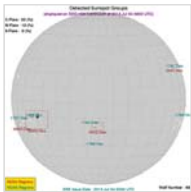


Issue2, July 2013

We hope the AOSWA framework helps our activities for improving space weather activities.

<http://aoswa.nict.go.jp/>

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## What purpose does AOSWA LINK serve?

AOSWA LINK is a newsletter service that seek to encourages communication among associates and all readers. Here, we will provide information about AOSWA , its work, associate's work and research, which create a mutual understanding that lead to better collaboration.

If you should wish to submit an article, you are greatly appreciated. The articles should be approximately 500 words and contain either figures or pictures. Also It is available for use as a means of spreading information, such as upcoming conference. Your feedback is always welcome.

Contact to: [sw-project-office@ml.nict.go.jp](mailto:sw-project-office@ml.nict.go.jp)

# Automatic Solar Synoptic Analyzer, the Analog-to-Digital Converter for Space Weather Prediction

*Sunhak Hong, Researcher  
National Radio Research Agency, Korean Space Weather Center, Korea*



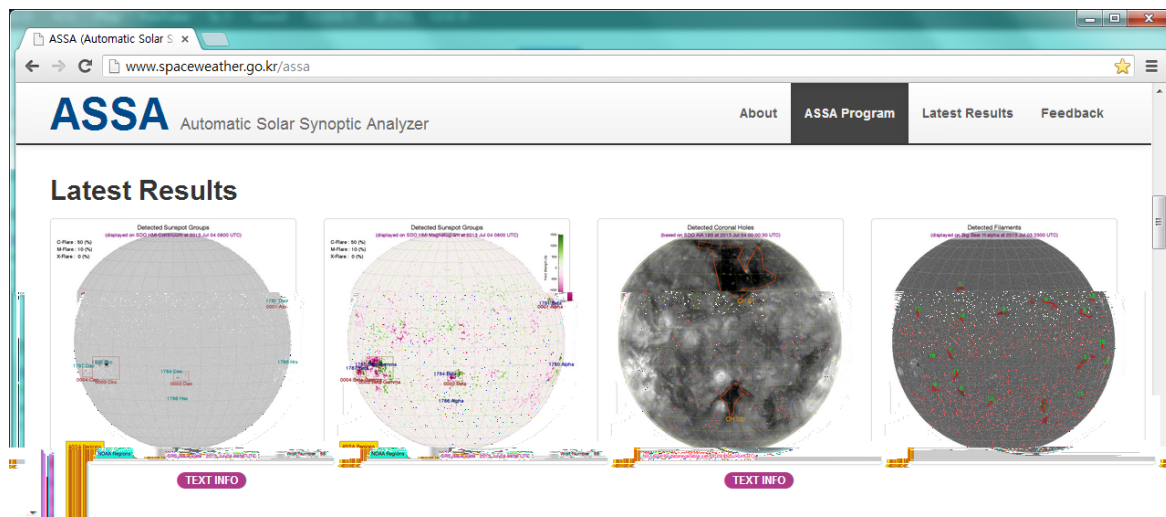
The Korean Space Weather Center of the National Radio Research Agency has developed an automated software system of identifying sunspot groups, coronal holes and filament channels, those are three major solar sources causing the space weather. Space weather forecasters of some space weather operation centers, *i.e.* NOAA Space Weather Prediction Center produce the solar synoptic drawings as a daily basis to predict solar activities, such as solar flares, filament eruptions, high speed solar wind streams, and co-rotating interaction regions as well as their possible effects to the Earth. As an attempt to emulate this process with a fully automated and consistent way, we developed a software system named ASSA(Automatic Solar Synoptic Analyzer).

