

ST17-A012

Space Weather Monitoring and Forecasting Activities in NICT



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About NICT

- **Location: Koganei, Tokyo + several branches in Japan**
- **Number of staff: ~800 including 300 of permanent researchers and 300 of Post Doc. (~20 staffs in space environment group)**
- **The Only national institute in Japan for Information Technology (basically research organization)**
- **The originality of our institute was in ionospheric observations for monitoring short wave propagations**
- **Our study fields expand not only narrow meaning of IT, but also wide areas.**

ISES / Regional Warning Center Tokyo, Japan




Every afternoon, we make a daily forecast (solar flare, geomagnetic activity, proton event, condition of radio wave propagation) by the meeting.

WDC for Ionosphere

- Established on IGY year 1957
- Archiving mainly ionospheric vertical soundings of four Japanese and 141 worldwide stations.
- Items of ionospheric data
 - Ionospheric vertical soundings
 - Todside soundings
 - Oblique Incidence Soundings
 - Absorption
 - Ionospheric drifts and backscatter
 - Whistlers and VLF
 - Atmospheric Radio Noise



World Data Center for Ionosphere




National Institute of Information and Communications Technology
Applied Electromagnetic Research Center
Space Environment Group

Applied Electromagnetic Research Center
Space Environment Group

Japanese

WDC for Ionosphere



The World Data Centers (WDCs) were established in the International Geophysical Year of 1957-1958 (IGY) based on the recommendation from the International Council of Scientific Unions (now International Council for Science) to guard against catastrophic loss of data, and for the convenience of data providers and users.

National Institute of Information and Communications Technology (NICT) has taken charge of the WDC for Ionosphere. NICT has collected and archived the ionospheric data and metadata provided by various ionospheric observatories in the world (approximately 250 stations). These ionospheric data have been exchanged with other WDCs and been open to the public.

Ionospheric Data Catalog

Data Request Policies and Procedures

※Ionospheric observation data provided by NICT are also available online from [Data Archive](#).
※The other ionospheric observation data will be provided basically by paper-based archives.

List of Current WDCs

※ World Data Center System (<http://www.ngdc.noaa.gov/wdc/>)

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Broadcasting of SWx information on the Web, e-mail, etc.

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



The screenshot shows the NICT website homepage. At the top, there is a navigation menu with links like 'NICTについて', '研究紹介', '成果・社会還元', 'プレスリリース', '連携・支援制度', 'イベント&ピクニック', and '資料・データ'. Below this, there is a banner for 'INTEROP TOKYO | 7-10 JUNE, 2011' with the text 'NICTは Interop Tokyo 2011 に出展'. On the left side, there are several news items, including one about the Great East Japan Earthquake and another about the NICT exhibition. On the right side, there is a '最新トピックス' (Latest Topics) section with a list of recent news items dated from May 10th to 18th.



The screenshot shows the NICT Space Weather Portal. The main heading is '宇宙天気サービス' (Space Weather Service). Below the heading, there is a navigation bar with links for '宇宙天気情報センター' and '携帯電話版'. The central part of the page features a 'リアルタイムデータ' (Real-time Data) section with a table of space weather parameters and a 'シミュレーション' (Simulation) section. On the right side, there is an 'お知らせ' (Notice) section with a date of 2011/03/11 and a 'メンテナンス情報' (Maintenance Information) section with a date of 2011/4/12. At the bottom, there are two sections: '一般利用者向けサービス' (Services for General Users) and '研究者向けサービス' (Services for Researchers).

項目	値	単位	説明
太陽風速度	430	km/s	太陽風速度
太陽風密度	4.57	cm ⁻³	太陽風密度
太陽風圧力	4.21	nPa	太陽風圧力
太陽風電圧	448	mV	太陽風電圧
太陽風電流	1.5	MA	太陽風電流
太陽風電圧	0.7	mV	太陽風電圧

NICT Space Weather Portal

http://www2.nict.go.jp/y/y223/sw_portal/sw_portal.html

New product for publicity and education - Weekly Space Weather News (trial version)-



