

Large-Scale Ionospheric Disturbances during the April 2002 Storms

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Global and regional snapshots of ionospheric disturbances during April 17 – 21, 2002, will be presented with total electron content (TEC) data measured from hundreds of ground-based global positioning system (GPS) receivers. During this period continuous interactions between the solar wind and Earth's magnetosphere, and between the magnetosphere, ionosphere, and thermosphere occurred and created several geomagnetic storms successively. The TEC snapshots reveal overwhelming negative ionospheric effects at middle latitudes, while increased TEC and enhanced equatorial anomaly features are also seen at low latitudes. Distinguished large-scale TEC depletion and enhancement in both hemispheres are also observed in different longitude sectors simultaneously, indicating the local time effects of electrodynamical perturbations and global thermospheric circulation changes. This presentation will compare the GPS data with magnetometer data, FUV images obtained from the IMAGE mission, and coupled-modeling results to assess the ionospheric responses to the peculiar conditions of the successive storms in a high solar activity year.