When identifying sunspot groups, ASSA uses high-resolution SDO HMI intensitygram and magnetogram as inputs and providing McIntosh classification and Mt. Wilson magnetic classification of each active region by applying appropriate image processing techniques such as thresholding, morphology extraction, and region growing. At the same time, it also extracts morphological and physical properties of sunspot groups in a

quantitative way for the prediction of flares and CMEs. When identifying coronal holes and filament channels, images of SDO AIA 193 and global H-alpha network are used for morphological identification and also SDO HMI magnetograms for quantitative verification. The output results of ASSA are routinely checked and validated against NOAA's daily SRS(Solar Region Summary) and UCOHO(URSIdgram code for coronal hole information).

The overall procedures of obtaining raw data, digital image processing, producing output files are fully implemented with IDL(Interactive Data Language). which are operated automatically and periodically with one-hour cadence. ASSA has been deployed at the Korean Space Weather Center and serve its customers in an operational status from the December 2012. The resultant images and text data can be accessed at <http://www.spaceweather.go.kr/assa>. Additionally, a standalone IDL application program for ordinary users called ASSA GUI is being distributed, with which users can experience the same procedures of ASSA on their own computers. We presented our results back in 2012 AGU Fall Meeting and 2013 Space Weather Week.

**The website of the Korean Space Weather Center, where you can find the latest results of ASSA and download ASSA GUI program from.**



# Dagik Earth: A tool to present the space weather data in four-dimension

Akinori Saito, Ph.D.

Department of Geophysics, Kyoto University, Japan



It has been widely recognized that the education and public outreach (EPO) activity is crucial for research institutes/projects to contribute society. Digital 3D display of the Earth and planets, such as Geo-Cosmos by Miraikan, Japan, and the Science on a Sphere (SOS) by NOAA, is one of the useful tools to show the science data to general audience in an institutive way.

Figure 1. Dagik Earth in National Museum of Nature and Science, Tokyo.



Dagik Earth is an affordable, portable and open system for the four-dimensional presentation of the Earth and planetary science data. "Four-dimension" means 3D in space and one-dimension in time, here. It uses normal PC projector and PC (Windows and Mac). The software and contents are freely available for education at the Dagik Earth web site (<http://earth.dagik.org/english/>). Thus it is easy to start Dagik Earth if user can find something white and round.

There are several Dagik Earth contents that are related with the space weather phenomena, such as the GPS-TEC disturbances, aurora image by FUV on the IMAGE satellite, and solar images by the STEREO satellites.

I hope you can make an attractive EPO activity on space weather with Dagik Earth. Dagik Earth DVD is available on your request to [info@dagik.org](mailto:info@dagik.org). We appreciate any comments and questions on Dagik Earth.

Figure 2. Setup of Dagik Earth in a science museum.