週刊宇宙天気ニュース | Weekly Space Weather News - Windows Internet Explorer

http://www.seg.nict.go.jp/wsw/index.html

週刊宇宙天気ニュース

Weekly Space Weather News

2010年2月
配信開始

2010年2月から新しい宇宙天気情報サービスとして、「週刊宇宙天気ニュース」がスタートしました。毎週、金曜日の夕方に最新版が配信されます。なお、この週刊宇宙天気ニュースは宇宙天気情報をわかりやすく提供するための新たな形態として試験的に実施するもので、ニュース内での説明や画像などに関して、随時変更があることを予めご了承ください。さらに詳細な宇宙天気情報については、[宇宙天気予報](#)をご覧ください。

週刊宇宙天気ニュースは宇宙天気情報を動画で提供するものです。世界各地の観測データを基に、情報通信研究機構での観測等も加味して、この一週間の太陽活動、地磁気活動、電離圏の情報と今後一週間の状況についての予報をお伝えします。また、宇宙天気に関する豆知識やインタビューのコーナーもあります。

2010年4月23日号(4月15日～4月21日)No.12

概況 この1週間、太陽活動はおおむね静穏でした。太陽風、地磁気、電離圏ともに、おおむね静穏な状態が続きました。

豆知識 太陽から吹き出す超音速の風ー太陽風

初めまして。2010年から宇宙天気ニュースの放送が始まりますが、ミスは愛嬌です。よろしくお願いします。



ページが表示されました

インターネット 100%

NICT Space Weather Monitoring Networks (NICT-SWM)



Magnetometer

Magnetometer & HF radar observations in Far East Siberia

South-East Asia low latitude Ionospheric Network (SEALION)

