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OBSERVATIONS OF THE TOPSIDE IONOSPHERE PLASMA BUBBLES IN THE SEPARATE PLASMA COMPONENT (He+): MODEL ESTIMATIONS

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The question about an opportunity to detect the topside plasma bubbles of equatorial origin in their separate plasma component (He+) is investigated. There are the indications [1, 2, 3, 4] that there is genetic connection between the He+ density depletions (subtroughs) and the equatorial plasma bubbles. For validation of this idea the characteristic times of the main aeronomy and electrodynamics processes, in which the plasma bubbles and their minor ion component (He+) are involved, have been calculated and compared among themselves. The conditions and factors, connected with solar activity, which are more favorable in the detection of the topside ionosphere plasma bubbles as He+ depletions, were under consideration. The numerical calculations, obtained in SAMIS3 model (3D model of equatorial spread F) and kindly presented by J. Huba (USA) [5], were used for this study. It was revealed that the plasma bubbles, reaching the "ceiling" heights, can exist within several days and that there is principal opportunity to observe them in the separate plasma component (He+).

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