



Office for Outer Space Affairs
United Nations Office at Vienna



UN BASIC SPACE SCIENCE INITIATIVE:

BSS, IHY 2007, ISWI

Inauguration of the International Center for Space Weather Science and Education at SERC, Kyushu University, Fukuoka, Japan, 14 March 2012, Albert Einstein's Birthday and the 90th Anniversary of His Visit to Kyu Dai

**United Nations Office for Outer Space Affairs
Vienna International Centre, Vienna, Austria**

Information Dissemination: 193 UNDP Offices, Permanent Missions

BSS Workshops 1991-2004

Telescopes, Planetariums

IHY Workshops 2005-2009

Instrument arrays

ISWI Workshops 2010-2012

Array of arrays





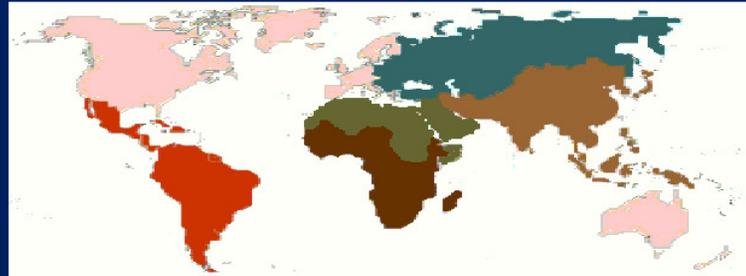
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UN INFORMATION DISSEMINATION NETWORK

UN Development Programme (UNDP) Offices

Permanent Missions of 193 UN Member States



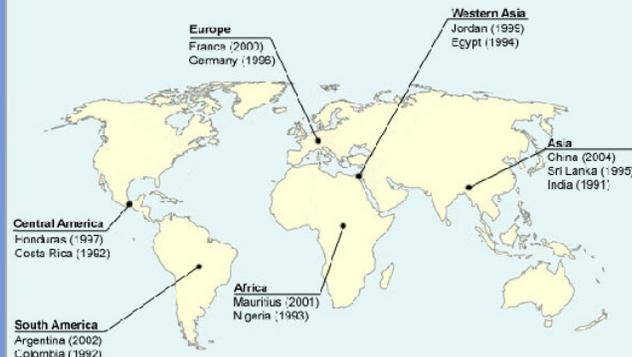
UNDP regional groupings
ESCAP, ECLAC, ESCWA, ECA, ECE





WORKSHOPS BASIC SPACE SCIENCE (BSS)

UN/ESA Workshops on Basic Space Science



Map BSS-0-01 Rev.1
October 2004

Office for Outer Space Affairs (UN-OOSA)
United Nations

Regional:

India, Costa Rica, Colombia, Nigeria, Egypt

Inauguration of optical telescopes:

Sri Lanka, Honduras, Jordan

International:

Germany, France, Mauritius, Argentina

Review of all workshops:

P.R. China



Mauritius



Argentina



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BSS TRIPOD: Telescope, Observing, Teaching

Government of Japan (NAOJ):

Japanese Cultural Grant Aid

45cm reflecting telescope

CCD & computer equipment

Building/ dome/ maintenance provided
by local institution

Singapore 1987, Indonesia 1988,
Thailand 1989, Sri Lanka 1995,
Paraguay 1999, The Philippines 2000,
Chile 2001, Mongolia 2008



Sri Lanka 1996

American Association of Variable Star Observers (AAVSO):

Hands-on Astrophysics

Setting Up a Variable Star Observing
Programme

Astronomy, mathematics, computer
science





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BSS TRIPOD: Telescope, Observing, Teaching

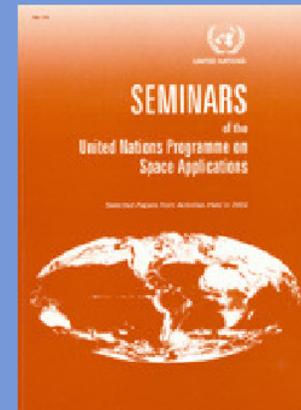
International Astronomical Union (IAU):

Astrophysics for University Physics Courses

Study/ comparison of university education curricula in developing countries

Elementary calculus
Classical mechanics
Statistical mechanics
Thermodynamics applied to astronomy

Advanced teaching material recommended:
K.R. LANG / J. BENNET et al.





