PLANS FOR THE INTERNATIONAL HELIOPHYSICAL YEAR (IHY)

Heliophysical: A broadening of the concept "geophysical," extending the connections from the Earth to the Sun & interplanetary space. On the 50th anniversary of the International Geophysical Year, the 2007 IHY activities will build on the success of IGY 1957 by continuing its legacy of system-wide studies of the extended heliophysical domain

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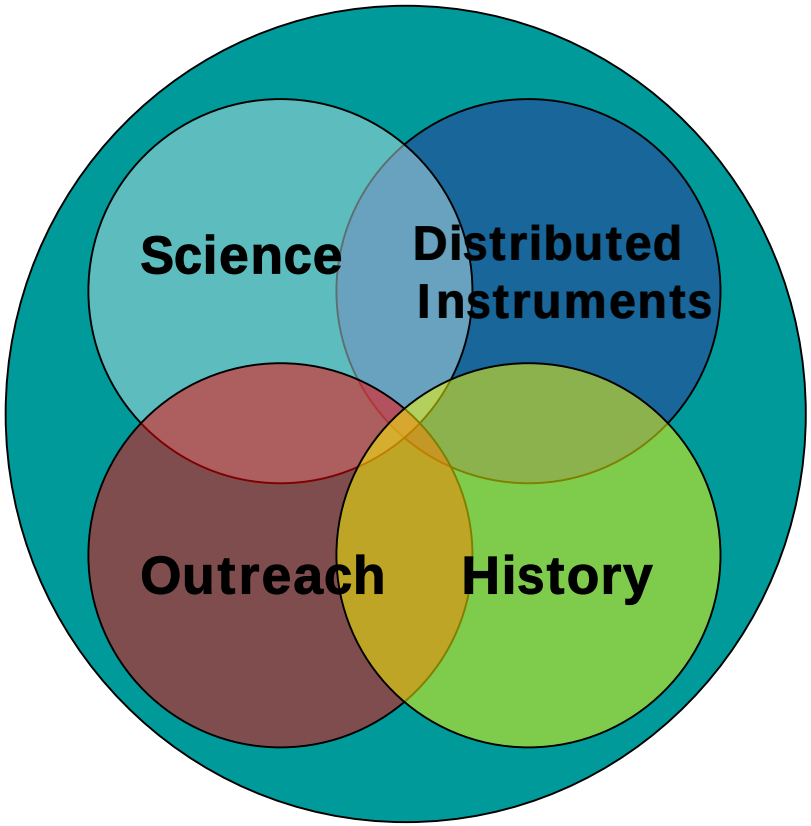
Objectives

- Develop the basic science of heliophysics through cross-disciplinary studies of universal processes.
- Determine the response of terrestrial and planetary magnetospheres and atmospheres to external drivers.
- Promote research on the Sun-heliosphere system outward to the local interstellar medium - the new frontier.
- Foster international scientific cooperation in the study of heliophysical phenomena now and in the future.
- Preserve the history and legacy of the IGY on its 50th Anniversary.
- Communicate unique IHY results to the scientific community and the general public.

