
Press release

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Korean Space Weather Center receives cosmic observation data from a NASA satellite

Cosmic observation data received in real time from a NASA satellite 1.5 million Km away then shared with 14 space radio environment forecast and warning institutions around the world

The National Radio Research Agency (Director general Cha-Sik Lim) of the Korea Communications Commission announced that, since February 1, it has been sharing the cosmic observation data that it receives from the NASA ACE satellite with 14 space radio environment forecast and alert institutions around the world.

※ **ACE** (Advanced Composition Explorer) satellite: a cosmic environment observation satellite launched by NASA in 1997

The ACE satellite monitors the sun for cosmic radiation, high-energy particles and solar flares and transmits that information to ground stations.

※ **High-energy particle**: high energy protons (10 MeV or more) discharged into space after an eruption of a sunspot

Coronal mass: elements in the solar atmosphere comprising the Sun, such as protons, electronics and helium ions

In particular, as the ACE satellite, located 1.5 million Km away from the Earth, can detect high-energy particles or coronal mass about one hour before they reach the Earth, it plays an important role in helping to prevent damage caused by a disturbance of the magnetic field of the Earth or ionosphere.

Until now, to receive the cosmic observation data of the ACE satellite around the clock, the US, Germany and Japan have worked together, but Korea has now become a new partner.

The Top News of the Day corner of the website of the US Space Weather Prediction Center (SWPC) welcomed the Korean Space Weather Center of the National Radio Research Agency as a partner in receiving ACE data, and said that the reception of the continuous real-time cosmic observation data will be of great help for warning about sunspots in advance.

※ **SWPC** (Space Weather Prediction Center): the Space Weather Prediction Center of the National Oceanic and Atmospheric Administration

To receive the rather weak signals transmitted 1.5 million Km away, a 13m diameter dish antenna was installed last December at the Korean ACE satellite receiving station that was built at the Korean Space Weather Center located in Hanlim-eup on Jeju Island. Official service began in February after a month-long series of test operations.

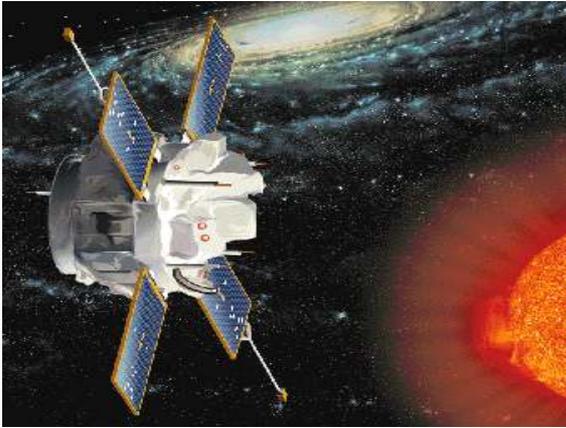
“As it will take Korea a great deal of time and investment before it can directly launch a cosmic observation satellite like NASA, an international cooperative network like the ACE satellite initiative can be a more realistic alternative,” said Jae-Hyeong Lee, President of

the Korean Space Weather Center. “We will not only take the lead in preventing damage from the eruption of sunspots, but also contribute to preventing damage to international society by observing the space radio environment, and actively share the analysis data with other countries.”

- ※ Attachment: 1. Images of the ACE satellite and receiving station
2. Posting on the SWPC website
3. Outline of the eruption of the sunspot

[Attachment1] Images of the ACE satellite and receiving station

Images of the ACE satellite



Images of the 13m diameter ACE satellite antenna installed at the Korean Space



[Attachment 2] Posting on the SWPC website (www.swpc.noaa.gov)

Top News of the Day:

2012-02-01 16:30 **SWPC and KSWC partner to bring in ACE data**

SWPC welcomes the Korean Radio Research Agency's Space Weather Center as a partner in the space weather enterprise. As of February 1, 2012 the Space Weather Center's new tracking station on Jeju Island is being used to provide critical tracking and downlink of real-time data from the NASA ACE satellite. This addition helps to ensure there is continuous real-time data available from ACE, which is used to provide critical warnings of geomagnetic storms to a wide variety of SWPC customers.

[Attachment 3] Outline of a sunspot eruption

Sunspot alert issuance procedure

- o If a sunspot erupts on the Sun, **an alert will be issued automatically based on data** from the US satellite and observation devices located at various places around the world.
- The data quantifies the intensity of the solar flares, number of high-energy particles, and degree of geomagnetic field disturbance, and **is classified into 5 levels of severity**.
 - ※ levels: level 1 (minor), level 2 (moderate), level 3 (strong), level 4 (severe) and level 5 (extreme)

Statistics about alerts related to sunspot eruptions

- o As the solar maximum, predicted to come in **2013**, is approaching, the number of alerts related to sunspot eruptions is increasing.

< Issuance of level-3 or higher alerts >

2010	2011	2012 (as of February)
level 3 twice	level 3 ten times level 4 twice	level 3 twice (1.23, 1.28)

□ The role of the Korean Space Weather Center of the National Radio Research Agency

- o Korea Communications Commission established the Korean Space Weather Center in Jeju island in August 2011 as **an organization that will focus exclusively on the space radio environment** to minimize damage caused by sunspot eruptions.
- o The Korean Space Weather Center provides the **forecast service** i.e. predicting solar activities and the **alert service** which propagates sunspot eruptions pursuant to **the Radio Waves Act**.
- o The Korean Space Weather Center is a member of the **International Space Environment Service (ISES)**, an international organization sharing solar activity observation data and analysis information.
 - As a **Regional Warning Center (RWC)** representing Korea, it is working closely with 14 member countries under the umbrella of the International Space Environment Service to actively respond to solar activities.

※ ISES: International Space Environment Service,
RWC : Regional Warning Center