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Planetariums

Planetarium
A Challenge
for Educators



UNITED NATIONS



Myanmar



Peru



Viet Nam

Government of Japan (NAOJ)

Host country

UNOOSA

**Myanmar, Jordan, Malaysia, The
Philippines, India, Argentina, Uruguay,
Vietnam, Thailand, Sri Lanka, India,
Uzbekistan, Paraguay, Ecuador,
Honduras, Costa Rica, Peru, Bolivia,
Cuba, El Salvador**

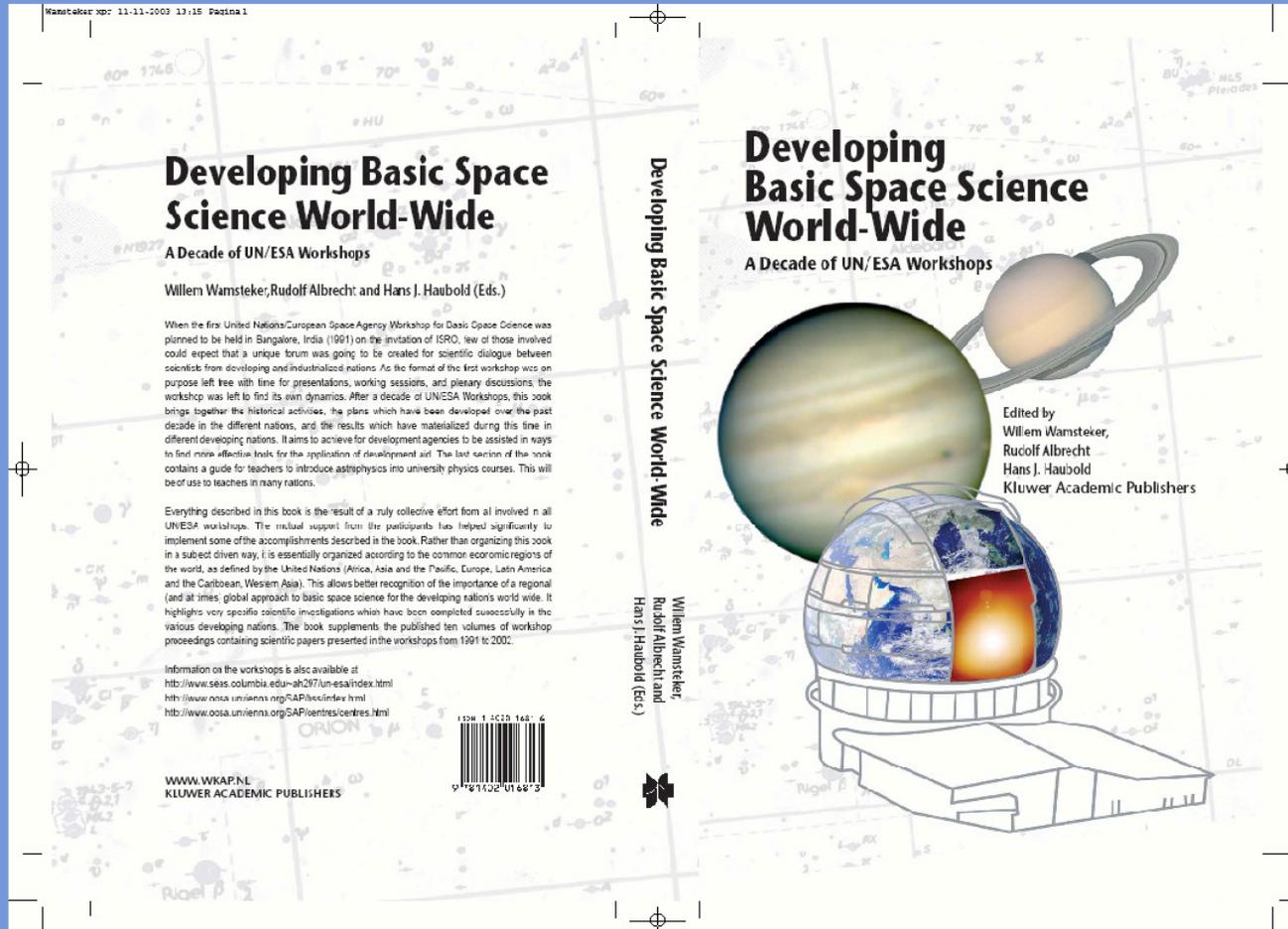




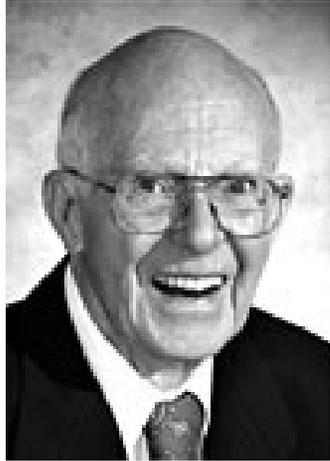
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Final Report BSS



