

A comparison between measurements of the F-layer critical frequency and values derived from the PRISM adjustment algorithm applied to total electron content data in the equatorial region

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The Parametrized Real-Time Ionosphere Specification Model (PRISM) is a global ionospheric specification model that can incorporate real-time data to compute accurate electron density profiles. Two important data types which can be ingested into PRISM are ionosonde data (critical frequencies and heights) and total electron content (TEC). The adjustment algorithm incorporates measurements of F-layer critical frequencies (f_oF2) directly, but the TEC data must first be converted to equivalent f_oF2 values. To assess the accuracy of the conversion algorithm in the equatorial region, TEC data from a global positioning system (GPS) receiver in Fortaleza, Brazil (3.9S, 38.4W) is used to compute f_oF2 values above a nearby ionosonde station (Sao Luis, 2.6S, 44.3W) for comparison with measured values. Time series of computed and measured f_oF2 will be presented for the period October 25-November 9, 1993, using ionosonde and GPS data recorded at 15 minute and 30 second intervals respectively. This comparison can be used to suggest methods of optimizing the PRISM adjustment algorithm for TEC data obtained at low latitudes.