

Identification of Jupiter's hectometric radiation associated with reconnection in the magnetotail

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It is known that Jupiter's radio emission in the hectometric wave range (HOM) shows 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)=180deg when solar wind pressure enhances. Another one is generally more intense than sw-HOM and has no or weak relation with solar wind variations (nsw-HOM) appearing around CML=110deg and 280deg as the two major components when δ (Jovicentric declination of an observer)=-1deg (Nakagawa, 2003). The nsw-HOM is thought to be generated by some internal processes initiated by the rapid planetary rotation and massive plasma, however precise source processes and locations have not been clarified yet.

We have reanalyzed occurrence characteristics of HOM using the WIND data to investigate precise relation between occurrence of nsw-HOM and Jupiter's magnetospheric variations observed by the Galileo Jupiter orbiter. As a result, we found that HOM has the 3rd nsw-HOM component appearing from 340deg to +20deg in CML which generally appears quasi periodically with the time scale of a few to several days and also shows long-term occurrence variations with seemingly capricious time scales. A comparison study between the occurrence timing of the 3rd nsw-HOM and magnetospheric events for the Galileo era indicates that most of the 3rd nsw-HOM appeared when magnetic reconfiguration events occurred in the magnetotail region. We show the precise occurrence features of the 3rd nsw-HOM and discuss their possible source locations based on a comparison study with Jupiter's UV auroral images.

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