The 2002 Nobel Prize Laureates in Physics



**Raymond
Davis Jr.**



**Masatoshi
Koshiba**

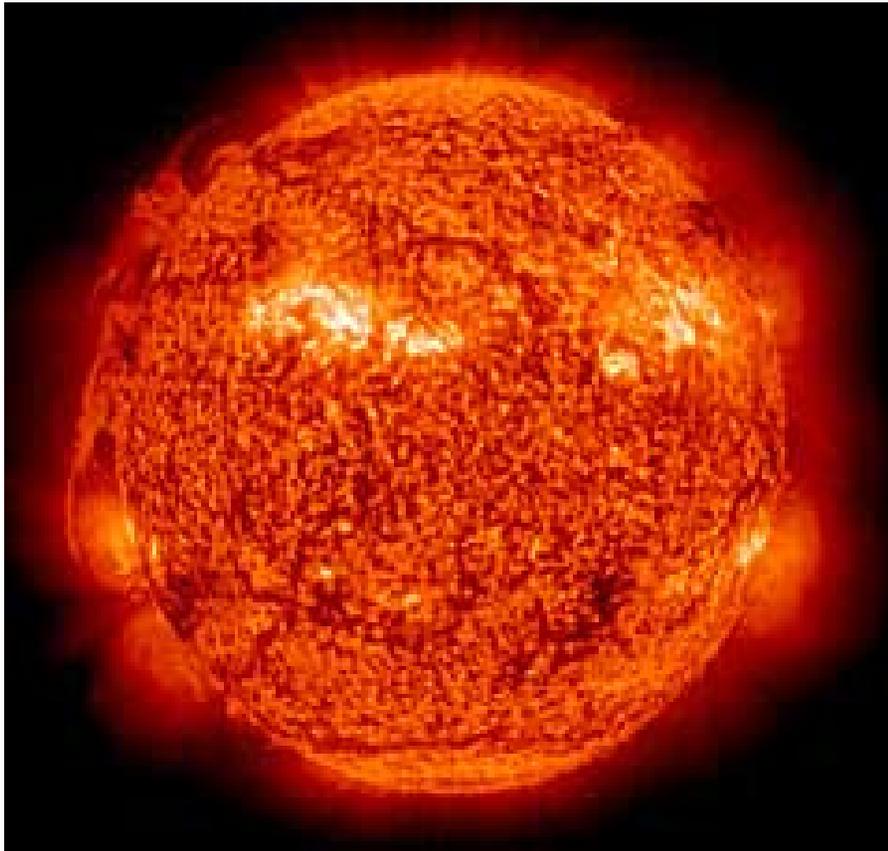


**Riccardo
Giacconi**

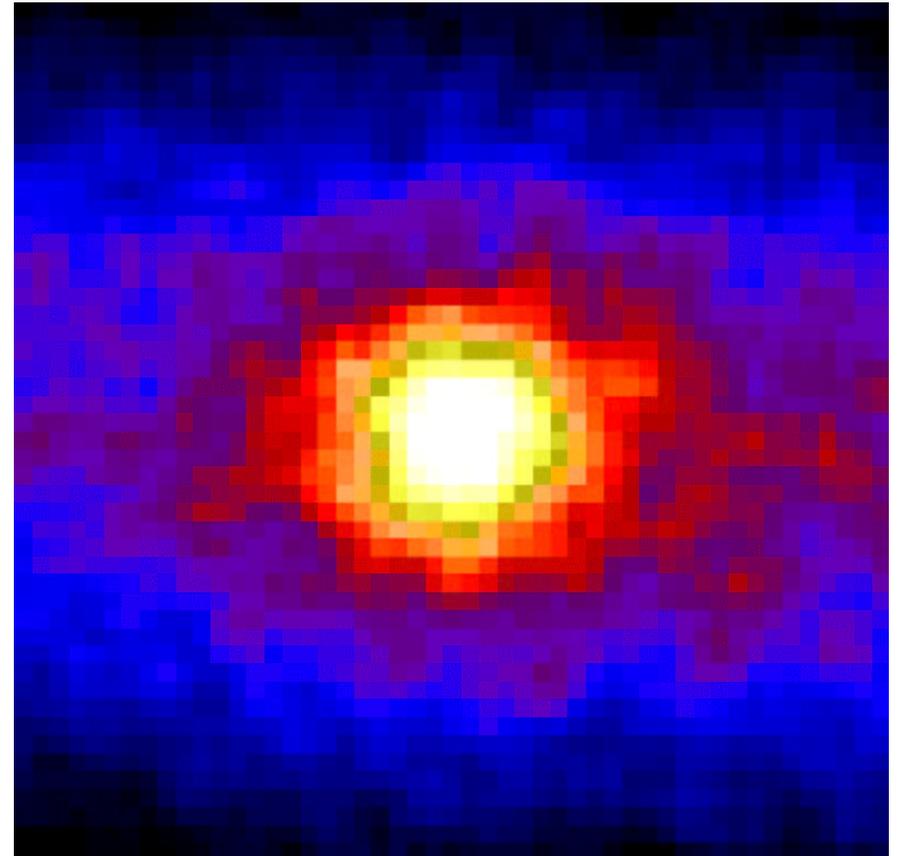
"for pioneering contributions to astrophysics, which have led to the discovery of cosmic X-ray sources"