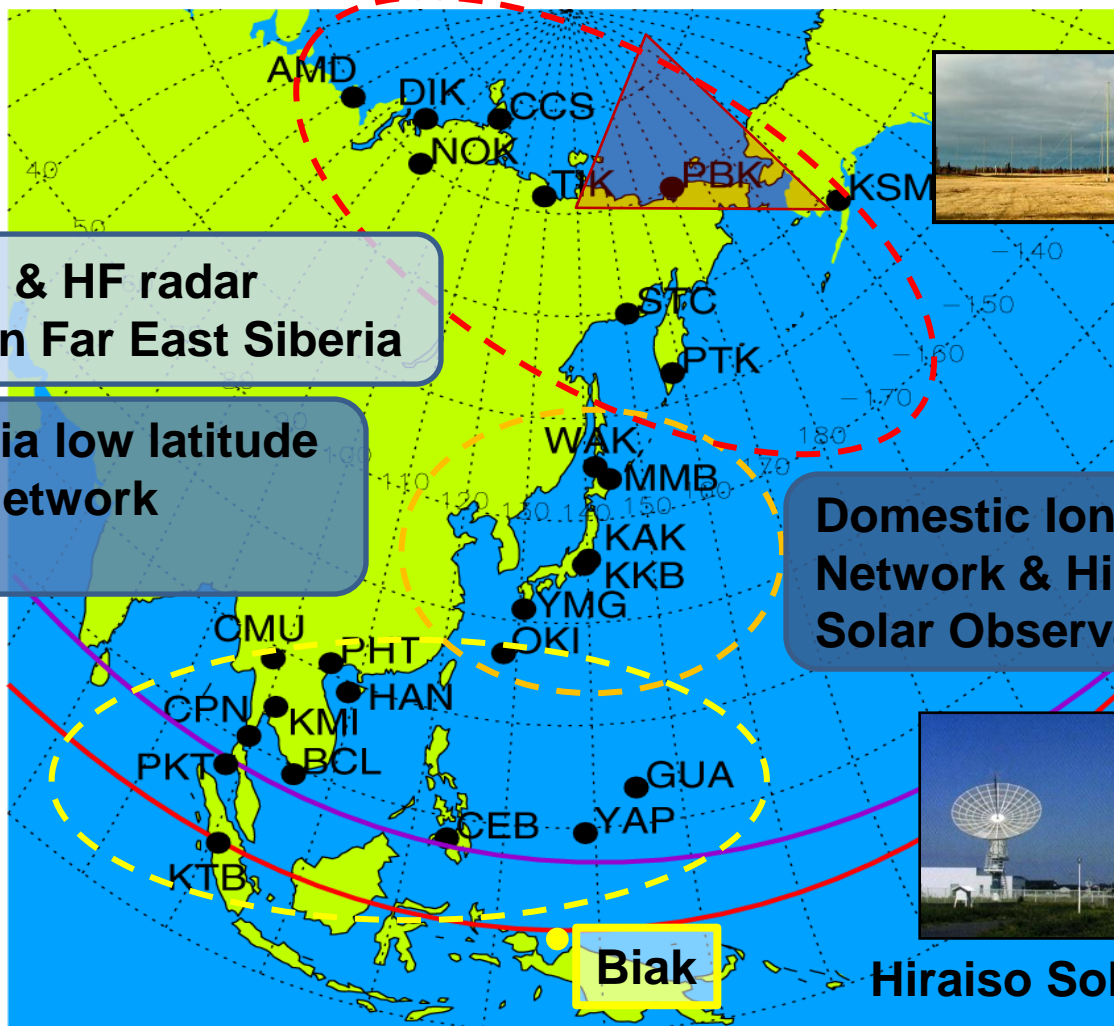


HF radar (SuperDARN)

Domestic Ionosonde Network & Hiraiso Solar Observatory



Ionosonde



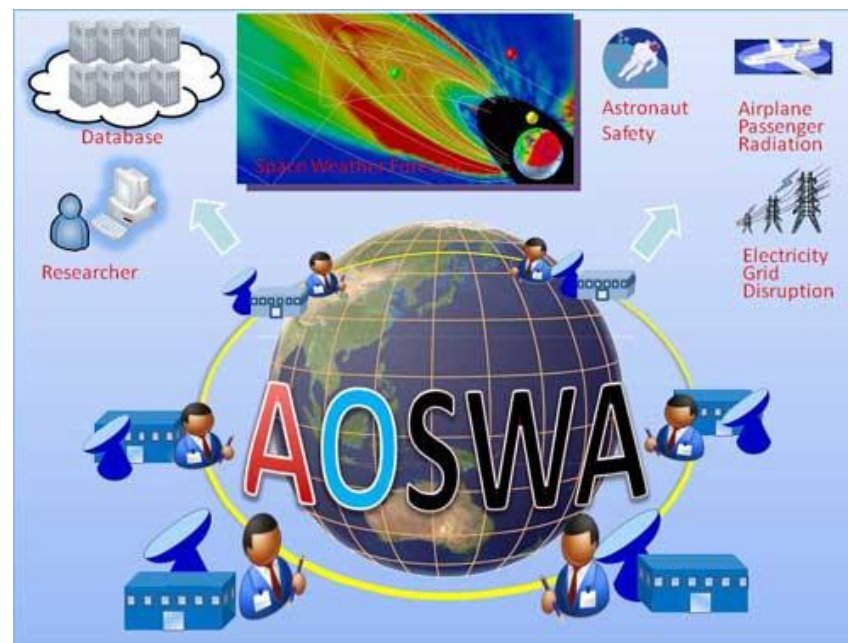
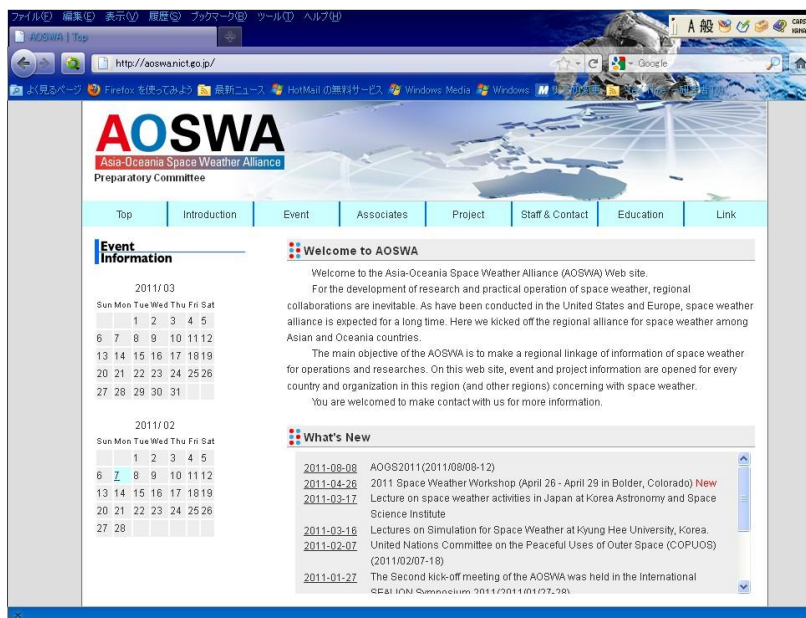
Hiraiso Solar Observatory

