



UN BASIC SPACE SCIENCE INITIATIVE

Basic Space Science International Heliophysical Year 2007 International Space Weather Initiative

Hans J. Haubold

United Nations Office for Outer Space Affairs
Vienna International Centre, Vienna, Austria
hans.haubold@unvienna.org

Information Dissemination: 178 UNDP, 185 PM

BSS Workshops 1991-2004

Telescopes, Planetariums

IHY Workshops 2005-2009

Instrument arrays

ISWI Workshops 2010-2012

Array of arrays

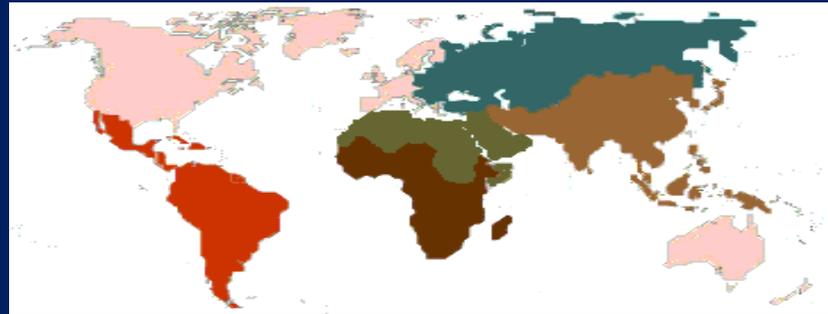
UN-affiliated Regional Centres for Space Science and Technology Education





UN INFORMATION DISSEMINATION NETWORK

- ◆ 178 UN Development Programme (UNDP) Offices
- ◆ 185 Permanent Missions of 192 UN Member States



UNDP regional groupings

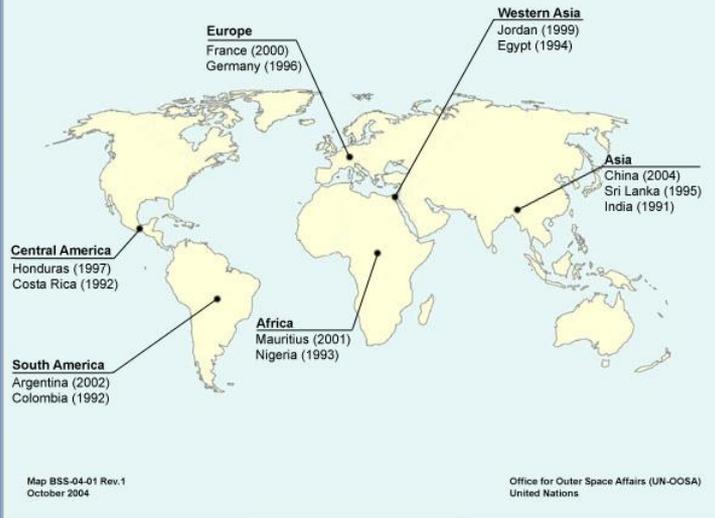




WORKSHOPS

BASIC SPACE SCIENCE (BSS)

UN/ESA Workshops on Basic Space Science



- **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 2001



Argentina 2002



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 2009, India?



Sri Lanka 1996

- ◆ **American Association of Variable Star Observers (AAVSO):**

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





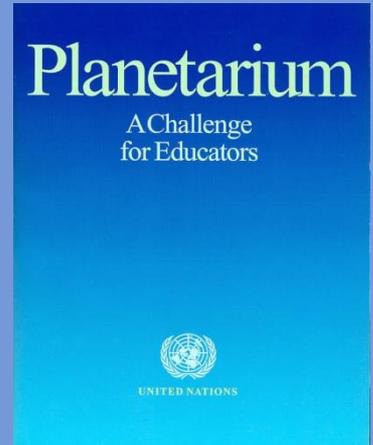
BSS TRIPOD: Telescope, Observing, Teaching