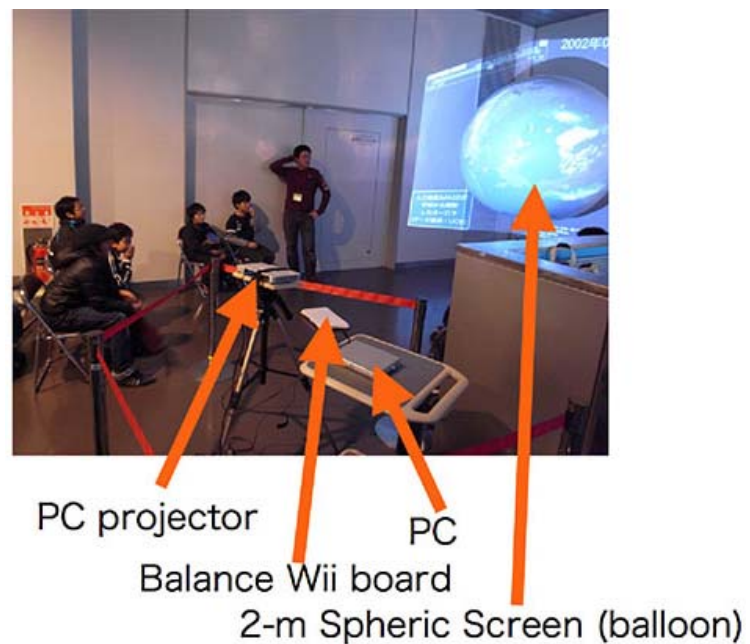
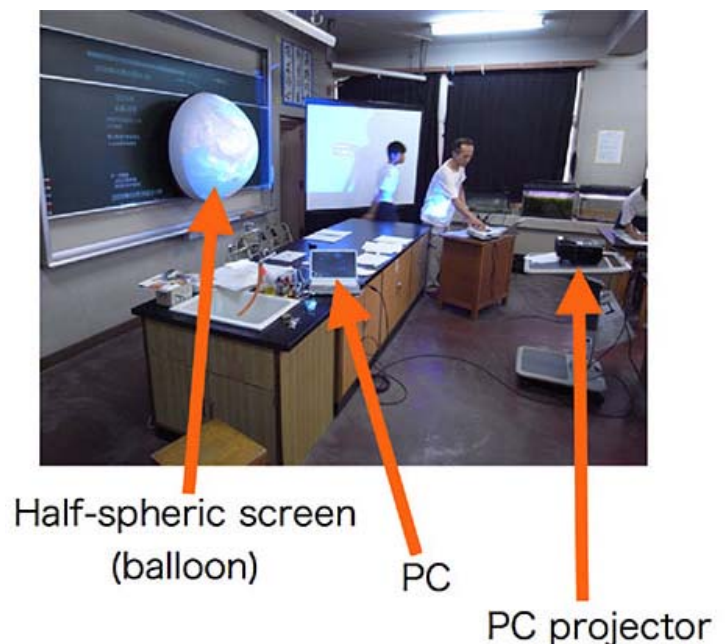


Figure 3. Setup of Dagik Earth in a classroom.



# Second announcement and Useful Information of the 2nd AOSWA Workshop

## *The National Space Science Center (NSSC) of the Chinese Academy of Sciences*

The 2nd AOSWA (Asia-Oceania Space Weather Alliance) Workshop will be held during 4-7 November 2013 in Kunming, China . We are pleased to announce that the online registration and the abstract submission are open for the 2nd AOSWA Workshop.

A limited amount of funds are available to young researchers and key contributors. Please send email (with abstract) to Siqing Liu (liusq@nssc.ac.cn) before August 1, 2013 for financial aid. The workshop website can be found at <http://www.aoswa2013.cn>

### *Important Dates*

- Financial support request (with abstract) deadline: August 1, 2013
- All abstracts due by August 20, 2013
- Early Bird registration deadline: August 31, 2013 (250 USD)
- Later and On-site registration (300 USD)

### *Accommodations*

Dianchi Garden Hotel is chosen as the official hotel for the workshop. Room reservation is accessible from the workshop website. The hotel will keep rooms available until October 10, 2013, and after this deadline the availability is not guaranteed.

### *Workshop Theme*

Space weather modeling from research to operation

### *Session topics*

- The research on solar cycle activity especially on the current solar cycle
- Ionosphere and related applications
- Radiation environment (radiation belt, cosmic rays, solar particle radiation) and effects
- The construction of space weather forecast models
- Research to operations (R2O)
- International coordination on space weather forecasting

### *Scientific Organizing Committee members*

Ji WU (Chair, NSSC, China)

Toshio IGUCHI (Co-Chair, NICT, Japan)

Jiancun GONG (Co-Chair, NSSC, China)

Weixing WAN (Co-Chair, IGG, China)

Mamoru ISHII (NICT, Japan)

Dave Neudegg (IPS, Australia)

Rupesh M. Das (NPL, India)

A. K. Upadhyaya (NPL, India)

Potapov Alexander Sergeevich (ISTP, Russia)

Sunhak Hong (RRA, Korea)

Huaning Wang (NAO, China)

Siqing Liu (NSSC, China)

Jun Lin (YNAO, China)





## Information of Kunming

very hot in summer. With its perpetual spring-like weather which provides the ideal climate for plants and flowers, Kunming is known as the "City of Eternal Spring". The city is covered with blossoms and lush vegetation all-year round.

