THE INTER[illegible]L HELIOP[illegible]EAR (IHY)

March 2007-2009

What can you do?

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NASA-Goddard Space Flight Center

February 2007

IHY 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.**

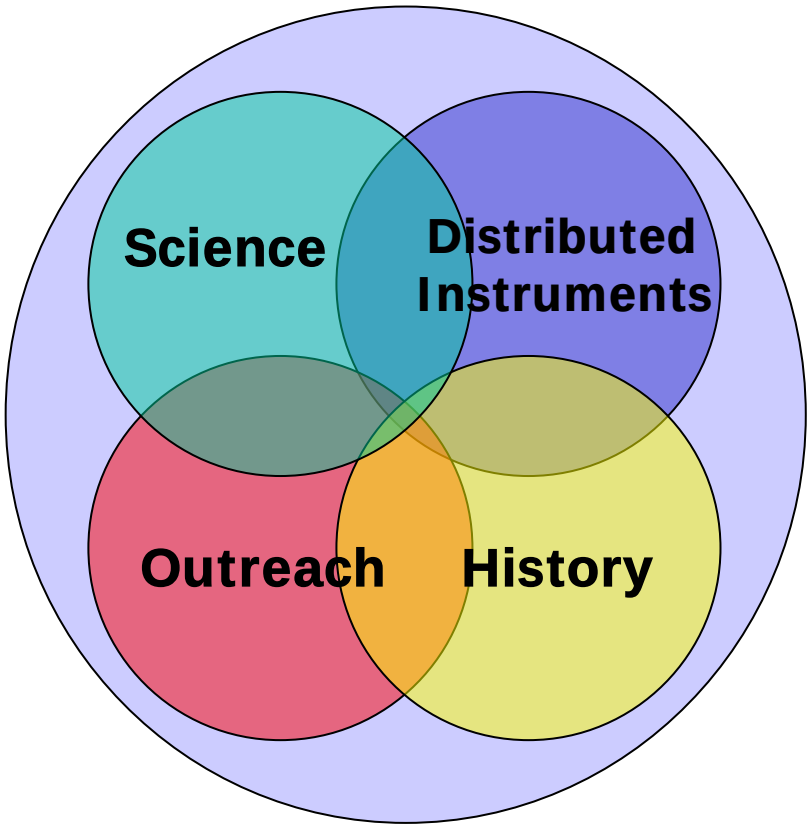
IHY Participation

- 71 countries with National committees
- UNBSS
  - *17 Distributed instrume*
  - *5 N*
- *[illegible]*
- *[illegible]*vestigation Plans (CIPs)
- Thousands of scientists from more than 71 countries

What can you do?

Don't miss this opportunity! It is not too late to participate in IHY activities. There is no cut-off. Activities will continue Feb 2007-2009.