- ◆ **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



Myanmar 1986



Peru 2003



Viet Nam 1998

- **Government of Japan (NAOJ)**
- **Host country**
- **UNOOSA**
- **Myanmar, Jordan, Malaysia, The Philippines, India, Argentina, Uruguay, Vietnam, Thailand, Sri Lanka, Uzbekistan, Paraguay, Ecuador, Honduras, Costa Rica, Peru, Bolivia, Cuba, El Salvador**





Final Report BSS

ManoTekar xpr 11-11-2003 13:15 Pagina 1

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/European Space Agency Workshop for Basic Space Science was planned to be held in Bangalore, India (1991) on the invitation of ISRO, few of those involved could expect that a unique forum was going to be created for scientific dialogue between scientists from developing and industrialized nations. As the format of the first workshop was on purpose left free with time for presentations, working sessions, and plenary discussions, the workshop was left to find its own dynamics. After a decade of UN/ESA Workshops, this book brings together the historical activities, the plans which have been 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 agencies to be assisted in ways to find more effective tools for the application of development aid. The last section of the book contains a guide for teachers to introduce astrophysics into university physics courses. This will be of use to teachers in many nations.

Everything described in this book is the result of a truly collective effort from all involved in all UN/ESA workshops. The mutual support from the participants has helped significantly to implement some of the accomplishments described in the book. Rather than organizing this book in a subject driven way, it is essentially organized according to the common economic regions of the world, as defined by the United Nations (Africa, Asia and the Pacific, Europe, Latin America and the Caribbean, Western Asia). This allows better recognition of the importance of a regional (and at times) global approach to basic space science for the developing nation's world wide. It highlights very specific scientific investigations which have been completed successfully in the various developing nations. The book supplements the published ten volumes of workshop proceedings containing scientific papers presented in the workshops from 1991 to 2002.

Information on the workshops is also available at
<http://www.seas.columbia.edu/~ah207/un-esa/index.html>
<http://www.oosa.unvienna.org/SAP/bss/index.html>
<http://www.oosa.unvienna.org/SAP/centres/centres.html>

WWW.WKAP.NL
KLUWER ACADEMIC PUBLISHERS



Developing Basic Space Science World-Wide

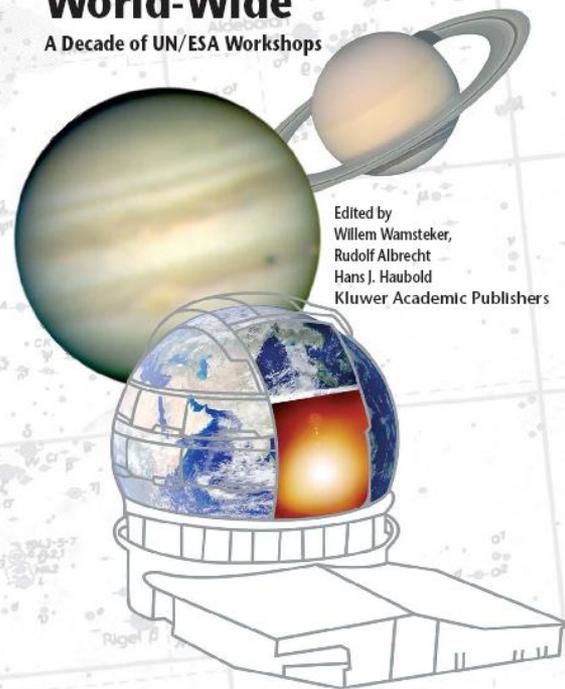
Willem Wamsteker,
Rudolf Albrecht and
Hans J. Haubold (Eds.)