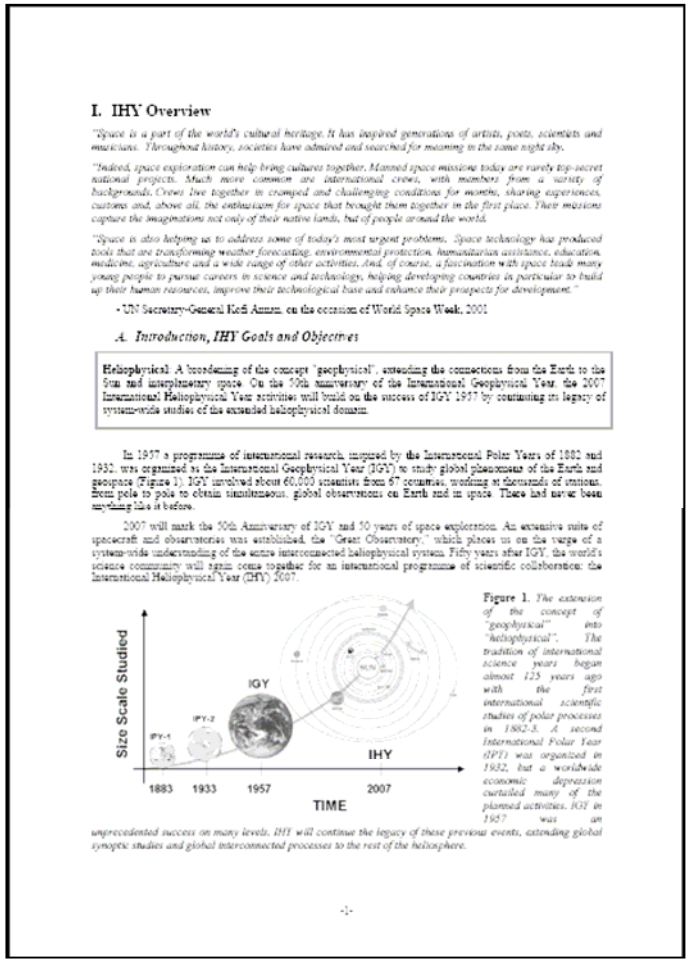
Four Interlocking Elements of the IHY Program



- **Coordinated Investigation Programs (CIPs)**
  - Scientific Research
- **Distributed small instrument program**
  - New observational capability
- **Education, outreach**
  - Promoting space science
- **IGY History preservation**
  - Preserving the history of space physics

See website at http://ihy2007.org for more information.

IHY Plan Endorsed



I. IHY Overview

"Space is a part of the world's cultural heritage. It has inspired generations of artists, poets, scientists and musicians. Throughout history, societies have admired and searched for meaning in the same night sky.

"Indeed, space exploration can help bring cultures together. Manned space missions today are rarely top-secret national projects. Much more common are international crews, with members from a variety of backgrounds. Crews live together in cramped and challenging conditions for months, sharing experiences, customs and, above all, the enthusiasm for space that brought them together in the first place. Their missions capture the imaginations not only of their native lands, but of people around the world.

"Space is also helping us to address some of today's most urgent problems. Space technology has produced tools that are transforming weather forecasting, environmental protection, humanitarian assistance, education, medicine, agriculture and a wide range of other activities. And, of course, a fascination with space leads many young people to pursue careers in science and technology, helping developing countries in particular to build up their human resources, improve their technological base and enhance their prospects for development."

- UN Secretary-General Kofi Annan, on the occasion of World Space Week, 2001

A. Introduction, IHY Goals and Objectives

Heliophysical: A broadening of the concept 'geophysical', extending the connections from the Earth to the Sun and interplanetary space. On the 50th anniversary of the International Geophysical Year, the 2007 International Heliophysical Year activities will build on the success of IGY 1957 by continuing its legacy of system-wide studies of the extended heliophysical domain.

In 1957 a programme of international research, inspired by the International Polar Years of 1882 and 1932, was organized as the International Geophysical Year (IGY) to study global phenomena of the Earth and geospace (Figure 1). IGY involved about 60,000 scientists from 67 countries, working at thousands of stations, from pole to pole to obtain simultaneous, global observations on Earth and in space. There had never been anything like it before.

2007 will mark the 50th Anniversary of IGY and 50 years of space exploration. An extensive suite of spacecraft and observatories was established, the "Great Observatory," which places us on the verge of a system-wide understanding of the entire interconnected heliophysical system. Fifty years after IGY, the world's science community will again come together for an international programme of scientific collaboration: the International Heliophysical Year (IHY) 2007.

