R006-34
A 会場 ：11/7　PM1 （13:45-15:30）
13:45〜14:00

#Porunakatu Radhakrishna Shreedevi[1,2)],Yu Yiqun[1)],Miyoshi Yoshizumi[2)],Tian Xingbin[1)],Kumar Sandeep[2)],Nakamura Satoko[2)],Jun Chae-Woo[2)],Shiokawa Kazuo[2)],Jordanova Vania[3)],Hori Tomo[2)],Asamura K[4)],Shinohara I[4)],Yokota S[5)],Kasahara S[6)],Keika K[6)],Matsuoka A[7)]
[(1]BUAA,[(2]ISEE,[(3]LANL,[(4]ISAS/JAXA,[(5]Osaka University,[(6]University of Tokyo,[(7]Kyoto University

EMIC wave induced proton precipitation during the 27-28 May 2017 storm: Modelling and Observations

#Shreedevi Porunakatu Radhakrishna[1,2)], Yiqun Yu[1)], Yoshizumi Miyoshi[2)], Xingbin Tian[1)], Sandeep Kumar[2)], Satoko Nakamura[2)], Chae-Woo Jun[2)], Kazuo Shiokawa[2)], Vania Jordanova[3)], Tomo Hori[2)], K Asamura[4)], I Shinohara[4)], S Yokota[5)], S Kasahara[6)], K Keika[6)], A Matsuoka[7)]
[(1]BUAA,[(2]ISEE,[(3]LANL,[(4]ISAS/JAXA,[(5]Osaka University,[(6]University of Tokyo,[(7]Kyoto University

Electro Magnetic Ion Cyclotron (EMIC) waves are known to cause the ion precipitation into the mid-latitude ionosphere during geomagnetic storms. Recent studies have shown that the ion precipitation induced by EMIC waves can contribute significantly to the total energy flux deposited into the ionosphere and severely affect the magnetosphere-ionosphere coupling. In this study, the temporal and spatial evolution of the proton precipitation into the ionosphere and its correspondence to the EMIC wave activity in the inner magnetosphere is examined using simulations of the BATSRUS+RAM-SCBE model. During the geomagnetic storm of 27-28 May 2017, the Van Allen Probes observed typical signatures of EMIC waves in the inner magnetosphere i.e., at 4 to 6 Re in the evening sector. Ground magnetometers at high latitude stations also showed the presence of PC1/EMIC waves after 1600 UT on 27 May 2017. During the main phase of the storm, the DMSP satellites observed enhanced proton precipitation at locations where the ground/space-based magnetic field measurements detected enhanced EMIC wave activity. The source and distribution of proton temperature anisotropy in the equatorial plane associated with EMIC waves are investigated to understand the excitation of the waves. A comparison of the precipitating proton fluxes obtained from the simulations with the particle measurements from the DMSP satellites show that EMIC wave scattering can account for the 30 keV proton precipitation at subauroral latitudes. The results are also compared with the proton fluxes/EMIC wave activity measured by the Arase satellite.