"for pioneering contributions to astrophysics, in particular for the detection of cosmic neutrinos"

Gravitationally Stabilized Solar Fusion Reactor



Sun as seen by SOHO
(ESA/NASA)



Sun as seen by a neutrino
telescope(SuperKamiokande)



IHY 2007: WORKSHOPS 2005-2009

1st 2005 UAE

Instrument providers: Japan, USA, France,
Armenia, Brazil, Switzerland
and hosts: > 100 countries

Coordinated investigation programmes
Education and outreach

2nd 2006 India

3rd 2007 Japan

4th 2008 Bulgaria

5th 2009 Republic of Korea





IHY TRIPOD: Instrument Array, Data, Teaching

Since 2005, deploying small inexpensive instruments such as **magnetometers, radio antennas, GPS receivers, particle detectors, spectrometers** around the world to make global measurements of ionospheric, magnetospheric, and heliospheric phenomena

Partnership between instrument **providers** and instrument **host** nations.

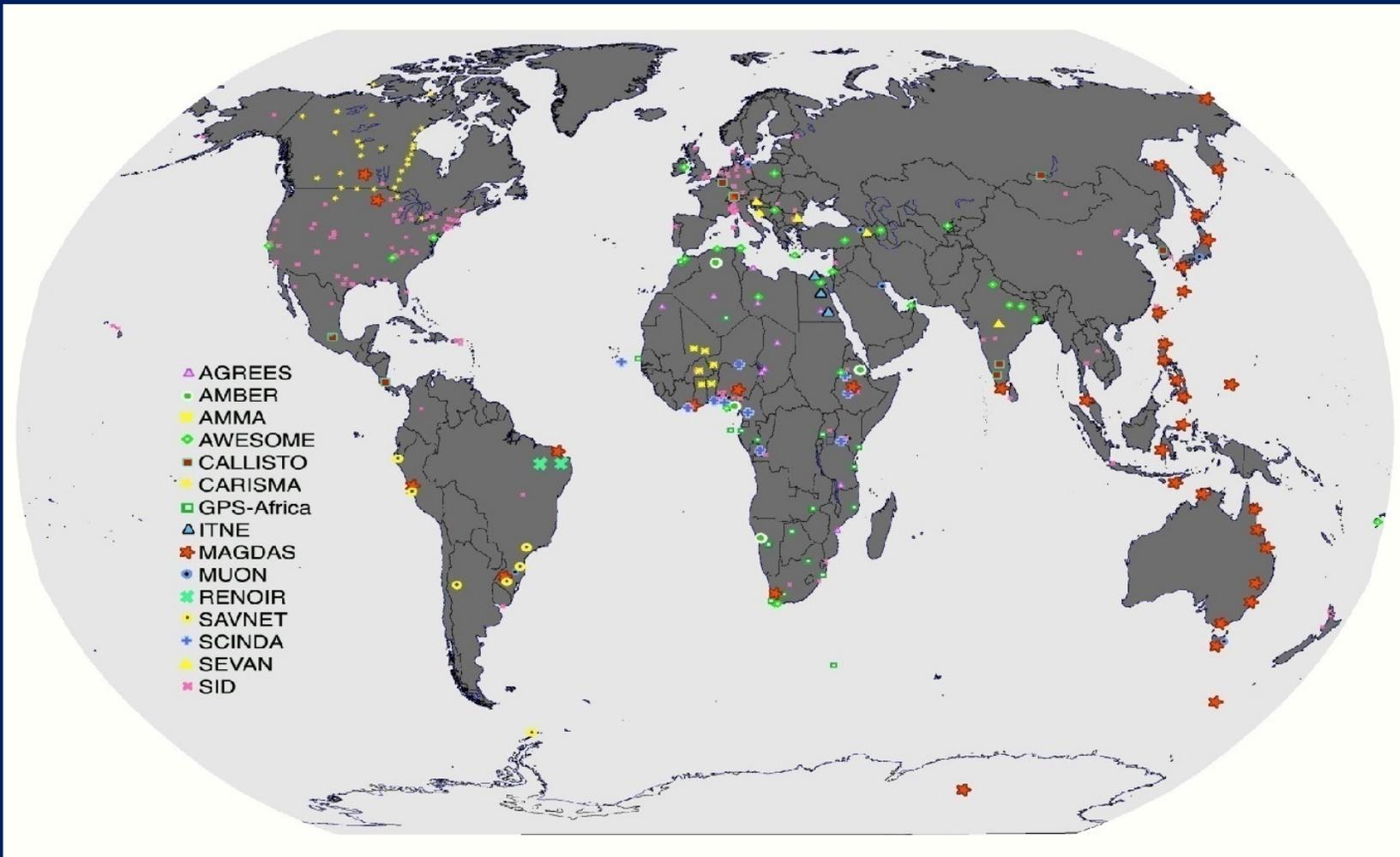
Provision of instrumentation by PI

Host institution makes available manpower, facilities, and operational support

Data taking, sharing, analysis, publication

Teaching space science at university level utilizing data





This model for developing instrument (500) arrays (15) was proven during the IHY



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Final Report IHY

Studies in Space Policy

B. J. Thompson · N. Gopalswamy
J. M. Davila · H. J. Haubold
Editors

