

IONOSPHERIC PROMPT PENETRATION ELECTRIC FIELDS

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Electric fields play a major role on the dynamics and plasma density distribution of the middle and low latitude ionosphere and plasmasphere. Ionospheric electric fields often undergo large departures from their climatological quiet time value in response to geomagnetic disturbances. These perturbations have time scales from a few minutes to a few days. The largest electric field disturbance occurs during periods of large and sudden changes in the solar wind driven magnetospheric convection and affect nearly simultaneously the middle and low latitude ionosphere. These ionospheric prompt penetration electric fields have been the subject of numerous experimental and modeling studies. In this talk we examine the characteristics of these disturbance electric fields using mostly low latitude ground based and satellite observations. In particular, we focus on the relationship between the solar wind parameters and ionospheric equatorial zonal electric fields. We also compare the results of different prompt penetration empirical and theoretical models with observations.

plasma density, ionosphere, electric fields

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