Comparison of the ground backscatter characteristics calculated using IRI and measured by SuperDARN Hokkaido HF radar

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We present ground backscatter propagation characteristics model for geographic location and specifications of SuperDARN Hokkaido HF radar. The model describes mean diurnal and seasonal variations of minimal group range, corresponding elevation angle and several other parameters and can be used for effective prediction of its regular behavior. The model is based on HF ground backscatter signal calculations developed in the framework of waveguide approach and IRI-2007 model, which is used as a background ionosphere. In this paper we also present a comparison of the model with an extensive dataset collected by SuperDARN Hokkaido radar during the whole its operation history since the late 2006 until 2014. Such a comparison could provide important information about IRI-2007 model accuracy in a wide mid-latitude region during the period of minimum and growing solar activity.