Four Elements of the IHY Program

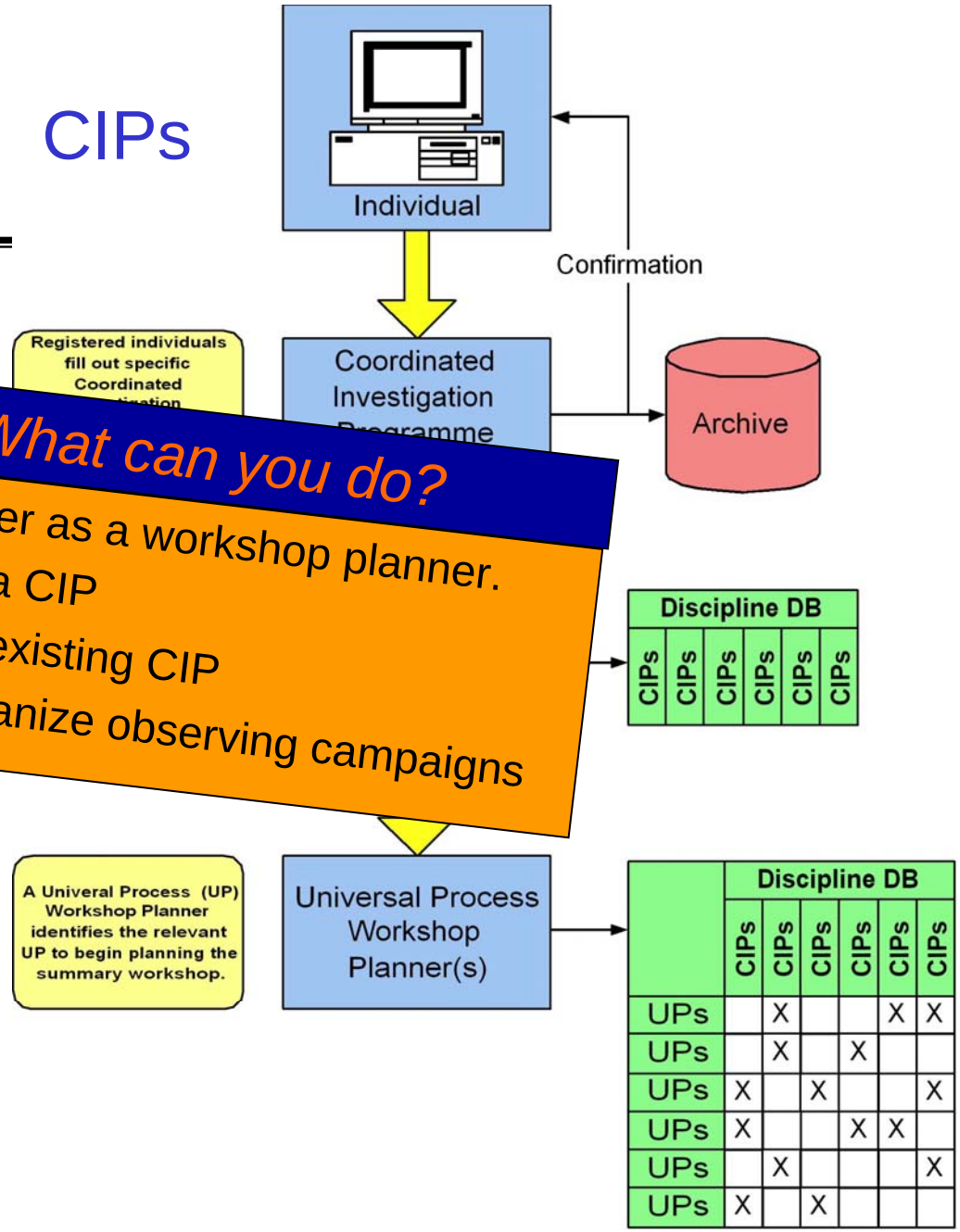


1. **Science of Universal Processes**
   - *Coordinated Investigation Programs (CIPs) Scientific Research*
2. **Distributed small instrument program**
   - *New observational capability*
3. **Education, outreach**
   - *Promoting space science*
4. **IGY History preservation**
   - *Preserving the history of space physics*

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

Universal Processes: CIPs

- Richard Stamper (RAL) has developed CI website
- Regional represe to nominate Disc planners in follo categories
- Currently 65 CIPs are in process
- Data cataloged in Joint CAWSES-IHY Data System



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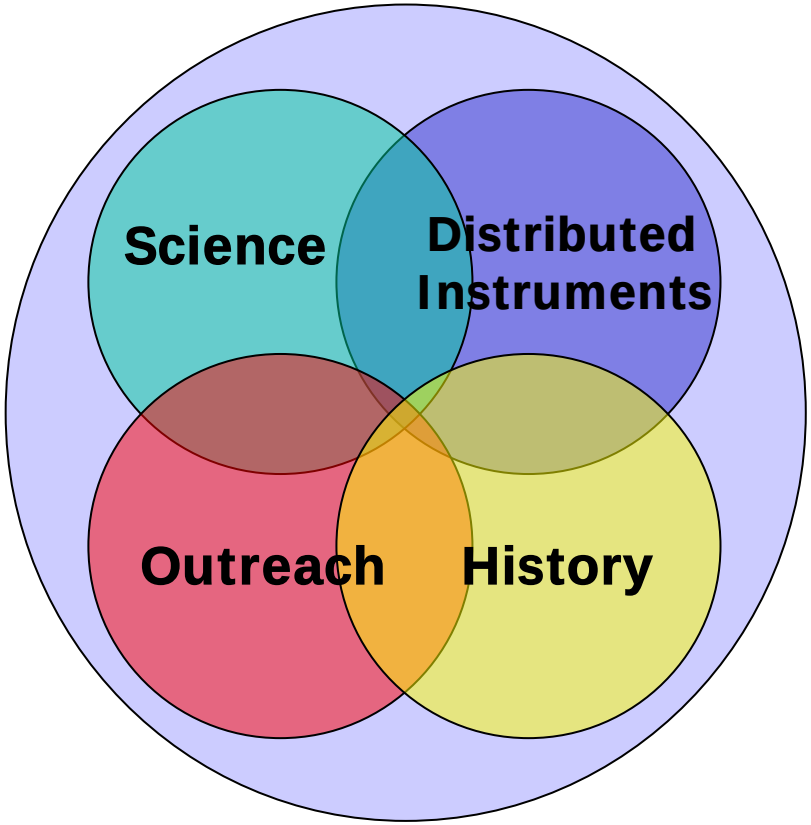

