



On the use of IMAGE FUV for estimating the latitude of the open/closed field line boundary in the ionosphere

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By carrying out a statistical comparison of over 40000 open/closed field line boundary (OCB) estimations obtained from the Wideband Imaging camera (WIC) and Spectrographic Imagers, SI-12 and SI-13 onboard the IMAGE spacecraft, we show that, statistically, the difference in location of the OCB estimated by the three FUV cameras is found to be small, $< 1^\circ$, except in the predawn sector where SI-12 boundaries are found to be displaced poleward of both SI-13 and WIC boundaries by up to 2° .

Comparing FUV OCB estimates with particle precipitation boundaries from the Defense Meteorological Satellites Program (DMSP) shows that a systematic difference exists between FUV and DMSP boundaries, similar for all three FUV cameras. This systematic difference may be used to correct auroral boundaries to give a more reliable proxy for the OCB. SI-12 OCB estimates are again found to be at higher latitudes than WIC or SI-12 in the predawn sector, in better agreement with DMSP boundaries, suggesting that SI-12 may be a better proxy for the OCB in the predawn sector. However WIC and SI-13 boundaries are found to be in better agreement with DMSP boundaries at all other magnetic local times, suggesting all three FUV cameras may be used as equally reliable proxies for the global OCB.