Putting the "I" in IHY
The United Nations Report for the International
Heliophysical Year 2007
Studies In Space Policy, Vol. 3

This book about the international aspects and achievements of the "International Heliophysical Year (IHY) 2007" can be regarded as a compendium of the fertile impacts of conducting research in this field. The main focus, as the title implicates, is the international cooperation, which has emerged from this grassroots initiative. North and South, industrialized and developing countries have been coordinating their efforts and have been learning from each other in a mutual partnership under a joint understanding of sharing the scientific benefits. Through this, trans-border networks have been created and scientific as well as cultural exchange took place.

Another focus of the book shows, how much astronomy contributes to the basis of knowledge society as today's concept for mastering the future. Heliophysics has been and will be attracting large numbers of young people to enter an education and career in science and engineering. Such attractions we desperately need in all countries around the world, and we have to be glad about initiatives like IHY, which are successful in raising awareness, interest and fascination.

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Thompson et al. Eds



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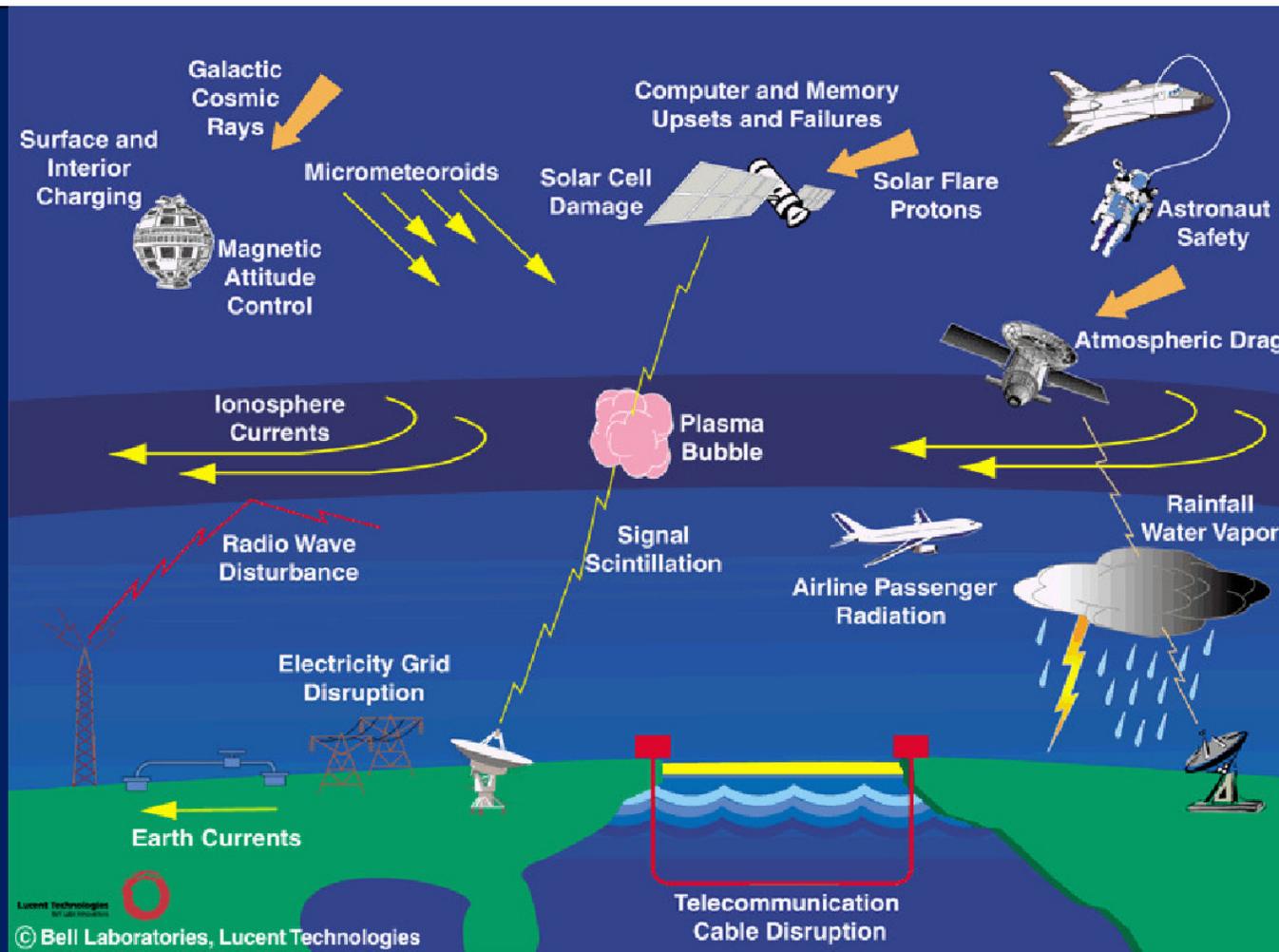


