

Initial results from Hokkaido HF radar observation 3: Ground scatter echoes and ionospheric disturbances

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Hokkaido HF radar gets its measurement started in December 2006. This paper gives initial backscatter occurrence statistics as derived from first 6 months observations. Occurrence distribution of ground backscatter echoes as a function of local time has two distinct peaks, one being located near noon and the other near midnight. Ground backscatter echoes during daytime often contains quasi-periodic variations in the backscatter power, which is probably associated with an emergence of medium-scale traveling ionospheric disturbance (MSTID). Occurrence distribution of these periodic structures with local time and season will be given. Ground backscatter echoes on the nightside appears in the area relatively close to the radar site and occurrence of the quasi-periodic features are less frequent. They often have relatively large Doppler shift whose magnitude is sometimes greater than 100 m/s, possibly imposed by a vertical uplift/downlift of the ionosphere. Their origin is, however, unknown at this stage. We will also mention dependence of ground scatter occurrence rate on the operating frequency and geomagnetic disturbance level, which might be helpful to optimize future operation of the radar in the mid-latitude.