

# **PiB AND AIRGLOW BURSTS DURING STRONG STORM-TIME GEOMAGNETIC DISTURBANCES**

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We report on the novel features of stormtime, midlatitude PiB/PiC geomagnetic pulsations, ionospheric and field-aligned currents, and oxygen, O1S and O1D, emissions at 557.7 and 630.0 nm, respectively. Those were observed during the main phase of the 20-DEC-2015 storm with significant variations of the solar wind dynamic pressure, Pd, and IMF Bz. The distinct characteristic of the super substorm or SSS (AE < -2500 nT) was the presence of bay-like geomagnetic variations with the X and Z components with the opposite signs in the northern and southern sections of the IMAGE chain near 18 MLT. Using the magnetogram inversion technique (ISTP MIT) we obtained the MLT-MLAT distribution (map) of equivalent and field-aligned currents (FACs) revealing an additional westward electrojet to the north of the usual eastward current. For the first time we have shown that such a current system provides the observed distribution of geomagnetic variations along the 18 MLT meridian. We also revealed a localized geomagnetic event during which the magnitudes of the H geomagnetic component, PiB/PiC pulsations, and oxygen emissions at mid latitudes were more than twice greater than during the super substorm.