





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







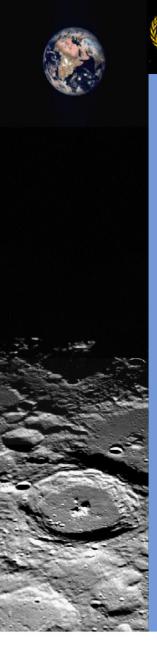
UN INFORMATION DISSEMINATION NETWORK

UN Development Programme (UNDP) Offices

Permanent Missions of 193 UN Member States



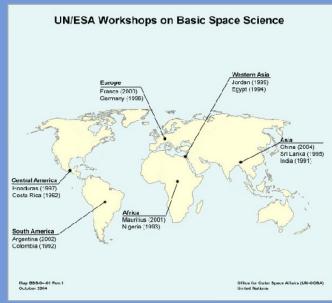
UNDP regional groupings ESCAP, ECLAC, ESCWA, ECA, ECE







WORKSHOPS BASIC SPACE SCIENCE (BSS)



Mauritius

Regional:

India, Costa Rica, Colombia, Nigeria, Egypt

Inauguration of optical telescopes:

Sri Lanka, Honduras, Jordan

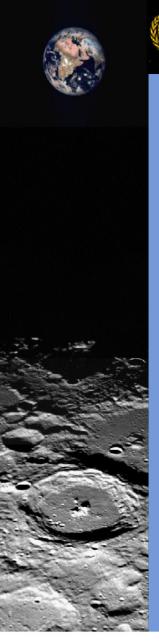
International:

Germany, France, Mauritius, Argentina

Review of all workshops:

P.R. China







science

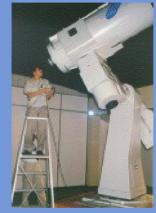


BSS TRIPOD: Telescope, Observing, Teaching

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

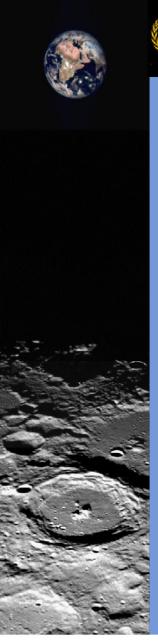


Sri Lanka 1996

American Association of Variable Star Observers (AAVSO):

Hands-on Astrophysics
Setting Up a Variable Star Observing
Programme
Astronomy, mathematics, computer









BSS TRIPOD: Telescope, Observing, Teaching

International Astronomical Union (IAU):

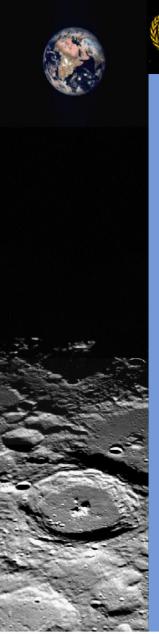
Astrophysics for University Physics Courses

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.









Planetariums



Government of Japan (NAOJ) Host country UNOOSA

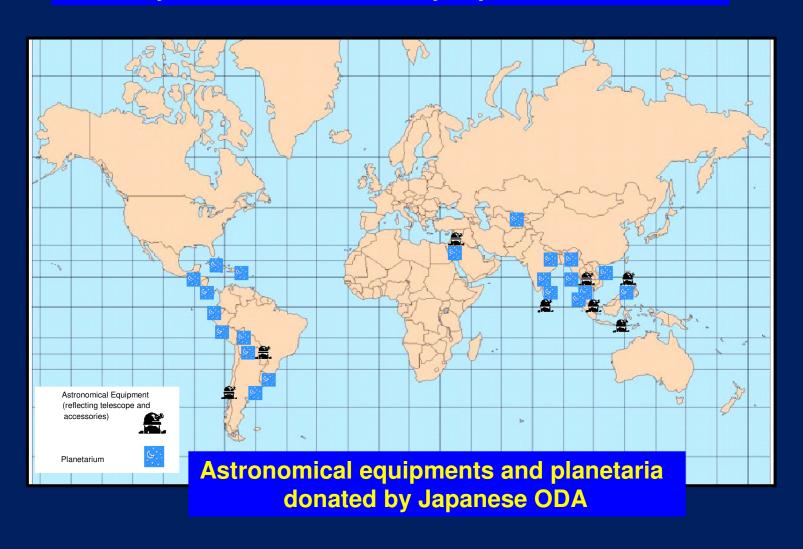
Myanmar, Jordan, Malaysia, The Philippines, India, Argentina, Uruguay, Vietnam, Thailand, Sri Lanka, India, Uzbekistan, Paraguay, Ecuador, Honduras, Costa Rica, Peru, Bolivia, Cuba, El Salvador

