In 1957 we were sticking our heads above the atmosphere.
In 2007 we will stick our thumb into the LSIM

International Heliophysical Year & United Nations Basic Space Sciences

An international program of scientific research to understand external drivers of the space environment and climate

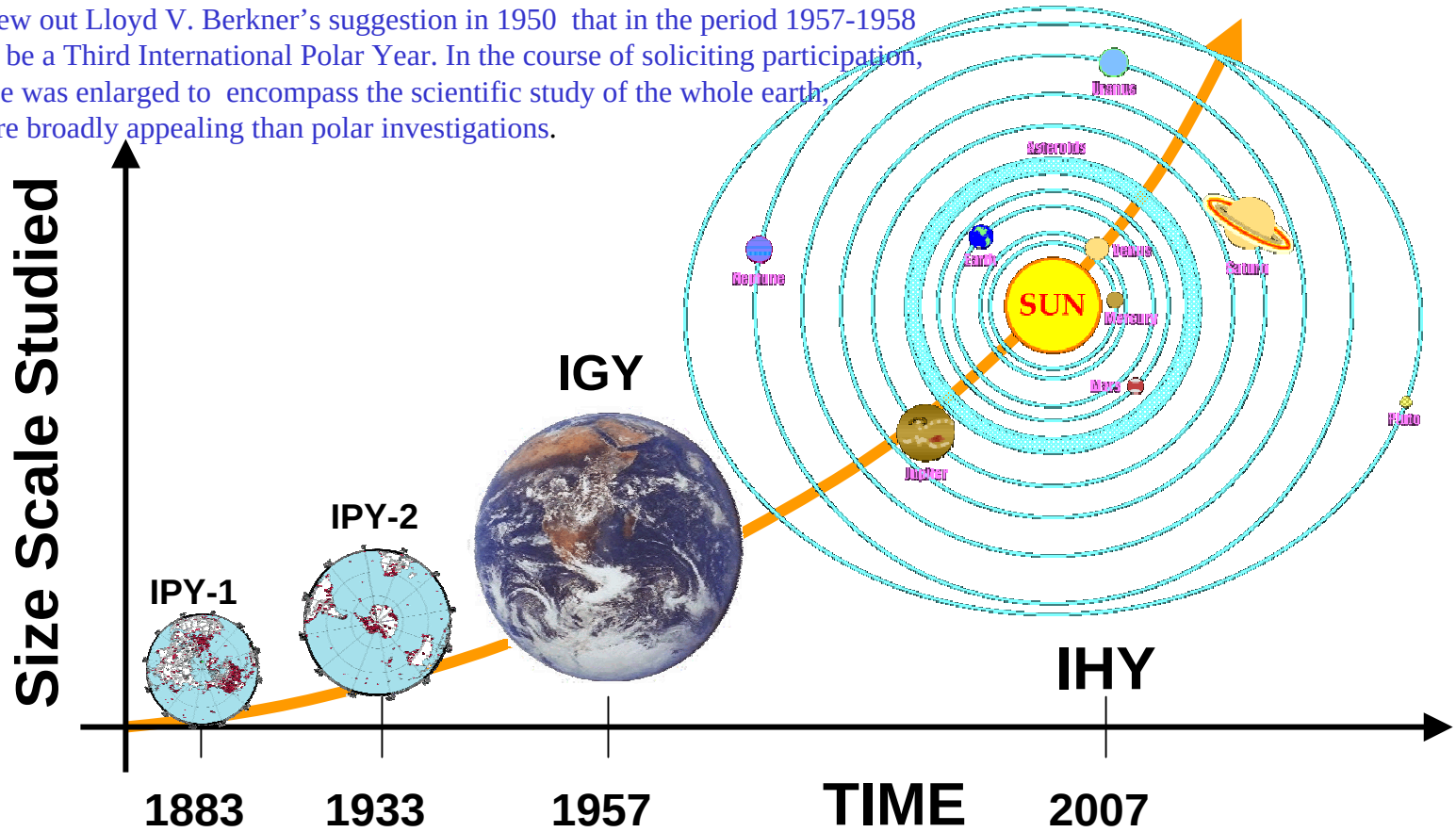
ihy2007.org
ihy.gsfc.nasa.gov

July 22, 2005
International IHY Planning

NAT GOPALSWAMY *NASA Goddard Space Flight Center*
And the IHY Team

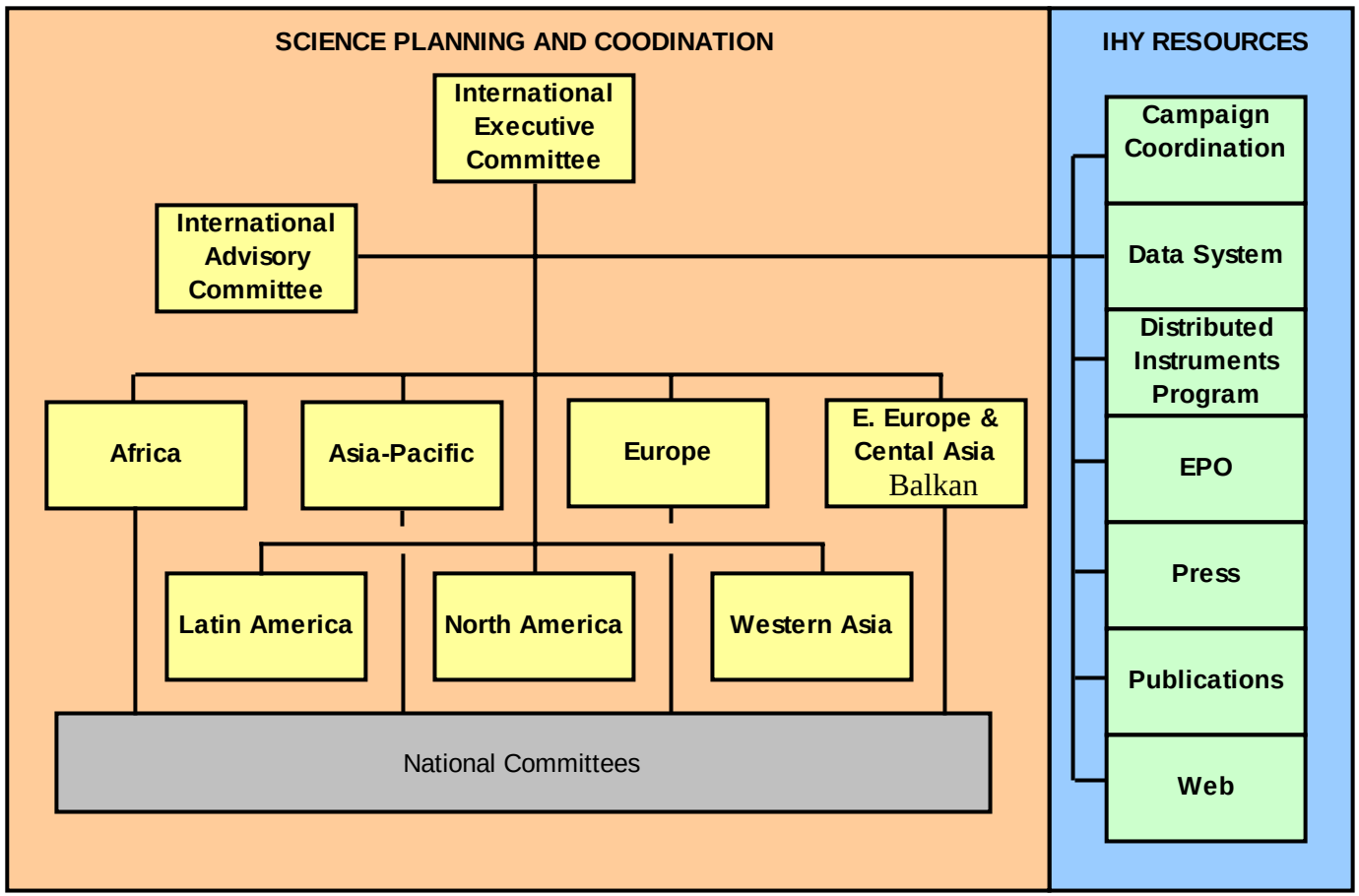
Evolution of System Studies

IGY 1957 grew out Lloyd V. Berkner's suggestion in 1950 that in the period 1957-1958 there should be