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Development of an Autonomous Method for Equatorial Spread-F from SEALION Ionosonde Data

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We have developed an automatic detection method for nighttime (1800-0600 LT) equatorial spread-F (ESF) from SEALION (SouthEast Asia Low-latitude Ionospheric Network) FMCW ionosonde data. ESF in this study is classified into three categories: range (Q), frequency (F), and mixed (M). We compared our result with the manual scaling in March and September 2013. The comparison with the manual scaled data shows ~91%, 85%, and ~89% match for Q, F, and M types, respectively. We analyzed the seasonal and local time variation at Chiang Mai in 2013. The seasonal and local time variation shows a good agreement with the previous studies which indicate high occurrence during equinoxes and pre midnight. The longitudinal and latitudinal variations were analyzed by comparing three different stations: Chiang Mai, Chumphon, and Cebu. The results show that the occurrence is significantly higher in Chumphon and Cebu which are located near the magnetic equator.