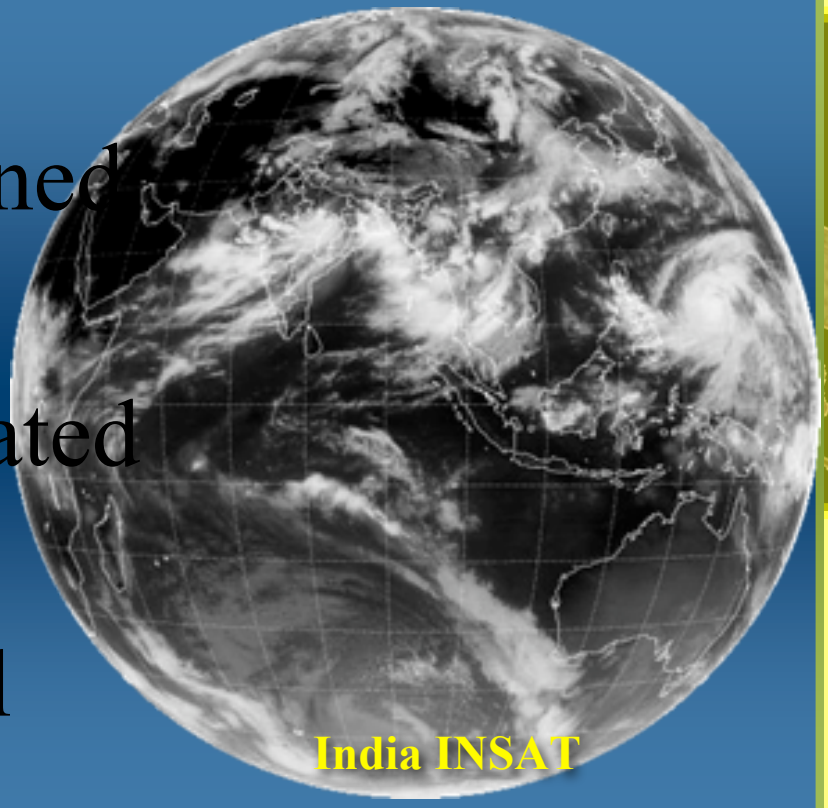
- Japan
- Europe

Attributes of an Integrated Global Observing System

- Comprehensive
- Sustained
- Integrated
- Global



U.S. GOES



India INSAT

eGY

*e*GY was established to affirm and expand the contribution of Geoscience to the benefit of humanity started with the IGY

*e*GY is an IUGG initiative

Led by IAGA

Endorsed by ICSU, and the WMO

Cooperating with IPY, IHY, IYPE and other organizations

*e*GY is:

- An “opportunity” to participate in forum to collaboratively address the challenges of modern data management and integrative science:
  - Distributed data
  - Cross-disciplinary data
  - Large, complex data sets,
  - Open data access and sharing,
  - Data, information, knowledge discovery
  - Data preservation and rescue
  - Interoperability
  - Data usability and quality
  - and more