R010-P10
ポスター 3 ：11/6　AM1/AM2 （9:00-12:30）

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Schumann resonance parameters at Kuju during intense solar activity

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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 this study, we investigated relationship between SR parameters and intense solar activities in Oct. and 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. SR was obtained by an induction magnetometer, which is a part of activities by International Research Center for Space and Planetary Environmental Science, Kyushu University. 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.

The long-time enhancement of solar X-ray flux occurred on 18 October, 2003. The enhancement lasted for about 19 days until it recovered to a previous level. SR frequency in H (horizontal northward component) also increased and well followed the X-ray flux. Since X-ray contributes the most to ionization of Earth's ionosphere, we suggested that the increase of SR frequency reflected the density variation of the lower ionosphere. In addition, the effect on SR frequency was not related to the local time at the observatory. The effect on SR seems to be the global character.

We further found that increase of the SR frequency in H often associated with flares. Since X-ray and EUV of flares enhance the ionization of Earth's ionosphere, the variation of the SR frequency seems to reflect the electron density in the ionospheric D-region. We also found that flare-associated variation of SR in H did not depend on local time at the observatory. On the other hand, SR in D (horizontal eastward component) shows local time dependence for flare events.

For SPEs (solar proton events), the variation of the SR frequency in D corresponded with enhancement of the Proton flux (40-80 MeV). It is assumed that the SR frequency in D component relates to the polar ionosphere which is strongly affected by solar proton events. We conclude that SR reflects conditions of the lower ionosphere during the intense solar activity.