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European Space Policy Institute

ISWI 2010-2012



Information Dissemination

ISWI Newsletter

- Space Environment Research Centre
Kyushu University, Fukuoka, Japan
- To register send empty email to
ISWInewsletter-on@mail-list.com

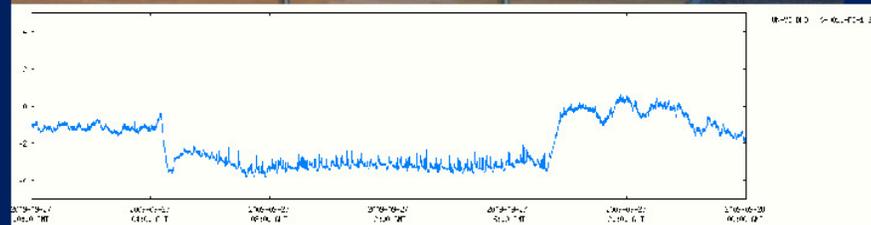
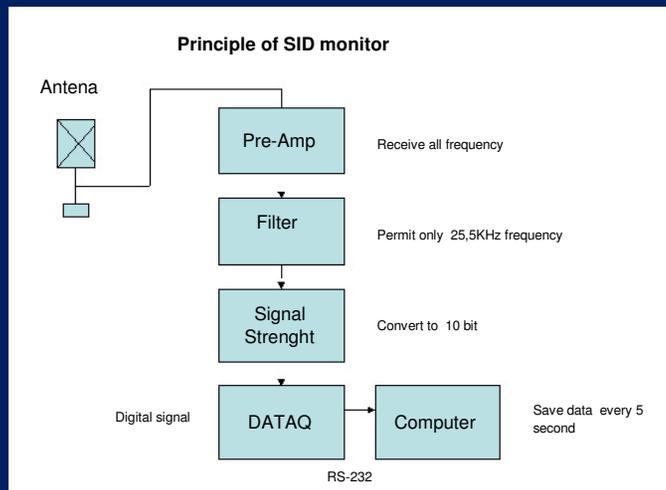


ISWI Website

- Solar Terrestrial Influences Laboratory
Bulgarian Academy of Sciences, Sofia, Bulgaria
- www.iswi-secretariat.org