a Third International Polar Year. In the course of soliciting participation, the enterprise was enlarged to encompass the scientific study of the whole earth, a subject more broadly appealing than polar investigations.



During the period between the orbiting of Sputnik-I and the creation of NASA, these activities-scientific research in the high atmosphere and outer space-began to be thought of as space science. … Homer E. Newell, "Beyond the Atmosphere: Early Years of Space Science"

Grass-roots Planning Process



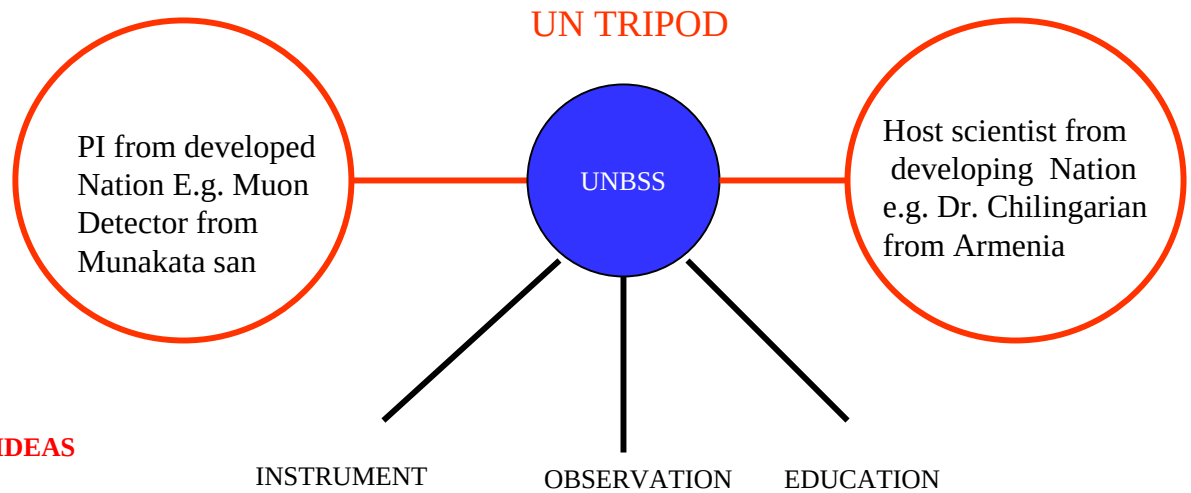
Elements of IHY Plan

- Observing (or modeling) campaigns: Make use of as many existing facilities/expertise as possible. Identify past data bases
- Distributed small instrument arrays
  - *Magnetometers, radio telescopes, GPS receivers, all-sky cameras, Neutron Monitors, etc.*
  - *Lead investigator provides instruments*
  - *United Nations Basic Space Sciences Initiative (UNBSS) members may choose to provide instruments, local facilities, or data acquisition*
- Series of cross-cutting Coordinated Data Analysis Workshops to develop interpretations
- Publication of workshop results
- Outreach and History Initiatives
  - *Preservation of IGY history*
  - *IGY Gold Club to recognize the contribution of IGY participants*

