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BOOK OF ABSTRACTS

Forecasting the Dourbes K index by using solar wind parameters

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The Dourbes K index has been produced for more of 4 decades and used as a measure of geomagnetic activity in many studies on the regional ionospheric behavior. In this paper, the Dourbes K index is considered as a driver of an operational ionospheric model for radio propagation and navigation applications. This requires forecasting of the index by using ACE solar wind measurements, available in near real time. Andonov et al., JASTP (2004) have developed a model providing Kp-like values from the IMF Bz and solar wind (SW) pressure and velocity measurements. The key parameter of this model is the modified function of Bz (Bzm), which represents the delayed reaction of Kp to Bz changes. The delay is controlled by two time constants, obtained by fitting the model expression to the measured Bz and SW parameters. Following the same approach, Dourbes K values are fitted to the respective ACE data for the period 2000-2003 using the same type of expression. New coefficients of the model are obtained, reflecting the peculiarities of the Dourbes K index. The cross-correlation of K and Bzm shows that K best correlate with Bzm values of the past 3 hours, which means that statistically reasonable is to forecast the Dourbes K index up to 3 hours ahead.

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