Instrument Programme

Sudden Ionospheric Disturbance Monitor (SID) operated by UNOOSA



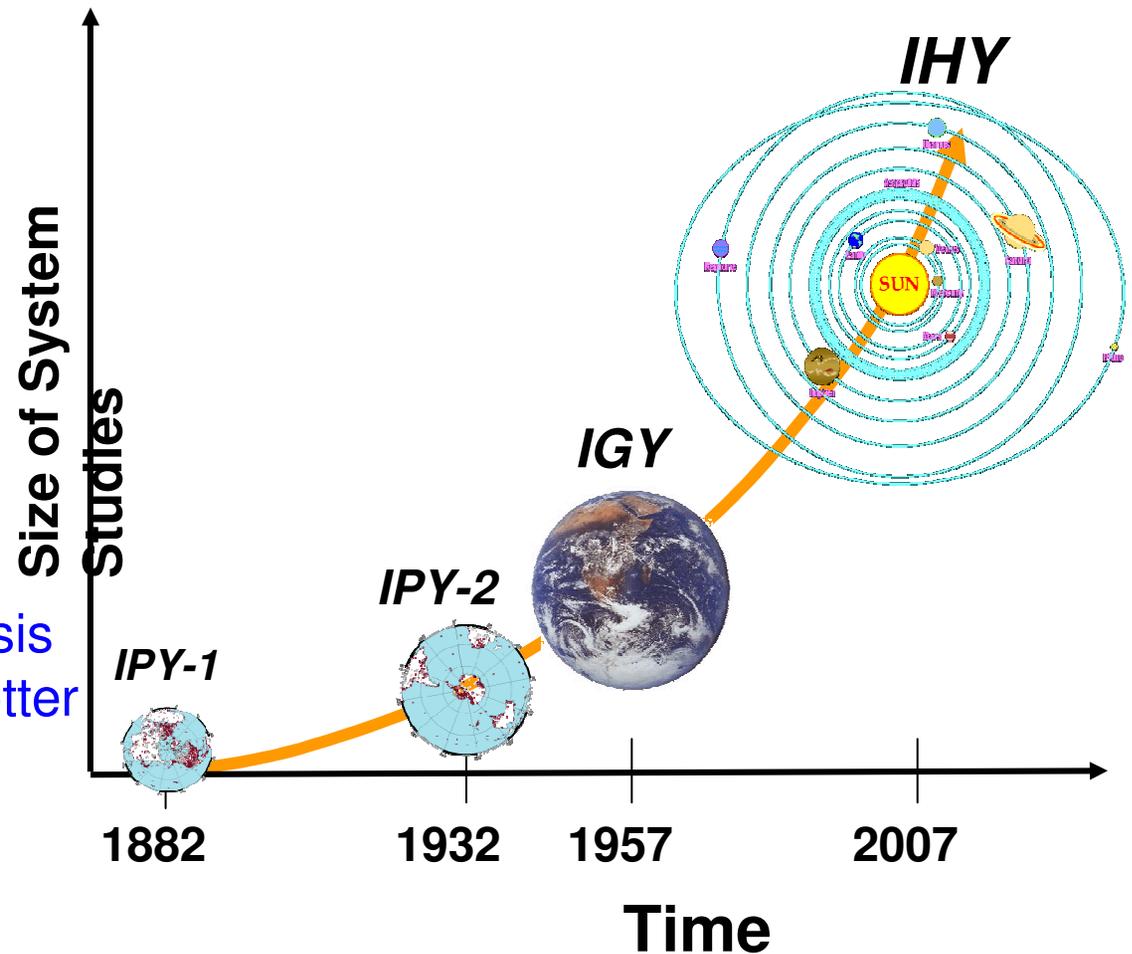
International Space Weather Initiative

Japan's Contribution to the ISWI

K. Yumoto¹⁾, S. Watari²⁾, T. Obara³⁾ and
STPP Sub-Committee⁴⁾

1) SERC, 2) NICT, 3) JAXA, 4) SCJ

1. Objectives of ISWI
2. Instrument Array Program
 - 2.1 CHAIN Network
 - 2.2 GMDN Network
 - 2.3 MAGDAS Network
 - 2.4 OMTIs Network
 - 2.5 SEALION Network
3. Training & Education
4. Data Coordination & Analysis
5. Outreach and ISWI Newsletter
6. Summary

