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Correlation of electron temperature with electron density in the low latitude topside ionosphere

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The correlation between electron temperature (Te) and electron density (Ne) in the low latitude topside ionosphere is investigated from the comparison of the satellite observations and the modeling. The observations show that the negative or the positive correlations between Te and Ne occur in the low latitude topside ionosphere during the daytime. The phenomena are associated with the equatorial ionization anomaly (EIA). To understand the generation process of the electron temperature and density distributions, we compared the observations with the physical modeling and an empirical model such as the International Reference Ionosphere (IRI).

Keywords: Demeter satellite, ionosphere, electron density, electron temperature