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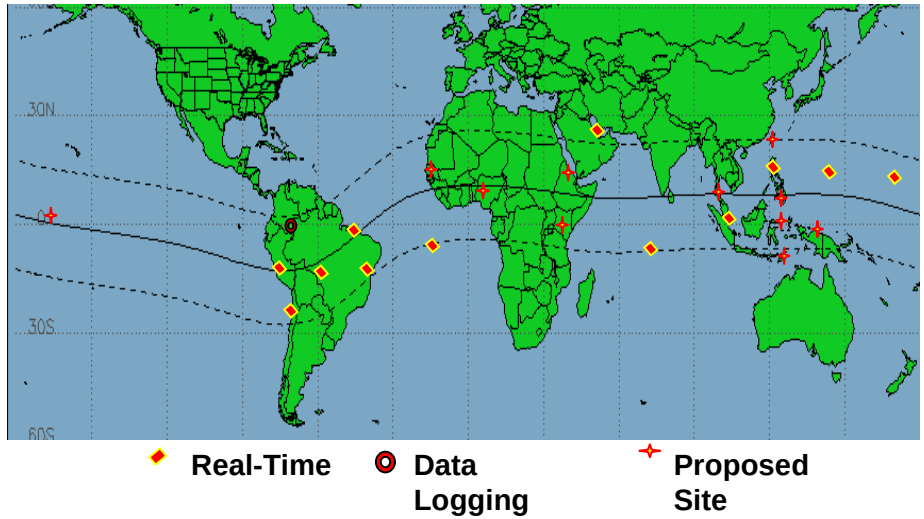
Distributed Instruments: Basic Concept

- **The lead scientist or principle investigator will provide instrumentation (or fabrication plans)**
- **The host country provides the workforce, facilities, and operational support typically at a local university.**