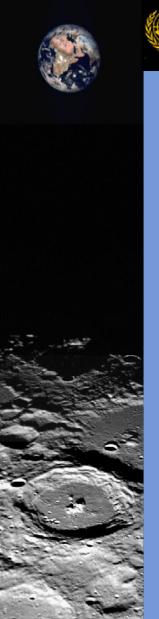
Viet Nam

Planetarium

AChallenge for Educators

Over 25 years of commitments by Japanese Government







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Final Report BSS

Developing Basic Space Science World-Wide

A Decade of UN/ESA Workshops

Willem Wamsteker, Rudolf Albrecht and Hans J. Haubold (Eds.)

When the first United Nations Curopean Opeac Agency Withhalbop for Dasic Opeac Oceance was planned to be held in Bungaire, India (1981) on the imitation of ISRO, ties of those involved could expect that a unique forum was going to be created for scientific dislicague between scientist from developing and industrialized nations. An the format of the first workshop was on purpose left fire with time for presentations, working sessions, and plearny discussions, the workshop was left to first first sam dynamics. After a decade of UNISSA Workshops, this book brings begether the historical activities, the plans which have beare developed over the past decade in the different nations, and the results which have materialized during this time in different developing nations. It aims to achieve for development agreedies to be assisted in ways to find none affective talles for the application of development all The last extens of the nanois contains a guide for teachers to introduce astrophysics into university physics courses. This will beed use to teachers in many realized.

Everything desorbed in this book is the "estitle" of a ruly collective effort from all involved in all UNISEA would beaution. The runkal support from the predictional has helped algorificantly to implement some of the accomplishments desorbed in the book. Rather than organizing this sook in a subset driven way, it is essentially organized according to the common economic regions of the word, as defined by the United Nations (Avice, Asia and the Paulific, Lurope, Leaf America and the Capiboean, Wessem Asia). This allows better recognition of the importance of a regional (and at times; joiled approach to bisic space science for the developing nations world wide. It highlights very specific scientific investigations which have been completed suscessfully in the valous developing nations. The book supplements the published ten volumes of workshop proceedings containing scientific pages presented in this workshops from 1914 to 2002.

Information on the vorkshops is also available at http://www.seas.columbia.edu-ah/207/un-esa/index.html http://www.oosa.un/ienna.org/SAP/leat/nets/html http://www.oosa.un/ienna.org/SAP/leat/res/centres/centres.html

WWW.WKAP.NL KLUWER ACADEMIC PUBLISHERS



Developing Basic Space Science World-Wide



Willem Wamsteker, Rudolf Albrecht and Hans J. Haubold (Eds.)

Developing Basic Space Science World-Wide



The 2002 Nobel Prize Laureates in Physics







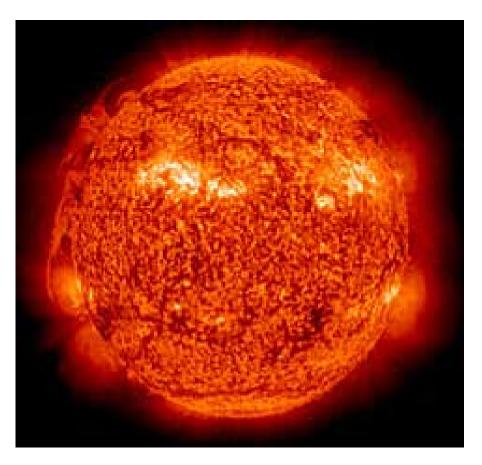
"for pioneering contributions to astrophysics, which have led to the discovery of cosmic X-ray sources"

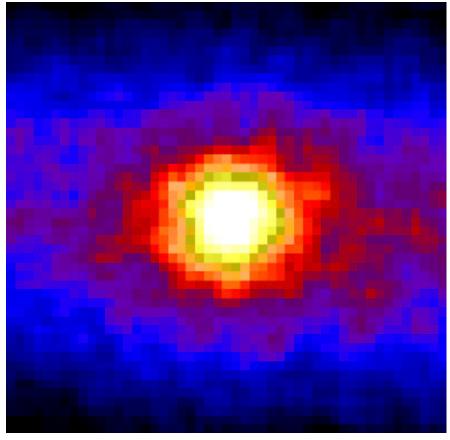
Raymond Davis Jr.

