



Magnetosphere-ionosphere-atmosphere coupling as seen from IMAGE and TIMED

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We report on two different sets of observations showing global coupling. First, the entire nightside upper atmosphere shows rapid (~ 1 h) intensifications of the 1356 Å line observed by the TIMED/GUVI and IMAGE/FUV cameras. The emission pattern is almost independent of geomagnetic latitude and peaks around 300 km altitude. During the same time, the IMAGE/HENA imager observes intensifications of the Oxygen ENA emissions from the ring current in the 50-200 keV range due to storm-time sub-storm injections. The atmospheric emissions arise most likely from the interaction between the high-energy Oxygen ENAs precipitating directly from the ring current and the neutral Oxygen of the upper atmosphere. Second, we report on global ring current and plasmasphere observations by the IMAGE/HENA and EUV imagers. The morphology and dynamics of both these regions indicate a strong coupling between the ring current and the ionosphere. During the storm mainphase the peak of the ring current is shifted eastward and the plasmopause becomes more eroded on the duskside due to this coupling.

ENA=Energetic Neutral Atom
HENA=High Energy Neutral Atom
EUV=Extreme Ultra Violet
FUV=Far Ultra Violet