Figure 1. *The extension of the concept of "geophysical" into "heliophysical". The tradition of international science years began almost 125 years ago with the first international scientific studies of polar processes in 1882-3. A second International Polar Year (IPY) was organized in 1932, but a worldwide economic depression curtailed many of the planned activities. IGY in 1957 was an unprecedented success on many levels. IHY will continue the legacy of these previous events, extending global synoptic studies and global interconnected processes to the rest of the heliosphere.*

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50-page IHY Booklet in printing

- *GA Resolution 60/99* endorsed the recommendation of the Scientific and Technical Subcommittee to promote and support the activities being organized within the framework of the International Heliophysical Year 2007

UN Activities

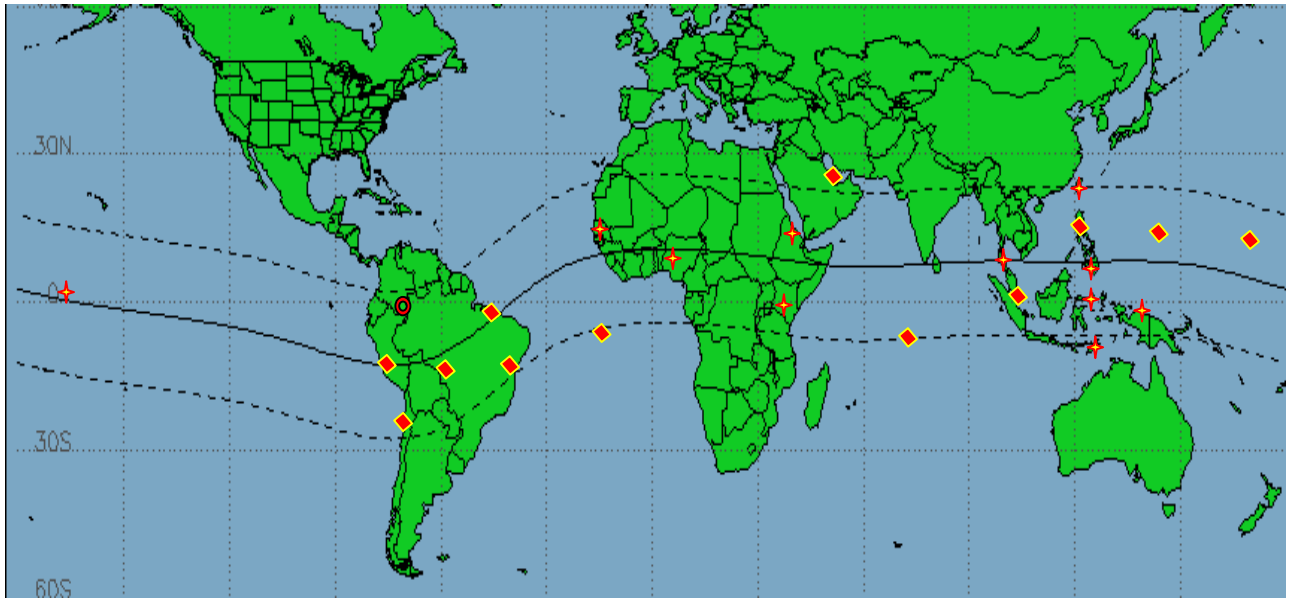
- UN Brochure describing the IHY produced in six languages
- Poster produced
- Brochure published in six languages
- 50-page Booklet in printing
- Workshop conducted in UAE

Report on BSS Workshop

UNBSS Flyer

UNBSS Brochure (6 languages)

UNBSS Distributed Instrument Program



Existing and proposed SCINDA stations. The magnetic equator and northern and southern magnetic latitudes at 20o are shown by dashed lines. The most intense natural scintillation events occur during nighttime hours within 20o of the earth's magnetic equator. SCINDA observations in this 20o belt on either side of the magnetic equator are sought. Current plans include expansion of the network to new geographic regions (courtesy: K. Groves).

- **Placing small inexpensive instruments in new geographical locations can provide new science**
- **Distributed observatories can provide long term benefit**
- **UNBSS dedicated to the program at least thru 2009**

