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CORRELATION BETWEEN FOES AND ZONAL WINDS OVER MID-LATITUDE STATIONS USING HORIZONTAL WIND MODEL (HWM14) DURING SOLAR CYCLE 23-24

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This study is the extension of our previous work. The critical frequency of the ionospheric sporadic E-layer (foEs) and neutral winds on Earth have been extensively studied, and the disturbed zonal component of wind has been identified as a major phenomenon underlying the propagation of Es layers (particularly in temperate regions). The correlation between median f_oEs values and zonal winds obtained from the climatological Horizontal Wind Model (HWM14) is investigated. The preliminary investigation focused solely on one value of geomagnetic disturbances. This extension includes spatio-temporal coverage as well as the effect of increased Ap(Kp) index on disturbed zonal winds, which is correlated with mid latitudinal sporadic E layer. The correlation coefficients (cc) increased by at least 10% at mid-latitudinal stations, with cc values dominating in the northern hemisphere. It is expected that CC will increase with the increase in the Ap index. As a result, f_oEs are more prominent during disturbed conditions.