

Statistical study of ionospheric irregularities by using Equatorial Atmosphere Radar

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The equatorial region is the source of many unique atmospheric processes that couple the entire atmosphere vertically from bottom to top and horizontally from equator to pole. The dynamical, electrodynamical, and electrical process of lower and upper atmosphere of equatorial region contribute to ionospheric irregularities through propagation of atmospheric waves, and magnetosphere-ionosphere interaction. Those process are responsible for the large degree of variabilities observed in the low latitude ionosphere.

Study of ionospheric irregularities was made during 2008-2013 by using 47 MHz Equatorial Atmosphere Radar (EAR) in Kototabang, Indonesia (0.20S, 100.32E; 10.36S dip latitude). Characteristic of echoes from ionospheric Field Aligned Irregularities (FAI) classified based on structure of E and F backscattered echoes power of EAR radar both of spatially and temporally. The results base on intermittent observations (2008-2010) and continuous observations (2011-2013). During the observations were obtained percentage of Equatorial Spread F (ESF) occurrences, diurnal and seasonal characteristics of ionospheric irregularities from the E region and also from F region. Furthermore, occurrence correlation between E and F region irregularities are also observed.

Keywords: Ionospheric Irregularity, Equatorial Atmosphere Radar, Statistical Study