Dear MAGDAS Host:

IHY (sometimes referred to as "IGY + 50") is drawing to a close. Final "country reports" are now being submitted to the IHY committee.

----> Attached is the final report for Japan.

Inside it, you will find a photo of those
who participated at the IHY workshop that was held at NAOJ (National Astronomical Observatory of Japan) in Tokyo in June of 2007. Half of the participants came from overseas. The other half were from Japan.

Dr Rabiu has submitted a smart-looking report for Nigeria.

If you want to send in a IHY report for your country, you have only a few days to do it.

Respectfully,
George Maeda
Editor-In-Chief.

end of MAGDAS newsletter.
Final IHY Report for Japan

Submitted by Professor K. Yumoto
On 6 November 2008
to Dr Barbara Thompson of IHY Committee.

All countries participating in IHY
are now submitting their final reports.

All reports will be compiled
and then issued as a formal document.

JAPAN

Submitted by Kiyohumi YUMOTO, Space Environment Research Center, Kyushu University, Fukuoka and the STPP Sub-Committee of the International Subgroup of the Earth and Planetary Science Committee, Science Council of Japan

IHY ACTIVITIES IN JAPAN

1. Introduction
In 1957, more than 66,000 scientists and engineers from 67 nations participated in the International Geophysical Year (IGY). Fifty years on, the International Heliophysical Year (IHY) will again draw scientists and engineers from around the globe in a coordinated observation campaign of the heliosphere and its effects on planet Earth. For the benefit of scientists and engineers from developing nations, the United Nations Office for Outer Space Affairs, through the United Nations Basic Space Science Initiative (UNBSSI), assists scientists and engineers from all over the world in participating in the preparations for IHY 2007-08 (See UN, 2006).

The IHY is an extensive international program to study the universal physical processes in the heliospace for a better understanding of the Sun-heliosphere system. In particular, the neutral and ionized matter in the heliospace and the interaction between them will be studied, from the atmospheres of Earth and planets to the interplanetary medium. The IHY will continue the legacy of the IGY during 1957-58 by extending the geophysical studies of 50 years ago to the combined system of the Sun and the planets. IHY also extends the physical realm from geospace to heliospace, recognizing the enormous progress made over the past 50 years.

2. Key Elements of IHY
There are four key elements of IHY: 1) Science (coordinated investigation programs or CIPs conducted as
campaigns to investigate specific scientific questions, 2) Instrument development (the IHY/UNBSS program), 3) Public Outreach (to communicate the beauty, relevance and significance of space science to the general public and students), and 4) the IGY Gold Club program (to identify and honor the scientists who worked for the IGY program).

3. IHY Activities in Japan
In June of 2006, the Science Council of Japan formally recognized the STPP (Solar Terrestrial Physics Program) subcommittee for International Affairs, Committee on Earth and Planetary Sciences, as the IHY National Steering Committee for Japan. The STPP subcommittee is chaired by K. Yumoto. The IHY National Steering Committee is promoting (1) the international network observations, (2) Public Outreach, (3) the international workshops, and (4) the nomination of IGY Gold Club members (see; http://www2.nict.go.jp/y/y223/sept/IHY/IHY.htm or http://www2.nict.go.jp/y/y223/sept/IHY/IHY-e.html);

4.1. MAGDAS Network
(PI: Prof. K. Yumoto, Space Environment Research Center, Kyushu Univ.) As Japan’s leading contribution to the IHY, the Space Environment Research Center (SERC) of Kyushu University, Fukuoka, Japan is in the process of deploying globally fifty state-of-the-art magnetometers. The MAGnetic Data Acquisition System (MAGDAS) Group seeks to deploy around the world in a strategic fashion a new generation of tri-axial fluxgate magnetometers (called MAGDAS) that transfer the digitized data to a central SERC server in real-time for space weather study and application during the IHY period (2007-2009). The MAGDAS stations were deployed along the 210° and 96° magnetic meridians and the magnetic dip equator as shown in Fig. 1. Attached to the end of this report is Annex V from the official UN report on the IHY Tokyo Workshop of June 2007. This is a list of installed MAGDAS units. The project will aid the study of the dynamics of geospace plasma changes during magnetic storms and auroral substorms, the electromagnetic response of the iono-magnetosphere to various solar wind changes, and the penetration and propagation mechanisms of DP2〜ULF range disturbances from the solar wind region into the equatorial ionosphere. With the help of MAGDAS data, one can conduct real-time monitoring and modeling of (1) the global three-dimensional current system, and (2) the ambient plasma mass density for understanding the electromagnetic and plasma changes in geospace, and (3) the ionospheric electric fields to know how to penetrate into the equatorial region (Yumoto et al., 2006, 2007).

4.2. Muon Detection Network
(PI: Prof. K. Munakata, Shinshu Univ.) This Muon detection network consists of nine institutes from seven counties (see Fig. 2), and performs cosmic ray monitoring for space weather study. This system, Muon Detector Network, performs space weather monitoring through the observation of the directional intensity of high-energy cosmic rays. In March 2006, this world-wide network of muon detectors was upgraded with both an enlargement of a detector in Brazil and the installation of a new detector in Kuwait-City, Kuwait. This enlargement vastly improved the coverage of cosmic ray pitch angle. The MUON DETECTOR NETWORK TEAM currently consists of the following institutes: (1) Physics Department, Shinshu Univ., (2) Bartol Research Institute, Univ. of Delaware, (3) STE Laboratory, Nagoya Univ., (4) Australian Antarctic Division, (5) School of Mathematics and Physics, Univ. of Tasmania, (6) Southern Regional Space Research Center, National Institute for Space Research,(7) Physics Department, Kuwait Univ. The precursory decrease of cosmic ray intensity is globally investigated one day prior to the sudden commencement of the
magnetic storm (Munakata et al., 2000). In December 2005, this world-wide network of muon detectors was upgraded with an enlargement of a detector in Brazil. This enlargement vastly improved the coverage of cosmic ray pitch angle.

