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太陽活動度パラメタに対するトップサイド電離圏の電子密度応答

Response of electron density in the topside ionosphere to parameters of solar activity

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We have constructed an empirical model of the electron density (Ne) profile obtained by FORMOSAT-3/COSMIC under the geomagnetic quiet condition (Kp < 4). The empirical model is constructed by the based on the trigonometrical and cubic function fitting. The empirical model can provide Ne from 150 km to 650 km as functions of day of year (DOY), local time (LT) and solar activity (F). The methodology of model construction is as follows: (1) Bins are set at every 6 degrees with 18 degrees window, every 3 degrees with 9 degrees window, every 20 km altitude for less than 400 km altitude and every 50 km for over 400 km. (2) Third order trigonometrical function for DOY, forth order trigonometrical function for LT and cubic function for EUV are applied. (3) It is assumed that Ne can be reproduced by multiplication of these 3 functions. (4) Ne between each bin is calculated using spline function. We apply several parameters which show solar activity, and investigate pertaining driver of Ne.

キーワード:電離圏,電子密度,経験モデル,太陽活動度

Keywords: ionosphere, electron density, empirical model, solar activity