R006-P07
ポスター 1 ：11/24　PM1/PM2 （13:15-18:15）

磁気圏ー電離圏間の電場の投影について

#海老原 祐輔 [1)], 田中 高史 [2)]
[(1] 京大生存圏, [(2]REPPU 研

On the electric field ”mapping” between the magnetosphere and the ionosphere

#Yusuke Ebihara[1)], Takashi Tanaka[2)]
[(1]Research Institute for Sustainable Humanosphere, Kyoto University, [(2]REPPU code institute

The electric field is fundamental to transport of charged particles. In the inner magnetosphere, the electric field is responsible for the radial transport of hot ions to enhance the ring current, and hot electrons to excite whistler-mode waves. It has been widely assumed that the magnetic field lines are equipotential, and that the electric field can be mapped between the magnetosphere and the ionosphere along the magnetic field lines. However, if the electric field propagates as the Alfvén waves, it may not be straightforward that the assumption is always valid because of the presence of the plasma bulk flow and infinite travel time of the Alfvén waves. We traced the trajectories of the packets of the Alfvén waves from the equatorial plane to the ionosphere in the fields obtained by the global MHD simulation. We called them Alfvénic footprints. We also traced instantaneous magnetic field lines from the equatorial plane to the ionosphere, and called them magnetic footprints. We set the solar wind speed of 400 km/s and interplanetary magnetic field (IMF) of 5 nT or -5 nT, and calculated the difference between the Alfvénic footprints and the magnetic footprints in the ionosphere. When IMF is southward, the deviation is as high as ˜1 deg in magnetic latitude (MLAT) near midnight at $>$8 RE, and $>$0.5 hours in magnetic local time (MLT) on nightside except for midnight. When IMF is northward, the deviation is large at $>$10 RE. The deviation depends largely on plasma density and flow velocity, so these values are not definitive. We discuss the validity of the electric field ”mapping” on the basis of the MHD simulation under various solar wind conditions.