Variation characteristics of Jupiter's hectrometric radiation in the solar quiet period

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It is well known that aurorae and auroral radio emissions (e.g. AKR: Auroral Kilometric Radiation) in the earth are primarily driven by interaction between the solar wind and the magnetosphere, while in case of Jupiter, it is thought that some internal processes, probably initiated by the rapid planetary rotation, primarily drive the auroral activity and the solar wind is a limiting control parameter. There are many in situ and remote observations support the idea, however, the role of the solar wind to the magnetic phenomena and pure characteristics of internal processes have not been revealed well. In order to investigate characteristics of the solar wind and non solar wind controls on Jupiter's auroral activities in detail, activities of hectometric radio wave (HOM), Jupiter's counterpart of the earth's AKR, have been analyzed using the WIND/WAVES data. The analysis period is selected for June to September in 2008, when the solar activity was considerably calm (the relative sunspot number had been nearly zero throughout the period) and predicted solar wind condition at Jupiter was quite stable and showed clear periodicity synchronized with the solar rotation. The preliminary analysis suggests that the HOM intensity is enhanced temporarily synchronizing with increase of the solar wind flow pressure, and a few day (or more) lasting HOM events occur independently with the solar wind variation and show gradual intensity variations. The latter result is consistent with the UV auroral activity recently revealed by the large campaign using the HST (Clarke et al., 2009).

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