## Over-shielding electric field and the development of equatorial spread F

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It is known that prompt penetration and over-shielding effects of interplanetary electric field (IEF) can impose F region zonal electric field perturbations over low latitudes. While the prompt penetration reveals the inability of the magnetosphereionosphere shielding to adjust to the fast fluctuations in IEF, the over-shielding refers to the residual shielding electric field that arises when a steady dawn-to-dusk IEF is turned off or reduced drastically. Based on three cases, it is shown that while the prompt penetration event can, on occasions, trigger the development of equatorial spread F (ESF) at the sunset terminator, the eastward electric field due to the over-shielding effect may assist the development of late night plume event. Although the characteristics of the effects due to over-shielding over dip equator were similar, the plume events were found to occur only on two occasions wherein post-sunset ESF structures were found to be confined to limited altitude region. These results will be discussed to highlight the effects of IEF in the triggering and development of ESF.