Ionospheric electric field perturbations at the equator associated with a sudden commencement

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Ionospheric electric field perturbations associated with the sudden commencement at 1640 UT Apr. 6, 2000 were observed by the FM-CW HF radar at the nightside dip equator station Cebu, Philippine. A sudden increase in westward electric field of 1.6 mV/m was observed simultaneously a sudden increase in the H component magnetic field of 250 nT at the dayside equator Ancon, Peru. The HF Doppler frequency shift was observed at the nightside low latitude station Sugadaira, Japan. From the frequency deviation, it is found that a westward electric field of 2.0 mV/m was suddenly imposed at the beginning of the sc.

The direction of the zonal electric field observed at Cebu was changed from westward to eastward and westward again. These variations were well correlated with fluctuations of solar wind number density. The eastward electric field may be caused by the over shielding effect of R2 FAC [Kikuchi et al., 2000].

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