

R010-27

Zoom meeting C : 11/4 PM2 (15:45-17:30)
16:45-17:00

Schumann resonance parameters at Kuju during solar flares and solar proton events

#Akihiro Ikeda¹⁾, Teiji Uozumi²⁾, Akimasa Yoshikawa³⁾, Akiko Fujimoto⁴⁾, Shuji Abe⁵⁾

¹⁾KNCT, ²⁾ICSWSE, Kyushu Univ., ³⁾ICSWSE/Kyushu Univ., ⁴⁾Kyutech, ⁵⁾ICSWSE, Kyushu Univ.

The Schumann resonance (SR) is the global resonance of electromagnetic waves generated by global lightning activity. SR parameters, which are amplitude and frequency, reflect the properties of both global lightning activity and the state of the Earth-ionosphere cavity. In addition, it was revealed that the SR is also affected by the solar activities. We newly aim to utilize SR for monitoring of solar activity (e.g., solar flare, solar proton event) and its effects on the ionosphere. For the first step, we investigate relationship between SR parameters and intense solar activities in Oct.-Nov., 2003.

We examined fundamental mode of the SR at Kuju, Japan (KUJ, M.Lat. = 23.4 degree, M. Lon. = 201.0 degree) by comparing solar X-ray, EUV and Proton flux. The data of X-ray and Proton flux were obtained by the GOES series of the satellites on a geostationary orbit. The EUV data were obtained by SEM/SOHO at the Lagrangian point L1.

We found that the flares were associated with increase of SR frequency in H (horizontal northward component). Since X-ray and EUV contribute the most to ionization of Earth's ionosphere, the variation of the SR frequency seems to reflect the electron density in the ionospheric D-region during the solar flare.

We also found that the variation of the SR frequency in D (horizontal eastward component) corresponded with enhancement of the Proton flux (40-80 MeV) during solar proton events. It is assumed that the SR frequency in D component relates to the polar ionosphere which is strongly affected by solar proton events.