GPS phase scintillation and auroral electrojet currents during geomagnetic storms of March 17, 2013 and 2015 - DTU Orbit (05/12/2018)

Interplanetary coronal mass ejections (ICMEs) compounded by high-speed plasma streams from coronal holes caused two intense geomagnetic storms on March 17–18, 2013 and 2015 during the current solar cycle. Ionospheric responses to the storms in the northern and southern hemispheres are compared in the context of solar wind coupling to the magnetosphere-ionosphere system. Phase scintillation is observed at high latitudes by arrays of high-rate GNSS Ionospheric Scintillation and TEC Monitors (GISTMs) and geodetic-quality GPS receivers sampling at 1 Hz. The high-rate GPS receivers are distributed in the northern and in the southern high latitudes with sparser coverage. In addition to GPS receivers, the high-latitude ionosphere dynamics is studied using arrays of ground-based instruments including HF radars, ionosondes, riometers, magnetometers, optical imagers as well as particle detectors and ultraviolet scanning imagers onboard the DMSP satellites.

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