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Statistical characteristics of MSTIDs using a 630-nm airglow imager at Magadan

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Medium-Scale Traveling Ionospheric Disturbance (MSTID) is a wavy phenomenon in the ionosphere, which has a horizontal wavelength of 100-200 km and a period of a few hours. To date many observations of nighttime MSTIDs using all-sky airglow imagers have been conducted in Japan. Since OI 630-nm airglow emission is sensitive to the variation in the F-layer altitude and plasma density, 630-nm airglow images can monitor the two-dimensional structure of the MSTIDs. According to the previous studies, nighttime MSTIDs at Stecolny near predominantly propagate southwestward. However, their propagation characteristics at higher latitudes is still unclear. The Solar-Terrestrial Enviroment Laboratory, Naogoya University has made airglow imaging observations of MSTIDs in Magadan, Russia (60.1N, 150.7E), since November 2008, as part of the Optical Mesosphere Thermosphere Images (OMTIs) in collaboration with Institute of Cosmophysical Research and Radiowave Propagation (IKIR).

In the presentation, we will report statistics of MSTIDs over Magadan from January 2009 to August 2012 (630 nights). The ratio of clear-sky intervals to the total observations was 51% and data of 2149 hours of clear sky are available for the analysis.

Keywords: Medium-Scale Traveling Ionospheric Disturbance