

[초SE-26] Solar Wind Observations Using STELab-IPS Array In Japan

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Radio wave from a compact radio source such as a quasar are scattered by irregularities of electron density. The scattered waves interfere with each other as they propagate to the Earth producing diffraction patterns on the ground. This phenomenon is called interplanetary scintillation (IPS). The IPS pattern contains the information of solar wind velocities and density fluctuations passing across a line-of-sight (LOS) from an observer to a radio source. The IPS is a useful tool which allows us to measure the solar wind in three dimensional space inaccessible to in situ observations. Although the IPS measurement is an integral of solar wind velocities and density fluctuations along the LOS, which causes degradation of accuracy, we have succeeded to develop computer assisted tomography (CAT) analysis to remove the effect of LOS integration. These techniques greatly improved the accuracy of determinations of solar wind velocity structures. In this talk we present our IPS observation system and long-term variation of global solar wind structures from 1980-2009, then we focus on recent peculiar solar wind properties.

[초SE-27] Recent Activities in Space Environment Engineerings in Japan Aerospace Exploration Agency

Hideki Koshiishi

Japan Aerospace Exploration Agency

Japan Aerospace Exploration Agency (JAXA) has measured space environment and its effects on spacecraft and astronaut since 1987. At present, we have operated space environment monitors onboard one GEO spacecraft, one QZO spacecraft, and two LEO spacecrafts. The obtained space environment data has been gathered into the Space Environment and Effects System database (SEES, <http://sees.tksc.jaxa.jp/>). In this presentation, measurement result of space environment in low earth orbit obtained by the Daichi satellite from 2006 through 2011 is reported as well as recent activities in space environment engineerings in JAXA. The Technical Data Acquisition Equipment (TEDA) on board the Daichi satellite (Advanced Land Observing Satellite: ALOS) had been operated in low earth orbit at 700 km altitude with 98 degree inclination from February 2006 until April 2011. The TEDA consists of the Light Particle Telescope and the Heavy Ion Telescope. The operation period of the Daichi satellite was through the solar-activity minimum period. The space radiation environment around the Daichi satellite had been almost stable. However, large solar flares followed by CMEs sometimes disturbed the space radiation environment in the orbit of the Daichi satellite. In addition, high speed solar wind often flowed and modulated the electron flux in the horn region. On the other hand, a little variation was seen in the SAA region.