R010-11
C 会場 ：11/4　PM2 （15:45-18:15）
17:05〜17:20

#張　天 [1)], 海老原　祐輔 [1)]
[(1] 京大生存圏

MHD simulations of responses of ionospheric currents and ground electric field variations under different solar wind conditions

#Tian Zhang[1)], Yusuke Ebihara[1)]
[(1]RISH, Kyoto Univ.

By performing a global magnetohydrodynamic (MHD) simulation, we investigated and calculated under different solar wind conditions (jump of velocity and density of solar wind), the response of ionospheric currents (Pedersen currents and Hall currents), the corresponding magnetic disturbance on the ground and the resultant geoelectric field variation by convolution method with an assumed ground conductivity. According to the results, we analyzed the change of geoelectric field as a function of magnetic latitude (MLAT) and magnetic local time (MLT), which may indicate the hazardous area where E (geoelectric field) becomes large in response to jump of Vsw (velocity of solar wind) and/or Nsw (density of solar wind). This also helps us to better understand the generation of large geomagnetically induced currents. At last, we compared the simulation results of dB (geomagnetic disturbance) with that of the known Quebec blackout in 1989, and discuss the cause of the large GIC that flowed in the power grid in Canada.