Developing Basic Space Science World-Wide

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Edited by
Willem Wamsteker,
Rudolf Albrecht
Hans J. Haubold
Kluwer Academic Publishers





WORKSHOPS INTERNATIONAL HELIOPHYSICAL YEAR 2007 (IHY)

1st 2005, Al-Ain, UAE

Instrument providers and hosts
Coordinated investigation programmes
Education and outreach



2nd 2006, Bangalore, India



3rd 2007, Tokyo, Japan

4th 2008, Sozopol, Bulgaria

5th 2009, Seoul, Republic of Korea

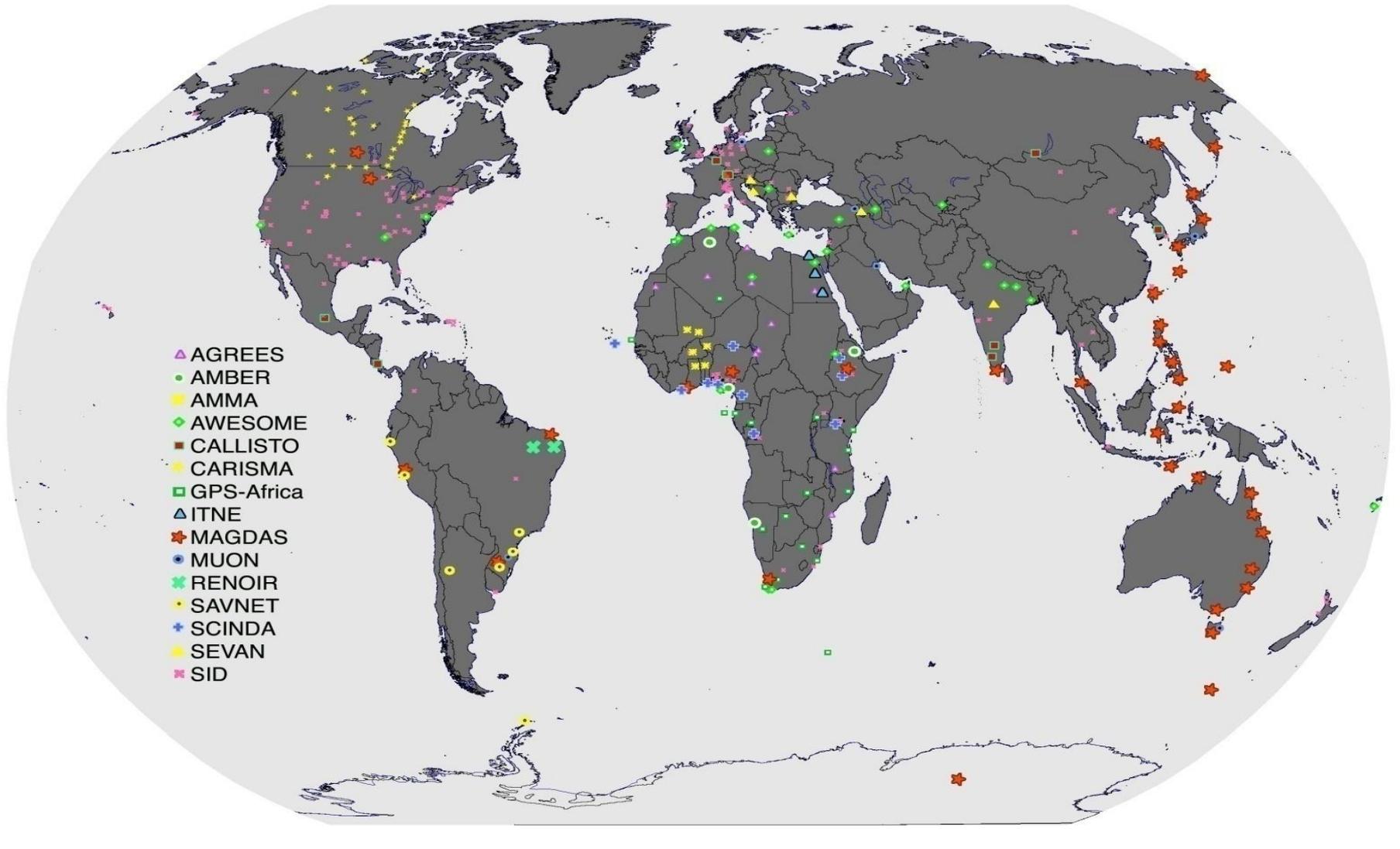




IHY TRIPOD: Instrument Array, Data, Teaching

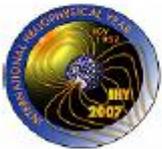
- ◆ Since 2005, deploying small inexpensive instruments such as **magnetometers, radio antennas, GPS receivers, particle detectors** around the world to make global measurements of ionospheric, magnetospheric, and heliospheric phenomena
- ◆ Partnership between instrument **providers** and instrument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





