ACTIVITY FOR SPACE WEATHER RESEARCH & OPERATION IN NICT

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What is “NICT”? 

NICT (National Institute of Information and Communications Technology, Japan) is;

- The “ONLY National Institute” of Information and Communications technology in Japan
- Staff: permanent scientists: 300, temporal scientists: 400, administrative: 200 (approximately).
- Headquarter: Koganei, Tokyo
- Main Branches: Keihanna, Kobe, Kashima, Okinawa
- Observatories: Wakkanai, Hiraiso (closed), Yamagawa, Okinawa
Domestic users: satellite operator, aviation office and companies, power plant companies, HF telecommunicators / broadcasters, resource survey, Univ. and research institutes, amateur radio operators

Forecasting Parameters
- Flare forecast
- Magnetic field forecast
- High-energy particle forecast
- HF propagation forecast

Web access: 160,000/month
No. of e-mail address: 10,000
And also on Facebook, twitter
Relation of Needs-Seeds in Space Weather

Sun
- Coronal Hall
- High speed solar wind
- Plasma cloud
- CME/CIR
- Solar flare
- Increase of high energy particle
- Academic institutes
- Study of unknown process

- Magnetosphere/Ionosphere
  - Disturbance of magnetosphere
    - Increase of high energy particle
    - Ionization of lower ionosphere
    - Increase of electron density
    - Increase of high energy particle
    - Increase of ionospheric current
    - Expanding upper atmosphere
  - Ground conductivity distribution

SWx the social needs
- SWx becomes Indispensable information for their task
- Social hazard/needs
  - Hazard to satellite operation
  - Hazard to human activity in space
  - Hazard to aviation
  - Hazard to telecom, broadcast
  - Hazard to positioning
  - Hazard to power line
- Disability of GNSS
- Change the satellite orbit
- GIC

SWx
- Human radiation
- Satellite anomaly
- Academic institutes
- Society
Product to be created

Radio propagation simulator

Human radiation estimation system

GIC hazardous warning system

“Taylor-made Space weather” satellite Warning system
Japan-US Collaboration on Space Weather Research

- Receiving the Solar wind data obtained with ACE/DSCOVR satellites
- Discussion in “Space Weather as a Global Challenge”
- Discussion in multi-national frameworks

Receiving ACE/DSCOVR solar wind data
- Receiving the Solar wind data obtained with ACE/DSCOVR satellites at Koganei, Tokyo
- Contribute to 24/7 observation of solar wind

Space Weather as a Global Challenge
- “Space Weather as a global Challenge” symposium has started on 2016
- The 3rd symposium will be hosted by Japan and held on July 24 at the Embassy of Japan

Multi-national framework
- ISES (International Space Environment Service) is a consortium of operational space weather forecast organization led by NOAA. NICT is one of the original member of ISES
- Japan-US collaboration in UN framework: WMO, ICAO, UN/COPUOS, ITU

ACE/DSCOVR Receiver in Koganei

2nd Space Weather as a Global Challenge

UN/COPUOS
The 3rd meeting of “Space Weather as a Global Challenge” was held at Japan Embassy on July 24, 2018 hosted by Japan Embassy, NICT, JAXA and DoS.

77 people attended from various countries.

Discussing Theme
- Japan’s Space Weather Efforts and Outlook
- Perspectives from around the Globe
- Toward Improved Space Weather Services and preparedness
- Perspectives from the Private Sector

Preparedness for severe space Weather disaster with international collaboration and activation of private sector were mainly discussed.