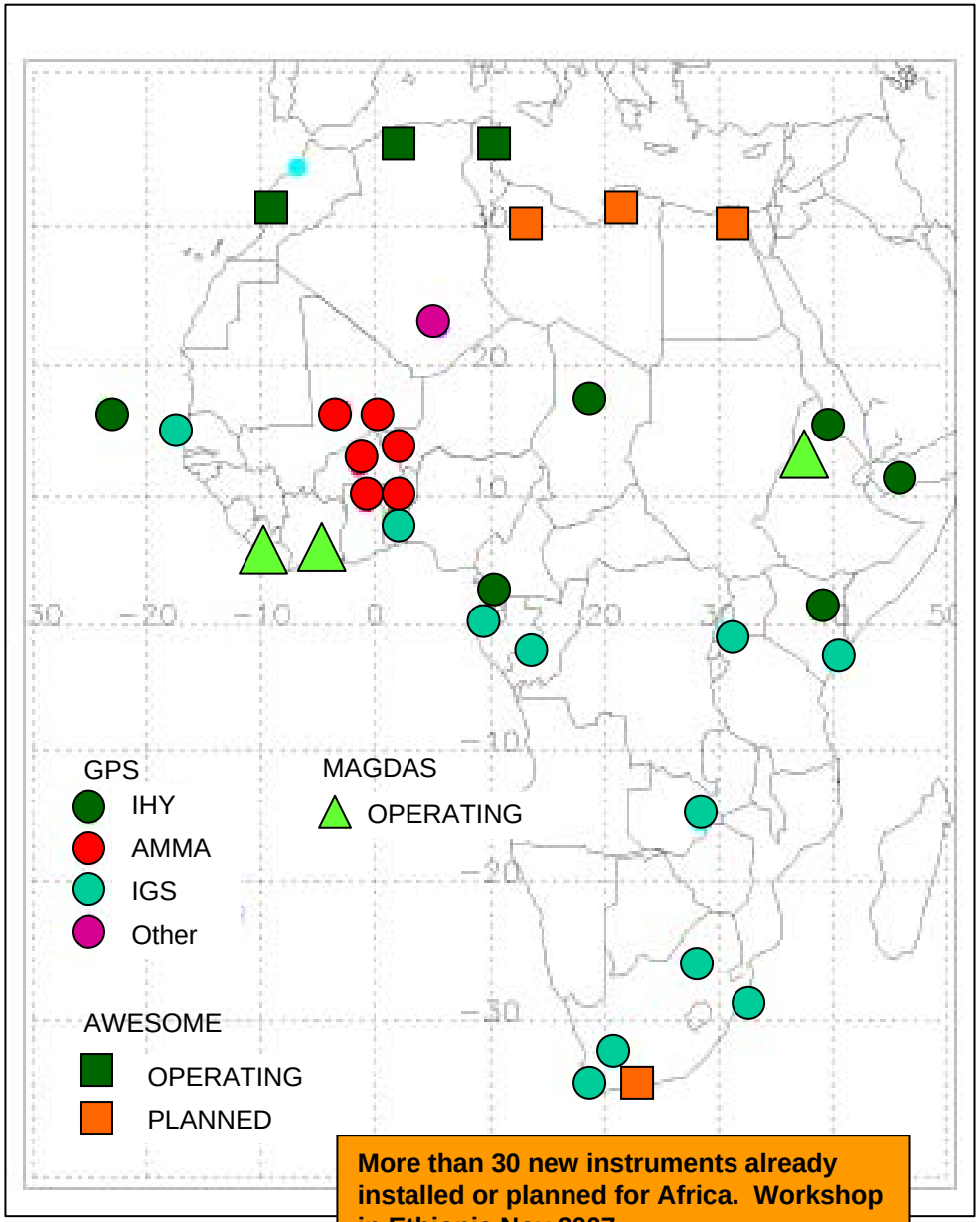


- **Host scientists become part of science team**
- **All data, and data analysis activity is shared**
- **All participate in publications and meetings**
- **UN-BSS dedicated to the program at least thru 2009**

UN-NASA Workshop Series

- **First Workshop**
  - *UN, ESA, NASA, and UAE Government sponsored*
  - *Approximately 120 participants from 27 countries*
- **Second Workshop**
  - *UN, NASA and Indian Government sponsored*
  - *Approximately 120 participants from 30 countries*
- **Third Workshop**
  - *UN, NASA and Japanese Government sponsored*
  - *Planned for June – July 2007*
  - *Will focus on data issues for first time*

These Workshops have been highly successful at establishing new collaborations between instrument providers and hosts



- **AWESOME space weather monitor in Tunisia Oct 2005. Instruments were installed in Algeria and Morocco in summer 2006, upcoming sites will be in Libya, Egypt and South Africa, with the goal of widespread instrumentation activities taking place in 2007-2008.**
- **IHY-Japan has made significant progress towards the completion of its 51-magnetometer MAGDAS global network with a new installation site on MacQuarie Island, Ethiopia, Ivory Coast, Nigeria, and Malaysia.**
- **The RENOIR ionospheric observing station program has received support for development, and will be making plans for instrument host sites later this year.**
- **The deployment Latin-American SAVNET VLF receiver chain will begin in 2006 with the target of being operational in 2007.**
- **The SCINDA scintillation network will double the size of their equatorial network, instrumenter's meeting July 2006 in Cape Verde in preparation for new deployments.**
- **Radio spectrometer network deployment in Japan, India, US, Switzerland, Mexico (in progress). First light in India last week!**
- **Armenian particle detector will be deployed in Bulgaria.**