<http://www.ihy2007.org>

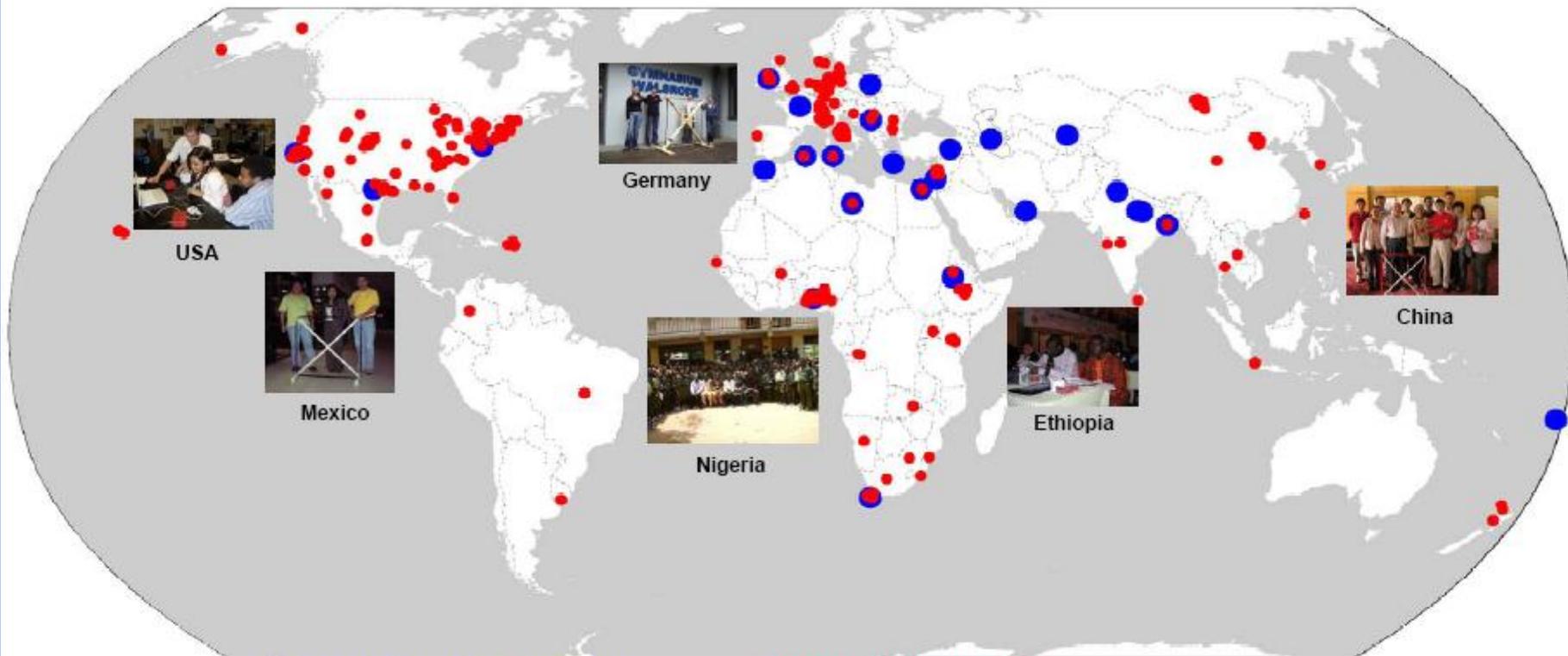
This model for developing instrument networks was proven during the IHY



Space Weather Monitor Sites



IHY Distribution 2007-2009



● AWESOME research monitors (26)

● SID student monitors (300) Larger dots indicate multiple sites



USA



Mexico



Romania



Lebanon



Thailand



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 implies, 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.

