



Office for Outer Space Affairs
United Nations Office at Vienna



UN Office for Outer Space Affairs

International Heliophysical Year 2007

First Meeting of the ICG

1-2 November 2006

UNOV, Vienna

Second Meeting of the ICG

4-7 September 2007

Bangalore, India





International Heliophysical Year 2007 (IHY)



- ◆ 50th anniversary of IGY 1957
- ◆ 50th session of UNCOPUOS
- ◆ 40th anniversary of Outer Space Treaty
- ◆ 50th anniversary of Sputnik 1
- ◆ Putting the 'I' in IHY by coordinating with institutions in all 192 UN Member States (178 UNDP, 185 PM)
- ◆ Regional and international workshops on IHY jointly organized by UNOOSA and IHY Secretariat (2005-2009)
- ◆ International IHY website www.ihy2007.org
- ◆ UNOOSA IHY website www.unoosa.org/oosa/en/SAP/bss/ihy2007/index.html





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IHY: UNCOPUOS and UNGA

UNCOPUOS three-year Work Plan 2006-2008

**The United Nations General Assembly,
in its resolution 60/99 of 2005**

**“Also notes with satisfaction
the contribution being made by the
Scientific and Technical Subcommittee and
the efforts of Member States and
the Office for Outer Space Affairs to
promote and support the activities being organized within
the framework of the
International Heliophysical Year 2007”**





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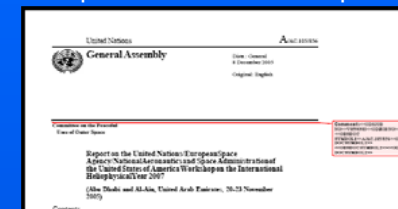
IHY Outreach

- ◆ Workshop Reports (UN docs)
- ◆ Flyer
- ◆ Poster
- ◆ Brochure
- ◆ 50-page Booklet

IHY Follow-up Projects

- ◆ Studying global phenomena on the largest possible scale with simultaneous observations from low-cost ground-based world-wide arrays of instruments and space-borne data (GPS)

Reports on IHY Workshops



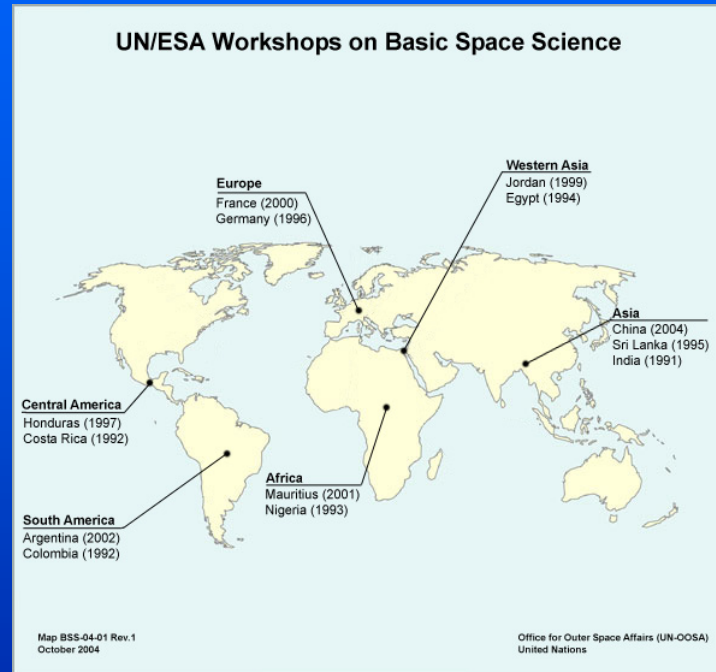
IHY Flyer



IHY Brochure (6 languages)



UN/ESA Workshops on Basic Space Science (1991-2004)



- ♦ **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





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BSS TRIPOD: Telescope, Observing, Teaching

◆ Government of Japan:

- ◆ Japanese Cultural Grant Aid
 - 45cm reflecting telescope
 - CCD & computer equipment
 - Building/ dome/ maintenance provided by local institution
- ◆ Sri Lanka 1996, Paraguay 2000, The Philippines 2001, Chile 2003, Nigeria 2004
- ◆ Bolivia, Pakistan, Ethiopia on-going