Masatoshi Koshiba Riccardo Giacconi

"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

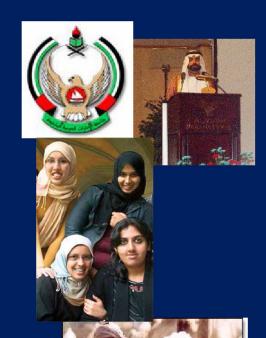
Coordinated investigation programmes Education and outreach

2nd 2006 India

3rd 2007 Japan

4th 2008 Bulgaria

5th 2009 Republic of Korea









IHY TRIPOD: Instrument Array, Data, Teaching

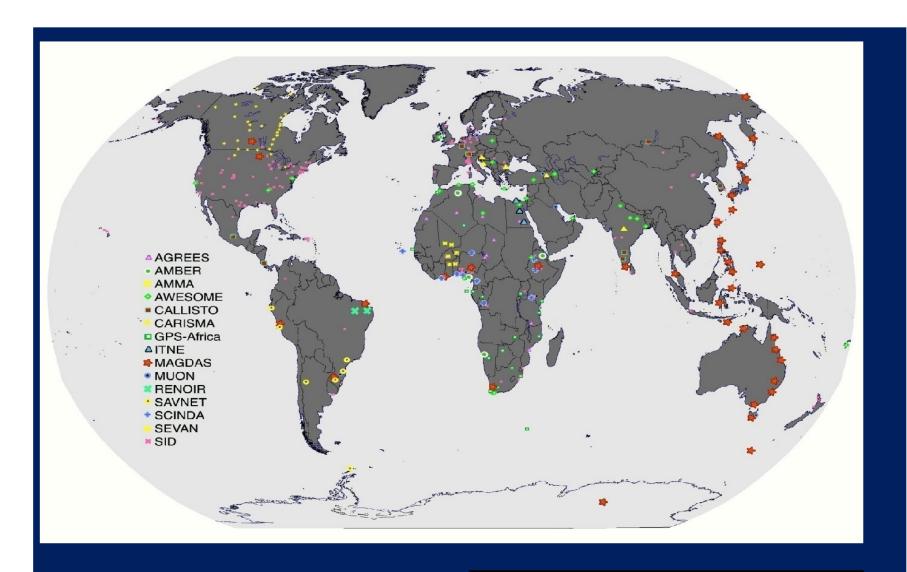
Since 2005, deploying small inexpensive instruments such as magnetometers, radio antennas, GPS receivers, particle detectors, spectrometers around the world to make global measurements of ionospheric, magnetospheric, and heliospheric phenomena

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







Final Report IHY

Thompson et al. Eds

Putting the "I" in 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

Heliophysical Year (HYY) 2007" can be regarded as a compendium of the fertile 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

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.