Instruments

	INSTRUMENT	CONTACT	STATUS
1	CALLISTO	C. Monstein (Switzerland)	Deployed in India, others in progress
2	H-alpha Telescope	K. Shibata, S. Ueno (Japan)	First observatory operating in Chile
3	MAGDAS Magnetometers	K. Yumoto (Japan)	Deployed in Malaysia, Ethiopia, Nigeria, Ivory Coast
4	GPS Scintillations	C. Amory-Mazaudier (France), and T. Rowell (USA)	More than 25 new installations across Africa (see map)
5	SCINDA GPS	K. Groves (USA)	Deployed in Cape Verde, Nigeria, others in progress
6	CIDR	T. Garner (USA)	4-instrument chain planned for Egypt
7	VLF Radio	U. Inan (USA)	Installed in Morocco, Algeria, Tunisia
8	RENOIR	J. Makela (USA)	Instrument funding obtained, instrument development in progress
9	SEVAN Particle Detectors	A. Chillingarian (Armenia)	Instrument for Bulgaria being fabricated
10	AMBER-AGREES	E. Yizengaw (USA)	In progress
11	SAVNET	J.-P. Raulin (Brazil)	Instrument funding obtained
12	Low-cost Ionosonde	J. Bradford (UK)	Seeking instrument funding
13	IHY Mag	I. Mann (Canada)	Seeking instrument funding
14	Low-frequency Radio Array	J. Kasper (USA)	In progress
15	Muon Network	K. Munakata (Japan)	In progress

Instruments (Cont)

	INSTRUMENT	CONTACT	STATUS
16	Liulin	T. Dachev (Bulgaria)	Instruments available, seeking sites for deployment
17	SAMA	J. H. Fernandez (Brazil)	Seeking funding for instruments

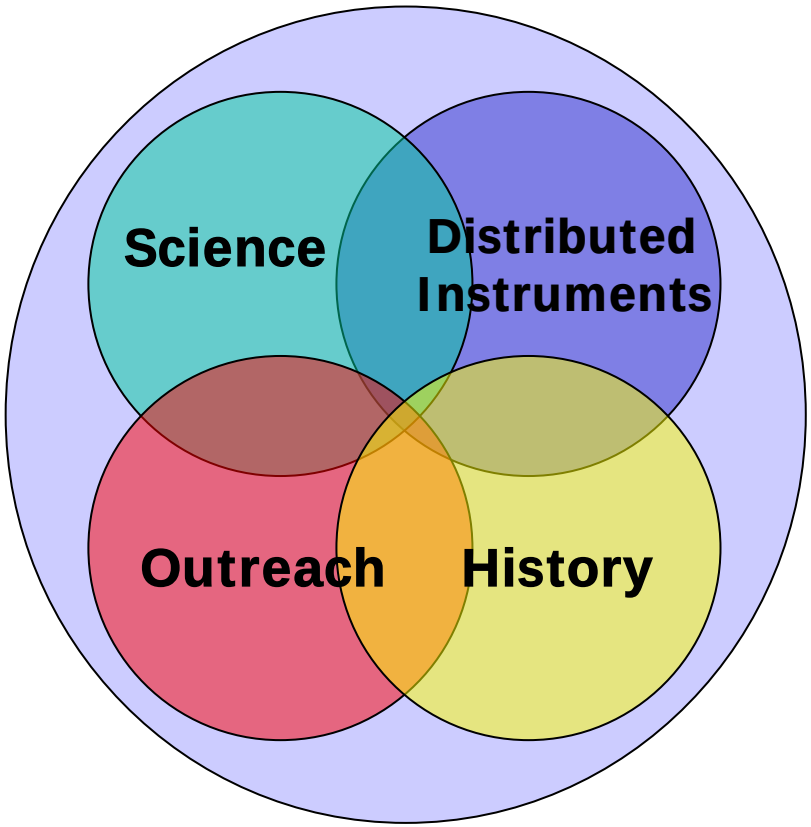
Extending the IHY-UNBSS Concept to Space Data

- **Space data exists in data bases that can be reached via internet**
- **Some da**
  - *Solar*
- **Concept**
  - *Scienc*
  - *Team* *cientific results*
- **Initial Pr**
  - *Development of Gnu Data Language (GDL) – free scientific software package to analyze space data*
  - *Low-cost IDL licenses from RSI*
  - *SOHO-SUMER data set*
  - *SAMPEX data set*
  - *CME catalog analysis*

What can you do?