Its economic importance derives from its geographical position. It is positioned near the border with Southeastern Asian countries, serving as a transportation hub in Southwest China, linking by rail to Vietnam and by road to Burma and Laos. This positioning also makes it an important trade center in this region of the nation. Kunming has been designated a special tourism center and as such sports a proliferation of high-rises and luxury hotels.

Kunming is the capital and largest city of Yunnan Province in Southwest China. It is the political, economic, communications and cultural centre of Yunnan. Located at an elevation of 1,950 meters on the Yungui Plateau with low latitude and high elevation, Kunming has one of the mildest climates in China. The weather never gets

## Visa Application

Attendees from most countries will be required to obtain a visa to enter the People's Republic of China; Attendees can apply for a Chinese visa through a travel agency or directly at the nearest Chinese embassy. If attendees apply for a tourist visa, which will allow them to attend the conference and go sightseeing, an official visa invitation letter will not be needed from BISMIS. No visa is required for ordinary passport holders from Singapore, Brunei and Japan to visit

China for up to 15 days for business, sightseeing, visiting relatives and friends or for transit.

Once you have paid for the AOSWA workshop registration, we will issue you an official invitation letter with CAS seal (also called Authorised Notification Form for Visa Application) to assist you to obtain a visa to China. You can use the letter to get a visa in the nearest Chinese Embassy/ Consulate.

## Tours Information

### Fu xian Lake

Fu Xian Lake is located in the boundary area of the Cheng jiang county and HuaNing county. Which is a about 70kms from kunMing. Fuxian lake has a shape of inverted gourd, it covers an area of 212 square kms, which is the 3rd largest lake in Yunnan. The main scenic spots around Fuxian Lake include luchong village and Yusun Hill in the

west, the hot water pond in the east, Jinsha Bathing beach in the north. Haimen river and Gushan island in the south.

### The Stone Forest

The Stone Forest lies about 80 miles to the southeast of Kunming. A geological phenomenon, the Stone Forest was a vast expanse of sea during the Paleozoic era— some 270 million years ago. Later, the movement of tectonic plates altered the earth's crust, causing the sea to recede and its limestone bottom to appear, thereby forming land. Due to the constant seeping of rain through the cracks in the limestone, some of the stone formation dissolved and the fissures broadened, producing a group of great sculptures of different shapes, all molded by na-



In the midst of the forest, there is a huge rock screen on which two words—Stone Forest—are engraved in official script (in a calligraphic style typical of the Han Dynasty, 206 B.C.-220 A.D.). Among the scenic sights is the "Sword Peak Pond" with jadeite-colored water so clear that one can see the bottom of the pond. Other astonishing sights include "Figure of Ashima," "Shi Ba Xiang Song" (its name originating in the Chinese love story, "Liang Shanbo and Zhu Yingtai"), and "Lotus Peak."

The splendor of the Stone Forest is enhanced by the local customs of the native Sani people (who are part of the Yi

minority). Sani people are industrious and hospitable—and unconstrained. Sani women are expert at spinning, weaving, and embroidering. They like to wear rainbow-colored headgear and bright-colored dresses. The young people especially are very good singers and dancers. Every day at sunset, under the moonlight, boys and girls gather at the village platform. While the boys play the three-stringed plucked instruments, the girls clap their hands and dance the strong-rhythmed traditional "A'Xi (Ah-shi) Dance in the Moon" with great enthusiasm. If you happen to witness the event, you will be invited to join in the festivity.

## And more...



For more information of the conference and traveling. Please see the link below.

<http://aoswa.nict.go.jp/info/workshop/2nd.pdf>

## Editor's notes

*Yuko Uchida, Editor of AOSWA LINK*

I've been a staff of AOSWA Secretariat since April 2013 and this is my first editing its newsletter. As this link is quite new service launched in 2013, I hope it works as effective communication tool and keeps on attract the interest of readers for long. Now I'm working on the website renewal which should be able to provide useful information more to visitors. It is my pleasure to engage in AOSWA work. Please feel free to contact me if you have any questions or comments.

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