Studies in Space Policy

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



The United Nations Report for the International Heliophysical Year 2007







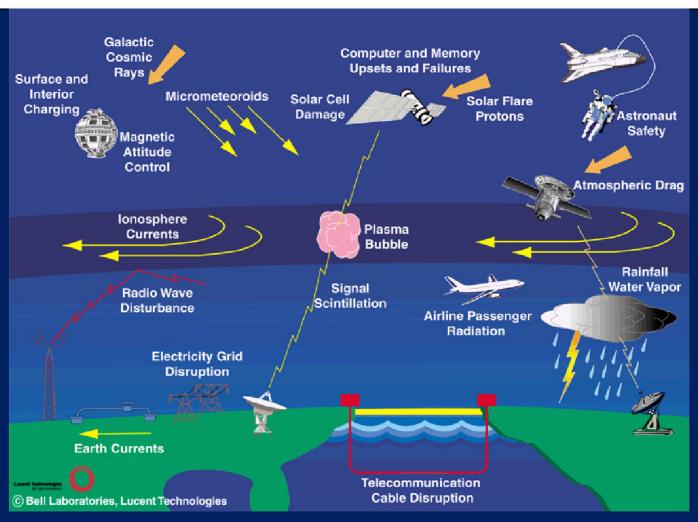








ISWI 2010-2012



International Space Weather Initiative

Information Dissemination

ISWI Newsletter

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



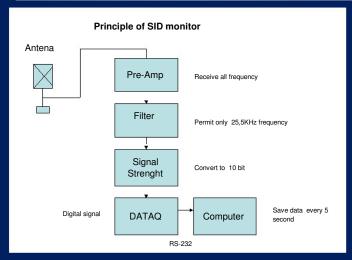
ISWI Website

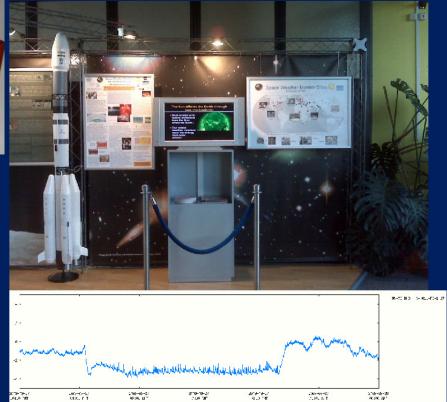
- Solar Terrestrial Influences Laboratory
 Bulgarian Academy of Sciences, Sofia, Bulgaria
- www.iswi-secretariat.org

Instrument Programme

Sudden Ionospheric Disturbance Monitor (SID) operated by UNOOSA







nternational 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

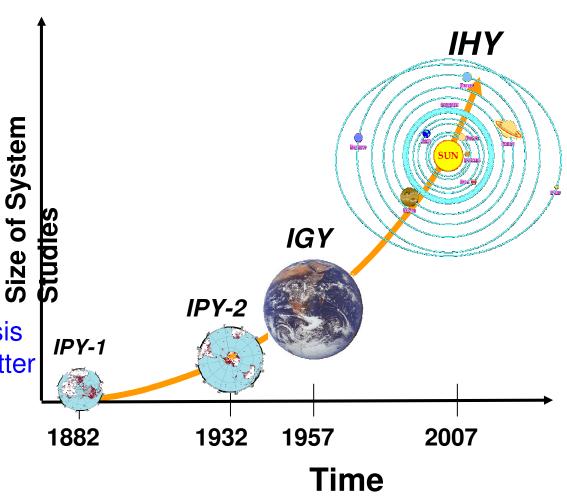
2.5 SEALION Network

3. Training & Education

4. Data Coordination & Analysis

5. Outreach and ISWI Newsletter

6. Summary

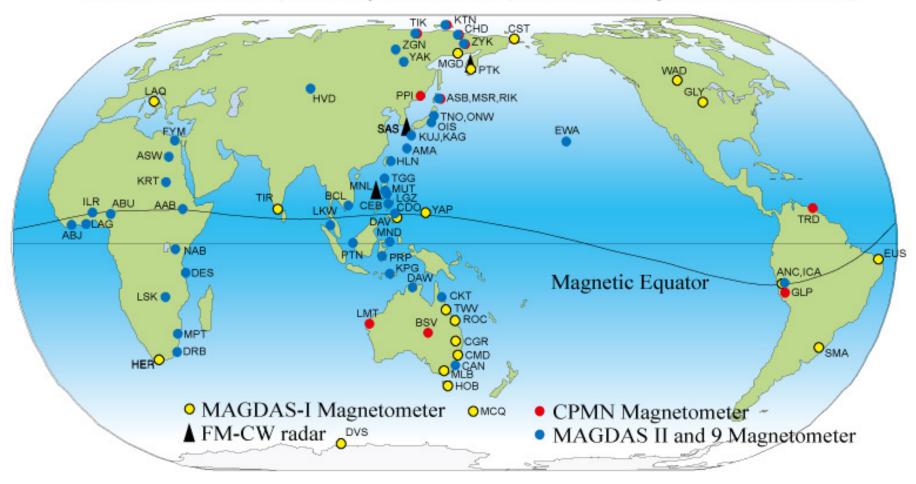


Current Japanese instruments (February 2011)

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<u>Instrument</u>	Lead scientist	Country	<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 Eartharrival 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 ionomagnetosphere 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 Acqusition System/Circum-pan Pacific Magnetometer Network)



Location of the 64 MAGDAS stations.

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

ISWI 2012: 16 + 2 Instrument Arrays