- Provide access to a data set, and 1-2 projects to accomplish with it.
- Provide a new instruments
- Host an instrument, or participate in data analysis program

Four Elements of the IHY Program



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IHY Outreach

- **Cristina Rabello-Soares (Stanford University), International Coordinator**
- **Will focus on**
  - *profe… …lopment*
  - *Stre… …search in univ…*
  - *Ed…*
- **Some…**
  - *Yuri…*
  - *Coordinated Sput…*
  - *Summer schools in US, Europe, America*
  - *World-wide observatory open house*
  - *Science outreach to youth*

What can you do?

- Develop your own outreach program, a traveling exhibit, a ballet, a board game …
- Join Observatory open house day
- Help with the translation of educational materials

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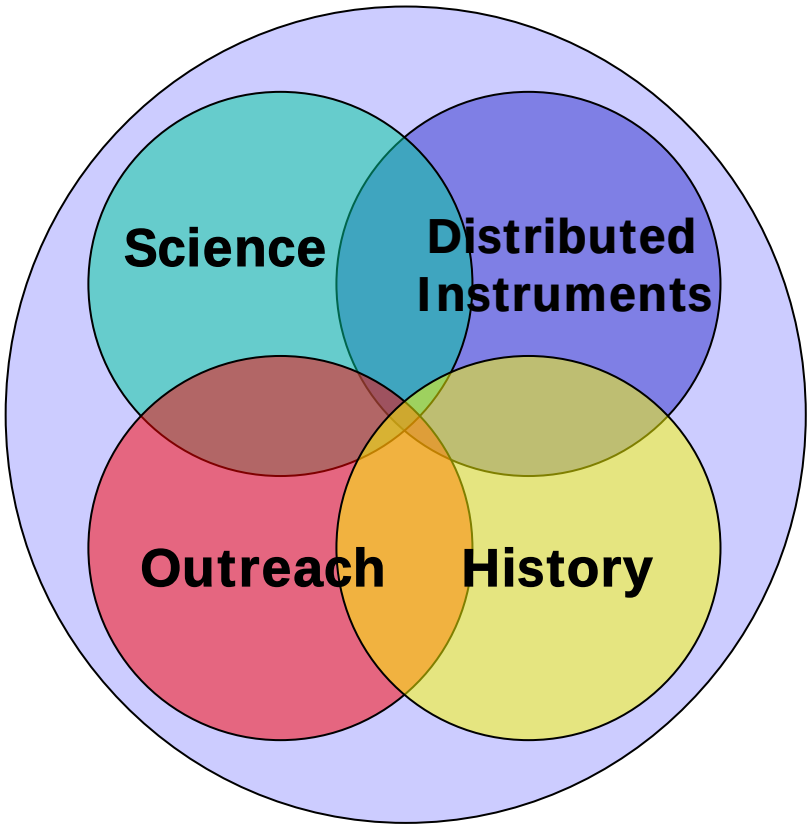

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History Preservation: IGY Gold Program

- **Sponsored by IUGG**
- **Managed by IHY for all International Years**
  - *Certificates available in IHY, IPY, eGY, and Planet Earth formats*
- **Recipi**
  - *Hav*
  - *Pro*
  - *Agr*
- **Artifac** **he GSFC library**
- **History sessions organized for several meetings, NRA for funds available in the US**

What can you do?

- Nominate IGY Gold recipients in your country or region
- Arrange a session or ceremony at a local meeting to present the certificates

Summary

"… science is the most powerful means we have for the unification of knowledge, and a main obligation of its future must be to deal with problems which cut across boundaries, whether boundaries between the sciences, boundaries between nations, or boundaries between man's scientific and his humane concern."

-- John F. Kennedy

In: A Century of Scientific Conquest by John F. Kennedy, in The Scientific Endeavor,
Centennial Celebration of the U.S. National Academy of Sciences, 1963.