

ミニ太陽極大期における磁気嵐 Magnetic storms during solar 'mini-max'

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Large magnetic storms, such as Dst being less than -100 nT, have rarely been observed during Solar Cycle 24. One of the reasons would be a weak driver in the solar wind. We focus on another possibility; the influence of the solar EUV radiation on the storm intensity. According to the ring current simulation coupled with the ionosphere, the intensity of the ring current becomes high when the background ionospheric conductivity is high. The reason is that the shielding electric field is weak and ions with energy of the order of keV penetrate deep into the inner magnetosphere when the ionospheric conductivity is high. According to the magnetohydrodynamics (MHD) simulation coupled with the ionosphere, the convection electric potential is weak when the background ionospheric conductivity is high. Thus, the ring current is expected to be weak because the keV ions are primarily transported from the near-earth plasma sheet by the convection electric field. This is opposite to that expected from the ring current simulation. We evaluate and discuss the overall influence of the solar radiation on the intensity of the ring current.

Keywords: Magnetic storms, Ring current, Solar Max, Solar radiation, Ionospheric conductivity