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Observations of large-scale AGWs/TIDs during enhanced auroral activity on 6 January 2014

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Observations of large-scale atmospheric gravity waves/traveling ionospheric disturbances (AGWs/TIDs) from measurements of Global Positioning System (GPS) total electron content (TEC) and Fabry–Perot Interferometer’s (FPI’s) intensity of oxygen red line emission at 630 nm measurements over Svalbard on the night of 6 January 2014 are reported here. TEC large-scale TIDs have primary periods ranging between 29 and 65 min and propagate at a mean horizontal velocity of 749–761 m/s with azimuth of 345–347 deg (which corresponds to poleward propagation direction). On the other hand, FPI large-scale AGWs have larger periods of 42–142 min. These large-scale AGWs/TIDs were linked to enhanced auroral activity identified from co-located all-sky camera and IMAGE magnetometers. Similar periods, speed and poleward propagation were found for the all-sky camera (60–97 min and 823 m/s) and the IMAGE magnetometers (32–53 min and 708 m/s) observations. Joule heating or/and particle precipitation as a result of auroral energy injection were identified as likely generation mechanisms for these disturbances.

Apply to be considered for a student award (Yes / No)?

No

Level for award (Hons, MSc, PhD, N/A)?

N/A

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