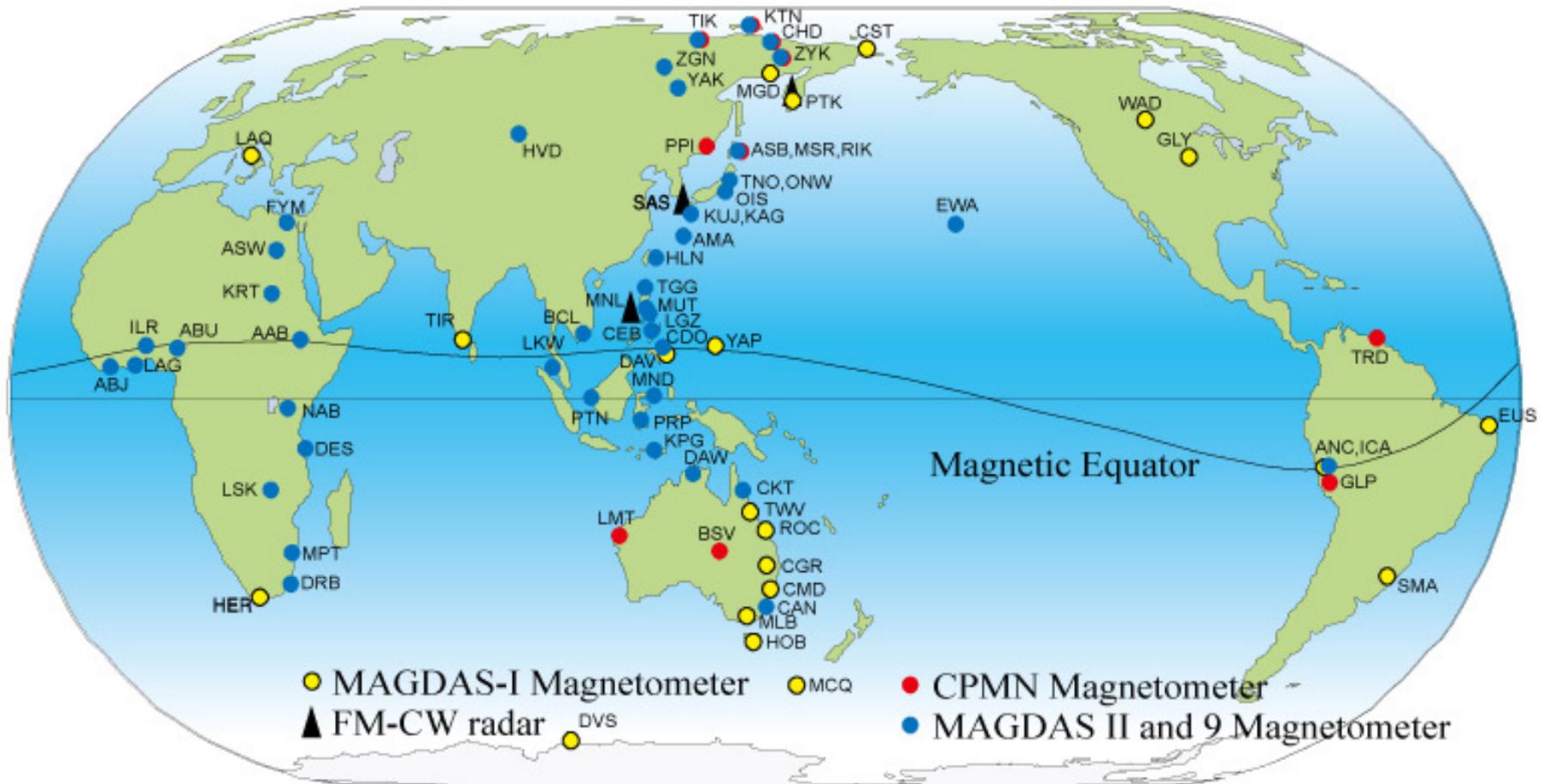


Current Japanese instruments (February 2011)

<i>Instrument</i>	<i>Lead scientist</i>	<i>Country</i>	<i>Objective</i>
Flare-monitoring telescopes under the Continuous H-alpha Imaging Network (CHAIN)	S. Ueno, K. Shibata, (Kyoto University)	Japan	Time variation and 3-D velocity field of solar activity, flares, filament eruptions and shock waves (Moreton waves) by using multi-wavelength H-alpha images of the full-disk Sun
Global Muon Detector Network (GMDN)	K. Munakata (Shinshu University)	Japan	To identify the precursory decrease of cosmic ray intensity that takes place more than one day prior to the Earth-arrival of shock driven by an interplanetary coronal mass ejection
Magnetic Data Acquisition System (MAGDAS)	K. Yumoto (Kyushu University)	Japan	Study of dynamics of geospace plasma changes during magnetic storms and auroral substorms, the electromagnetic response of ionomagnetsphere to various solar wind changes, and the penetration and propagation mechanisms of DP2-ULF range disturbances
Optical Mesosphere Thermosphere Imagers (OMTIs)	K. Shiokawa (Nagoya University)	Japan	Dynamics of the upper atmosphere through nocturnal airglow emissions
South-East Asia Low-Latitude Ionosonde Network (SEALION)	T. Nagatsuma (NICT)	Japan	Monitoring and study of ionospheric disturbances in the equatorial region by ionospheric and geomagnetic field observations
Education and outreach activities on space weather	S. Watari (NICT)	Japan	Education and outreach activities under the International Space Environment Service

MAGDAS/CPMN

(MAGnetic Data Acquisition System/Circum-pan Pacific Magnetometer Network)



Location of the 64 MAGDAS stations.

14 February 2012

K. Yumoto and G. Maeda
ISWI Steering Committee Meeting
United Nations Vienna

ISWI 2012: 16 + 2 Instrument Arrays