ISBN 1868-5307
ISBN 978-3-211-99179-4



springer.at



Thompson et al. Eds.



Putting the "I" in IHY

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Editors

Putting the "I" in IHY

The United Nations Report
for the International
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SpringerWienNewYork



European Space Policy Institute



Office for Outer Space Affairs
United Nations Office at Vienna



THE 5TH
UN/ESA/NASA/JAXA WORKSHOP
ON BASIC SPACE SCIENCE AND THE INTERNATIONAL
HELIOPHYSICAL YEAR 2007

22~25 September 2009
HYATT REGENCY JEJU IN KOREA

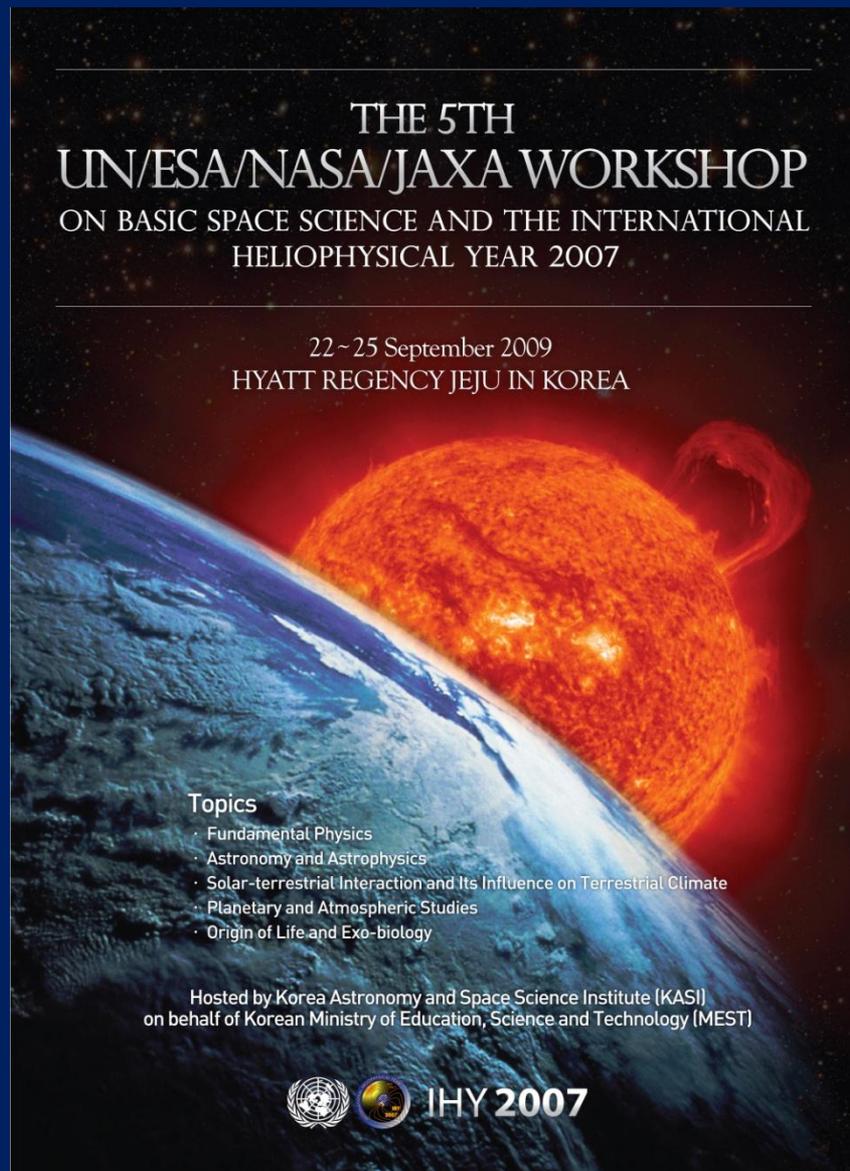
Topics

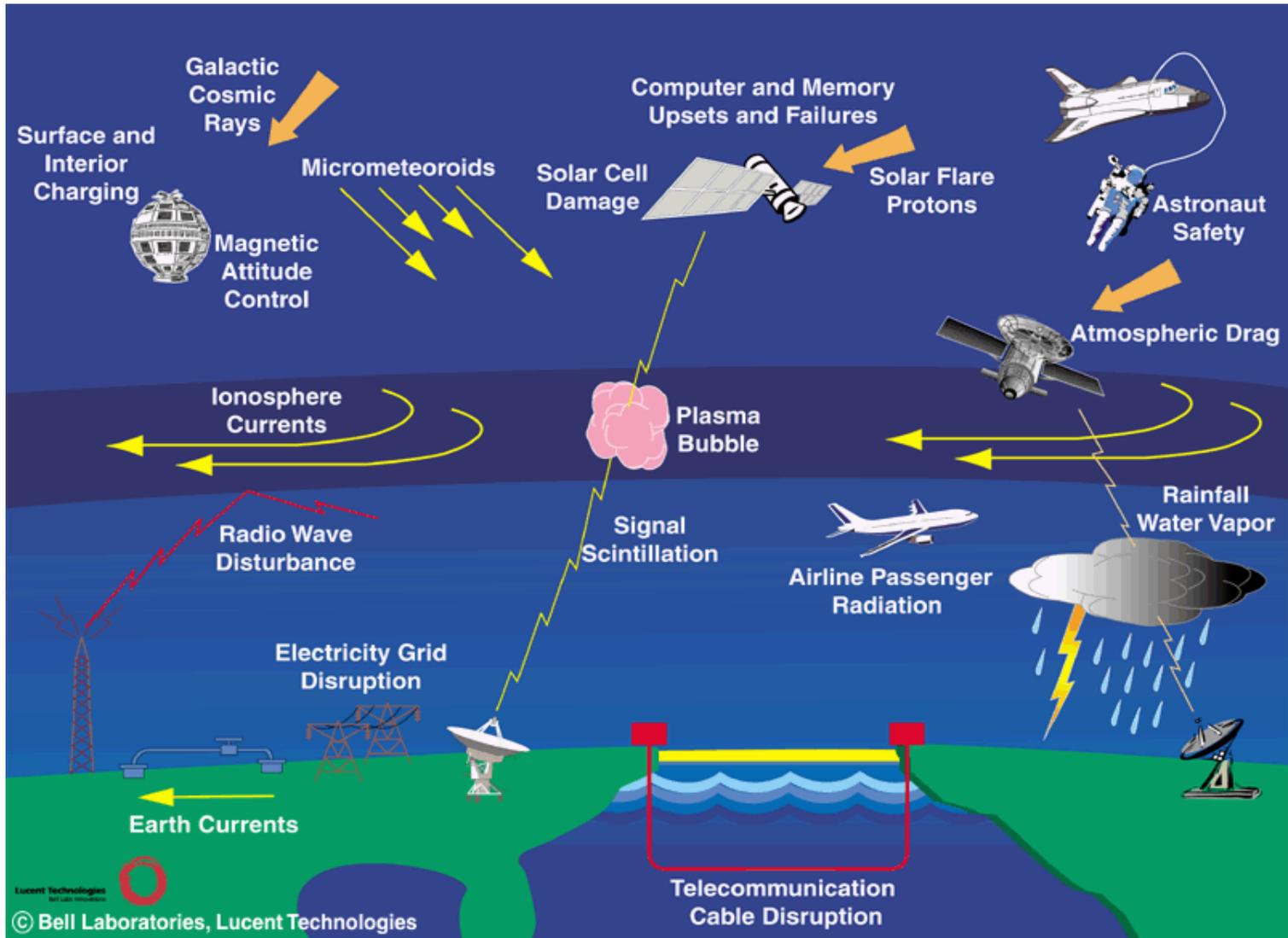
- Fundamental Physics
- Astronomy and Astrophysics
- Solar-terrestrial Interaction and Its Influence on Terrestrial Climate
- Planetary and Atmospheric Studies
- Origin of Life and Exo-biology