Sri Lanka 1996

◆ American Association of Variable Star Observers (AAVSO):

- ◆ Hands-on Astrophysics
- ◆ Setting Up a Variable Star Observing Programme



◆ Astrophysics for University Physics Courses

Telescope ⇒ Observing ⇒ Teaching ⇒ Data Analysis ⇒ Data Transfer ⇒ Telescope Networking





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First UN/NASA Workshop on IHY in November 2005 *“succeeded...beyond expectations!”*

- ◆ **UN, ESA, NASA, UAE Government sponsored**, attendance by His Highness Sheikh Al-Nahayan Minister of Education and the Chancellor of the UAE University
- ◆ **Instrument Donors Attending:**
USA, Canada, UK, Switzerland, Japan, Brazil, Armenia
- ◆ **Potential Hosts Attending:**
Georgia, India, Pakistan, Indonesia, Malaysia, Iraq, Iran, Sudan, Saudi Arabia, Algeria, Egypt, Libya, Cape Verde, Jordan, Ivory Coast, Cameroon, Nigeria, Eritrea, South Africa, ...



Second UN/NASA Workshop on IHY

IIA, November 2006, Bangalore, India

Third UN/NASA Workshop on IHY

NAOJ, June 2007, Tokyo, Japan





IHY: GPS Applications in Low-cost, Ground-based, World-wide Instrument Arrays

1. **Global Positioning System in Africa** (France)
Increase number of real-time dual-frequency GPS stations for ionospheric studies
2. **RENOIR: Remote Equatorial Nighttime Observatory for Ionospheric Regions** (U Illinois, USA)
Study equatorial/low-latitude ionosphere/thermosphere system
3. **SCINDA: Scintillation Network Decision Aid** (Hanscom AFRL, USA)
Prediction of communications degradation due to ionospheric scintillation
4. **SEVAN: Space Environment Viewing and Analysis Network**
(Alikhanian PI, Armenia)
Neutron-muon detecting system for cosmic ray secondary fluxes
5. **CIDR: Coherent Ionospheric Doppler Radar** (U Texas, USA)
Measure line-of-sight relative electron content using radio beacons
6. **Rutherford Appleton Laboratory Low-Cost Ionosonde** (RAL, UK)





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IHY: GPS: Africa

Dr. Christine Mazaudier

Terrestrial and Planetary Environment Research Center (CETP) of the
French National Center for Scientific Research (CNRS)

GPS-Network (23 nations): Algeria, Benin, Burkina Faso, Cape Verde,
Cameroon, Congo Brazzaville, Egypt Ethiopia, Ghana, Ivory Coast,
Kenya, Lybia, Nigeria, Republic of Central Africa, Democratic Republic
of Congo, Senegal, Tunisia, South Africa, Tanzania, Namibia, Zambia,
and Mazambique + Botswana through South Africa

UN IHY Policy: Communicate with providers/hosts through PM (185) and
UNDP(178)

Equipment: GSV 4004B GPS Ionospheric Scintillation and TEC Monitor and
Optional GPS702 Antenna

Research Field: atmospheric studies, ionospheric studies, geomagnetic
storms, equatorial anomaly, ...





IHY TRIPOD: Instrument Array, Data, Teaching

- ◆ **Since 2005, deploying small inexpensive instruments such as magnetometers, radio antennas, GPS RECEIVERS, all-sky cameras, etc. around the world to make global measurements of ionospheric, magnetospheric, and heliospheric phenomena**
- ◆ **Partnership between instrument providers and instrument host nations**
- ◆ **Lead scientist/engineer provides instrumentation
Host institution provides manpower, facilities, and operational support**
- ◆ **Data taking, sharing, analysis, publication**
- ◆ **Using data in teaching space science at university level**





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

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



- ♦ The Regional Centres for Space Science and Technology Education were created under the auspices of the United Nations through its Office for Outer Space Affairs (UNOOSA)
- ♦ 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 as well as data management.

♦ Regional Centres located in:

- ♦ African region: CRASTE-LF (Morocco), CSSTE-E (Nigeria)
- ♦ Asia and the Pacific region: CSSTEAP (India)
- ♦ Latin America and the Caribbean: CRECTEALC (Brazil and Mexico)



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THANK YOU!

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