

Expected source region of Jupiter's hectometric radio component relating to magnetotail reconnection

Hiroaki Misawa[1]; Fuminori Tsuchiya[2]; Takahiro Mizuguchi[2]
[1] PPARC, Tohoku Univ.; [2] Planet. Plasma Atmos. Res. Cent., Tohoku Univ.

It has been known that Jupiter's auroral radio emission in the hectometric wave range (HOM) is roughly classified two type occurrence components. One is a component relating to solar wind variations (sw-HOM) appearing around CML(Central Meridian system III Longitude of an observer) ~ 180 deg when solar wind pressure enhances. The other one is generally more intense than sw-HOM and has no or weak relation with solar wind variations (nsw-HOM) appearing around CML ~ 110 deg and ~ 280 deg for major components when D_e (Jovicentric declination of an observer) ~ -1 deg (Nakagawa et al., 2000; Nakagawa, 2003). Recently, we found one more nsw-HOM component appearing around CML ~ 340 deg, which highly correlates occurrence of magnetic reconnection events in the magnetotail region based on the WIND/WAVES data analyses (Misawa et al., 2018). This new component is an important role for the studies of global magnetospheric dynamics of Jupiter since it is a possible remote marker of the reconnection events occurring in the magnetotail. However, due to difficulty in precise direction finding in the hectometric wave range, the radio source of the new component, that is, location of transported energy input originated from reconnection events, has been still unrevealed.

In order to investigate source location of the new nsw-HOM we have made a comparison study of the new component with appearance features of Jupiter's aurora observed by the Hubble Space Telescope (HST) and the Hisaki spacecraft, and also have surveyed expected source regions by calculating observable rays using a magnetic field model. Preliminary analyses show that the occurrence of the new component well correlate with intensification of Jupiter's internally driven type aurora, and expected radio sources are located around dawn (spot) region and/or polar region.

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