Hosted by Korea Astronomy and Space Science Institute (KASI)
on behalf of Korean Ministry of Education, Science and Technology (MEST)



IHY 2007





ISWI Newsletter

- **Space Environment Research Centre, Kyushu University, Japan**

ISWI Website

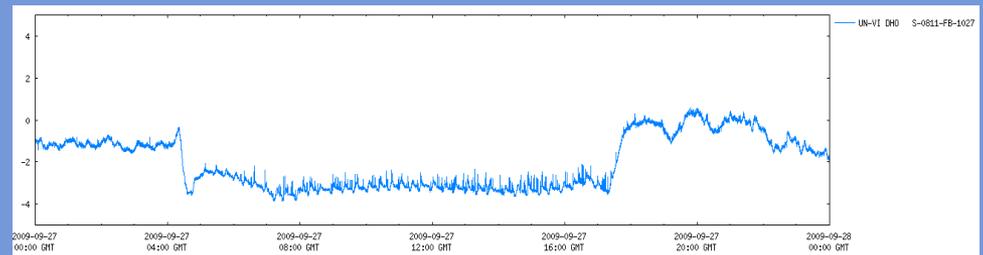
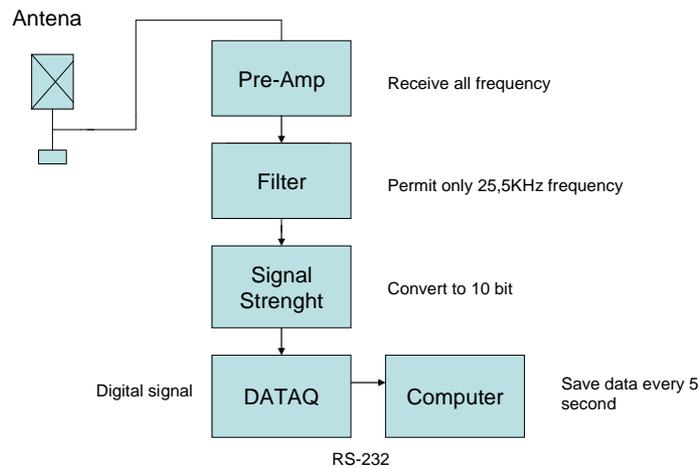
- **Solar Terrestrial Influences Laboratory, Bulgarian Academy of Sciences, Bulgaria**



Sudden Ionospheric Disturbance Monitor (SID) operated by UNOOSA



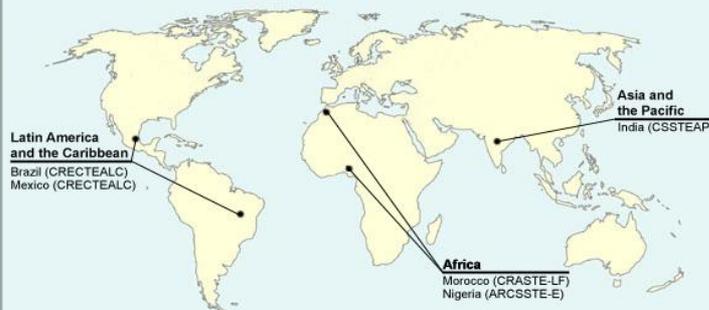
Principle of SID monitor





Regional Centres for Space Science and Technology Education (affiliated to the UN)

Regional Centres for Space Science and Technology Education
(affiliated to the United Nations)



◆ Regional Centres located in:

- ◆ Africa: CRASTE-LF (Morocco), CSSTE-E (Nigeria)
- ◆ Asia and the Pacific: CSSTEAP (India)
- ◆ Latin America and the Caribbean: CRECTEALC (Brazil/Mexico)

- ◆ The Regional Centres for Space Science and Technology Education were created under the auspices of the United Nations
- ◆ Goal: to develop, through in-depth education, an indigenous capability for research and applications in the core disciplines of:
 - ◆ Remote Sensing & GIS
 - ◆ Satellite Communications
 - ◆ Satellite Meteorology and Global Climate
 - ◆ Space and Atmospheric Sciences