Basic Concept

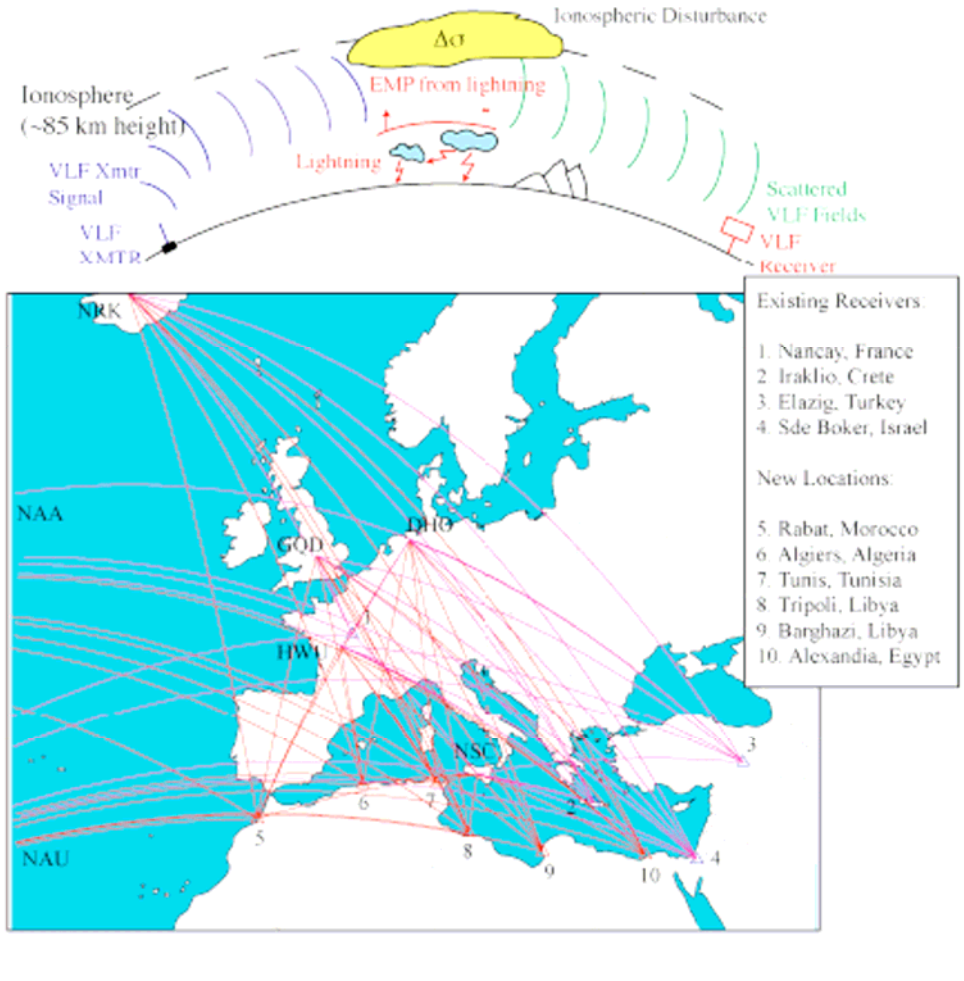
- **The lead scientist or principle investigator will provide instrumentation (or fabrication plans) for the instruments in the array**
- **The host country provides the workforce, facilities, and operational support to obtain data with the instrument typically at a local university.**
- **The Instrument host scientists become part of science team**
- **All data, and data analysis activity is shared with all members of the group**
- **Publications and meetings involve the participation of all team members when possible**

1st Workshop succeeded "…beyond expectations!"