UNBSS

- United Nations has adopted IHY as their program for 2005-2009
- UN supports 5 workshops 2005 (UAE), 2006-2009 (TBD)
- These workshops are for match-making to deploy IHY instruments
- PI from developed nation provides instrument
- UN contacts potential host country/university/scientist and bring the potential host scientists to the workshops

UN & IHY



UN Office for Outer Space Affairs
Contact: Hans Haubold

1991-2004 Astronomy
2005 - IHY

CURRENT IDEAS

- Radio Network: US – Switzerland-India – Japan – (Australia)?
- GPS/Scintillation US - Africa
- Magnetometers US-Brazil
- H-alpha Network France – Iran – Angola; ISOON; IHY-CAWSES
- Neutron monitors: Finland – Ethiopia-South Africa
- Muon detectors: Japan – Middle East IPS network: Japan-India-Mexico-UK

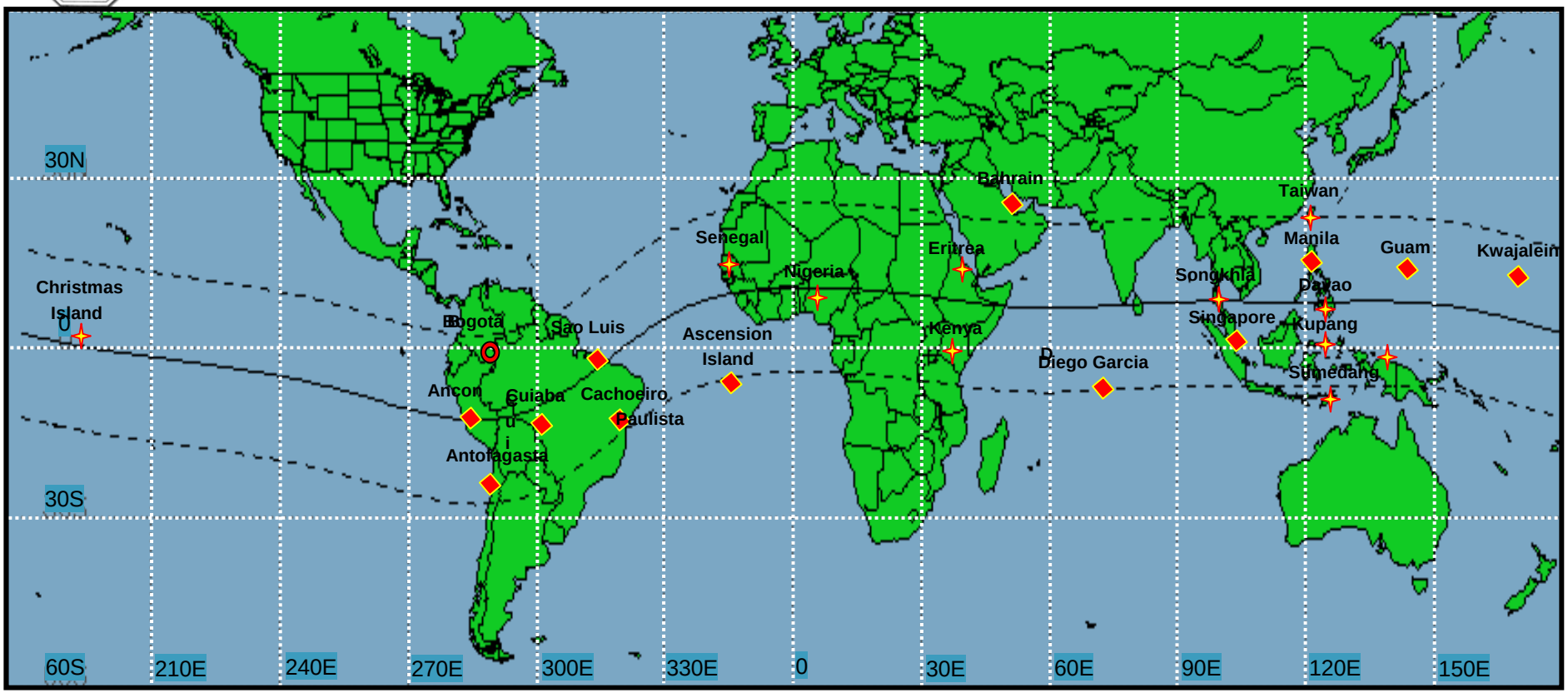
Announcement

Application

More instruments will be considered for 2006-2009. Some IHY legacy instruments used beyond IHY 2007

