

Topside ionosphere irregularities in He⁺ density: statistical study

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Topside ionosphere He⁺ density irregularities as depletions were firstly revealed from OGO-4 data and then from OGO-6, ISIS-2, Oreol-2 data. He⁺ density depletions (subtroughs) were seen as well-pronounced structures with He⁺ density drop (from several times to two orders of magnitude) in narrow latitude belt (5° to 10°) at equatorial and low latitudes mostly. However, they were distinctly observed in common in several tens of cases only. According to ISS-b data, He⁺ density subtroughs are revealed in ~440 cases in ~4000 ISS-b passes over equatorial and low-latitudinal regions (L~1.3-3) of the topside ionosphere (~1100 km). The available ISS-b data cover high and maximal solar activity period (1978-1979). The present study deals with the He⁺ density subtrough statistics. The subtrough occurrence probability as function of local time, season, longitude and Kp activity is obtained and discussed.