4.3. Interplanetary scintillation (IPS) Network
(PI: Prof. M. Kojima and Prof. M. Tokumaru, Solar-Terrestrial Environment Laboratory, Nagoya Univ.) The interplanetary scintillation (IPS) is the remote sensing technique to observe the solar wind, which has advantages over some in situ spacecraft measurements: It can observe three-dimensional solar wind in a short time, and the observations can be carried out consistently over a solar cycle. They are planning coordinate IPS observations among IPS facilities, so that they can observe the solar wind in the full distance range from near sun region to the earth orbit and monitor the solar wind 24 hours a day. The IPS network does synergistic collaboration with the Solar Mass Ejection Imager (SMEI), which gives measurements of bulk density changes with much higher spatial resolution than the IPS. They also carry out a complementary collaborative project between the muon network and the IPS network, both of which can derive 3D CME structure; The IPS observe the density compressed region ahead of the ICME, while the muon network observes flux rope structure in the ICME (Kojima et al., 2005). The IPS observations can be carried out consistently over a solar cycle. They are planning coordinate IPS observations among IPS facilities (see Fig. 3), so that the solar wind can be monitored in the full distance range from near sun region to the earth orbit and in 24 hours a day. The coordinated network does synergistic collaboration with the Solar Mass Ejection Imager (SMEI), which gives measurements of bulk density changes with much higher spatial resolution than the IPS. The IPS observe the density compressed region ahead of the ICME, while the muon network observes flux rope structure in the ICME.

4.4. CHAIN Network
PI: Dr. S. Ueno and Prof. K. Shibata, Kwasan and Hida Observatories, Kyoto University, Japan
Continuous H-alpha Imaging Network (CHAIN)-project was planned to monitor solar flares and erupting filaments continuously by using several of characteristic telescopes. As part of CHAIN-project, they selected Peru as the country where the 1st oversea Flare Monitoring Telescope (FMT as shown in Fig. 4) will be installed. They are investigating various items, aiming to start the operation of the FMT in Peru by the end of 2009, such as the seeing condition and the size of the turbulence due to the heat haze, the best structure of the housing of the telescope, the efficient method of remodeling the telescope with corresponding to the latitude of Peru, the best combination of the observing wavelengths, the appropriate soft-ware for data processing under the computer environment at Ica University, the human environment and the way of training of the local staffs, etc.

5. Public Outreach
Public Outreach is carried out through the Network of International Space Environment Services of the National Institute of Information and Communi- cation Technology (NICT, PI: Dr. S. Watari). Pictured below is the NICT ("National Institute of Information and Communication Technology" of Japan) Space Weather Information Center of International Space Environment Services (ISES). Here, real-time data from satellites and ground-based observatories are monitored, and a forecast is issued everyday at 6:00 UT. The exploitation of space requires that we have a better understanding of space weather. At Space Weather Information Center, real-time data from satellites and ground observatories
are monitored, and a forecast is issued everyday at 6:00 UT as shown in Fig. 5. The exploitation of space requires that we have a better understanding of space weather. The home page of IHY in Japan can be seen at the following: http://www2.nict.go.jp/y/y223/sept/IHY/IHY.htm.

6. IHY Tokyo Workshop

Japan hosted an UN/ESA/NASA Workshop on Basic Space Science and IHY 2007 at the National Astronomical Observatory of Japan (NAOJ: see Fig. 6), Mitaka, Tokyo, on June 18-22, 2007 (Chair of LOC: Prof. T. Sakurai, NAOJ). Many workshops are being held in various countries in conjunction with IHY, with an aim to benefit scientists and engineers from developing nations. Information on the IHY workshop is available at http://ihy2007.org. To make the IHY Tokyo Workshop a reality, considerable financial support was provided by NAOJ and SERC. For example, SERC paid for the travel expenses of 5 Japanese persons and about 10 foreign scientists.

7. IGY Gold Club

Part of IHY is to celebrate the accomplishments of the International Geophysical Year of 1957. With this in mind, last year the "IGY Gold Club“ was initiated. Members are limited to those individuals who participated in IGY. To date, the following 12 persons from Japan have been selected as Gold Club Members (all nominated by SERC):

1. Dr. Kaichi Maeda,
2. Dr. Hiroshi Maeda,
3. Dr. Masahisa Sugiura,
4. Dr. Noboru Wakai,
5. Dr. Mutsuo Ishitsuka,
6. Dr. Hiroyoshi Tanabe,
7. Dr. Keizou Nishi,
8. Dr. Eijiro Hiei,
9. Dr. Masami Wada,
10. Dr. Tai-ichi Kitamura,
11. Dr. Takashi Oguti,
12. Dr. Ichiro Kondo

You may see the actual IGY Gold Club certificates (pdf copies) at this website: http://www2.nict.go.jp/y/y223/sept/IHY/IHY-e4.html

More members from Japan are expected, and are currently being nominated.

Acknowledgements: The IHY Organizer in Japan, K. Yumoto (SERC, Kyushu Univ.) would like to appreciate the following Japanese IHY Coordinators: Secretary of Japan IHY Dr. S. Watari (NICT), Prof. T. Sakurai (Natl. Astron. Obs. of Japan), Prof. M. Kojima (STE Lab., Nagoya Univ.), Prof. K. Shibata (Kwasan/Hida Obs., Kyoto Univ.), Prof. M. Fujimoto (JAXA/ISAS), and Assistant Secretary of Japan IHY Mr. G. Maeda (SERC, Kyushu Univ.) for their tireless effort and contributions to the IHY program in Japan.
References