For announcement and application, visit ihy2007.org

Scintillation Ground Stations



Real-Time Data Logging Proposed Site

Need maps like this for different instrument arrays

Potential UNBSS Instruments

	Objective	Instrument	Lead Scientist	Status	Geographic Req
1	Ionosphere	AWESOME	Umran Inan, Stanford Univ.	Supported in part by SDO, has EPO component	Full latitude and longitude coverage
		SCINDA	Keith Groves, AFRL	Existing network with 4-5 new instruments funded by AFOSR	Conjugate latitudes near the magnetic equator
2	Radio bursts	CALISTO	Christian Monstein and Arnold Benz (ETHZ Institute of Astronomy)	Switzerland and US installations in progress. New installation in India needed.	New installation in India (Likely Ooty)
	IPS	IPS and SMEI network	Masayoshi Kojima (STE Lab) Americo Gonzalez (UNAM) P. K. Manoharan (Ooty) Andy Breen (University of Wales) Xizhen Zhang (NAO, Chinese Academy of Sciences) Bernie Jackson (CASS, UCSD)	The NAO 50m dish antenna will be completed in 2006. Mexican IPS array is now under test operation. The STE Lab and CASS already has a real time data network. CASS is submitting a NASA proposal to the Applied Information Systems Research (AISR) Program. STELab has commenced to build a new IPS array.	Japan, China, India, Europe, Mexico and space
3	H-alpha (Sun)	H-Alpha Telescope Network	K. Shibata (Kyoto Univ, Japan)	Japanese portion is funded	
			S. Koutchmy (Paris)	French installation in Angola is already underway	Angola
			Professor Datuk Dr Mazlan Othman Malaysia	Malaysian telescope exists, needs filters etc	Malaysia
4	Muon anisotro py	Muon telescope Network	Jim Ryan	Existing telescope needs relatively minor software upgrade for anisotropy measurement	Los Alamos, NM USA
			Frank Jensen	New MUSTANG telescope, already funded. Possible EPO component	Germany
		Muon detector network	Kazuoki Munakata (Shinshu Univ., Japan)	Existing prototype network of multi-directional muon detectors is going to be upgraded by extending detector size and adding new detectors. The number of directional channels will be doubled by this upgrading.	Extension of Brazilian detector is funded by NSF. Installations of new detectors in Kuwait & Germany are also funded by Kuwait Univ. and ESA, respectively.
5	TBD	Wide-field camera	Nicola Fox and Larry Paxton (APL)		TBD
6	Geomagnetic field	Magnetometer	Chris Russell (UCLA)	UCLA to fund 1 instrument for installation in Brazil	5 magnetometers requested by Jose Henrique, Brazil, project unfunded
			Ian Mann (Univ of Alberta)	Unfunded at this time	TBD
		MAGDAS	Kiyohumi Yumoto (SERC, Kyushu Univ.)	50 magnetometers were funded	Circum-pan Pacific region

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Nigeria, Pakistan, Peru, Philippines, Poland,
Portugal, Republic of Korea, Romania, the
Russian Federation, Saudi Arabia, Senegal,
Sierra Leone, Slovakia, South Africa, Spain,
Sudan, Sweden, Syrian Arab Republic, Thailand,
Turkey, the United Kingdom of Great Britain and
Northern Ireland, the United States of America,
Ukraine, Uruguay, Venezuela & Viet Nam

Contact your UN rep and update the IHY status