(Under National / International collaborations)

Collaborating Institutes (International)

- **University of Alaska, Fairbanks (UAF)**
- **Institute of Cosmophysical Research and Radio-wave Propagation, Far Eastern Branch, Russian Academy of Sciences (IKIR)**
- **King Mongkut's Institute of Technology Ladkrabang (KMITL), Thailand**
- **Chiang Mai University (CMU), Thailand**
- **National Institute of Aeronautics and Space (LAPAN), Indonesia**
- **Hanoi Institute of Geophysics (HIG), Vietnamese Academy of Science and Technology, Vietnam**
- **Center for Space Science and Applied Research (CSSAR), Chinese Academy of Sciences, China**
- **University of San Carlos, Philippine**

AOSWA: Asia-Oceania Space Weather Alliance



The main objective of the AOSWA is to make a regional linkage of information of space weather for operations and researches.

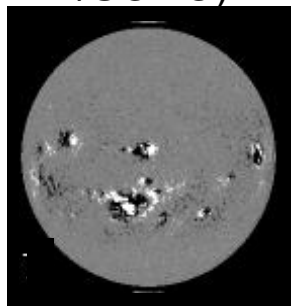
<http://aoswa.nict.go.jp/>

NICT Real-Time Space Weather Simulator

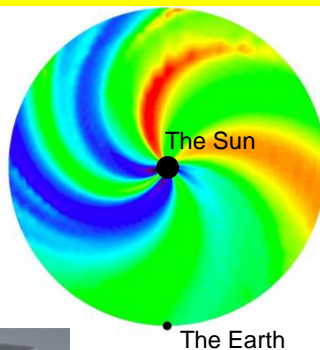
ACE Satellite
(Solar Wind Data)



Magnetic Field data
(MDI/SOHO)



The Sun and Solar Wind Model



Input

Visualize

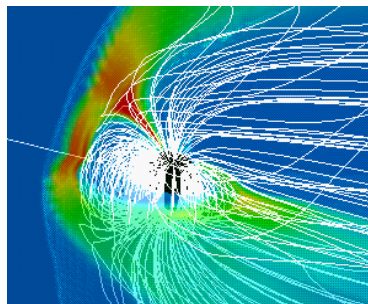


Super Computer



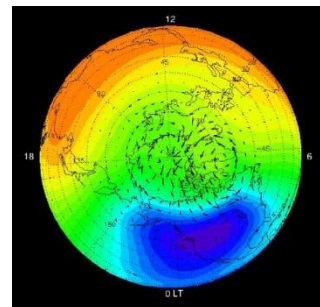
Antenna

Input



Magnetosphere Model

Input



Ionosphere and Thermosphere Model

Visualize

Web Page

Space Weather User's Forum (2009/12/21)



Topics:

- Tutorials from Space Environment Group
- Geomagnetic survey on the sea ground (JAMSTEC)
- SAR interferences due to plasma bubble (JAXA)
- Satellite charging (JAXA)
- Airplane navigation (MSAS:ENRI)
- Astronauts radiation effect (NIRS)
- Usage of space weather forecast by radio amateur (JARL)
- Solar power satellite and ionosphere (RISH)

Participants: more than 70

Space Weather User's Forum (2011/06/29)



Topics:

- New space weather information service
- Introduction of recent space weather activities
- How to use space weather information
- Aviation
- Geomagnetic survey
- HF communication
- Navigation
- Satellite operation
- Usage of real-time simulation
- Local meeting for each sector

User / Customer's needs

Major request

- Nowcast / Forecast of solar/geomagnetic activity.
- Nowcast / Forecast of space environment around GEO and LEO.
- Nowcast / Forecast of ionospheric scintillation and TEC map over Japan.
- Collecting practical needs of users / customers with educating space weather effect.
- Now we start building a close relationship with JAXA, and JMA, etc.

Questions?