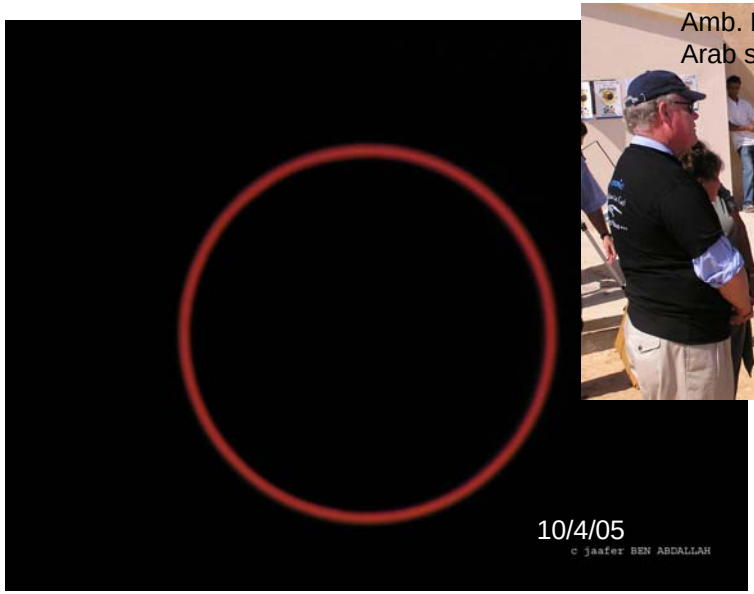
- **UN, ESA, NASA, and UAE Government sponsored,** attendance by His Highness Sheikh Al-Nahayan Minister of Education and the Cancellor of the UAE University
- **Instrument Donors Attending:** USA, Canada, UK, Switzerland, Japan, Brazil, Armenia
- **Potential Hosts Attending:** Georgia, India, Pakistan, Indonesia, Malaysia, Iraq, Iran, Sudan, Saudi Arabia, Algeria, Egypt, Libya, Cape Verde, Jordan, Ivory Coast, Cameroon, Nigeria, Eritrea, South Africa, …
- **Numerous contacts made**,
- **Follow-up** Workshop planned for November 2006, in India.

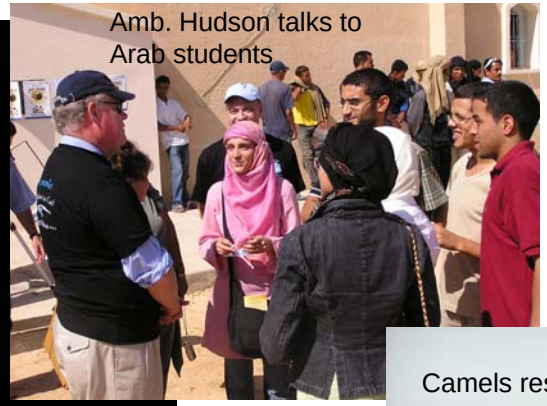
First Deployment !

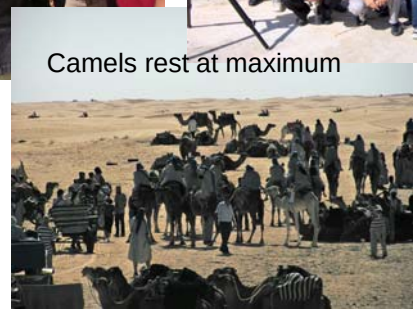
- **First instrument deployed at University of Tunis**
- **Morocco and Algeria agreement is already negotiated, instruments to be delivered in Spring 2006**
- **Libya and Egyptian contacts made, visit March 2006**



Tunisian Annular Eclipse







- **Series of outreach events coinciding with annular eclipse 4 Oct 2005**
- **12 newspaper articles (English, French, Arabic), 2 radio interviews, 2 cable satellite interviews**
- **Documentary in French, Arabic, English for teen audience**
- **Will visit Libya March 2006 for total solar eclipse and outreach**

IGY Gold Program

- A program to honor IGY 1957 participants
- We seek nominees from all countries
- Sponsored by IUGG
- Managed by IHY for all International Years
  - Certificates available in IHY, IPY, eGY, and Planet Earth formats
- Recipient must
  - Have participated in the IGY in some capacity
  - Provide an artifact of historical interest
  - Agree to have name made public on website
- Artifacts will be cataloged and held temporarily at the GSFC library
- History sessions organized for several meetings this spring

IHY Overall Schedule

- **2004**: Regional coordination meetings, campaigns begin to be defined, synergy/coordination discussions with professional organizations
- **2005**: Synthesis from regional to international, merging of science working groups and campaigns, identifying missing initiatives
- **2006**: Prototyping year, preliminary work, review and finalize campaign proposals, proposals to national funding agencies
- **2007**: IHY campaigns
- **2008-9**: Coordinated Data Analysis Workshops, publications, archives

Summary

- Plans and activities leading up to the IHY are proceeding well
- Research activities are being defined
- Continued emphasis on instrument deployment