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A New Model for Predicting Radio Absorption

Abstract:

Understanding the variation of High Frequency (HF) radio absorption in the auroral zone is of great importance for determining HF radio propagation conditions. Linking the absorption to parameters measured in real time, such as the solar wind velocity or interplanetary magnetic field (IMF) orientation, can lead to improved prediction models. Although various models have been proposed, e.g. e.g. Foppiano and Bradley, 1983 and 1984, Hargreaves, 1966; Hargreaves and Cowley, 1967; Foppiano and Bradley, 1985). In all the afore-mentioned works, it was deduced that using geomagnetic indices and sunspot number as the building blocks of a prediction model will not help yield the expected result. This work has utilized the availability of real time solar wind data and RIOMETER (Radio Ionospheric Opacity Meter) to produce a prediction model that yields an improvement on the previous model in both hemispheres.