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IMAGE RPI observations of storm enhanced density in the inner magnetosphere

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Plasma density enhancements in the inner magnetosphere during magnetic storms are studied using observations from the active sounding measurements of the radio plasma imager (RPI) onboard the IMAGE satellite. The density variations observed by the IMAGE RPI are examined in the context of the plasma plumes (storm time density enhancements) demonstrated in the global GPS TEC maps. Along the IMAGE orbits, which passed through the plumes, the RPI remotely measured electron density distributions along the magnetic field lines. Those field-aligned density profiles can be used to derive information about the altitudinal density structures, in addition to the horizontal TEC distributions, thus allowing better understanding of the plasma dynamics during such storm enhanced density events. We discuss the possible mechanisms of the storm-time density enhancements associated with the plasma plumes using RPI and TEC observations.