# 木星電波の長期変動特性－II

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# Long term variations of Jupiter's radio emissions -II

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It is known that Jupiter's radio emission in the decameter wave length shows a long term occurrence variations at the time scale of 11 to 12 years. In early 1960's, the variation had been first considered to be initiated by the solar and/or solar wind activities since the long term variation seemed to inversely correlate with the solar activity. After 1970's, precise correlation analyses show that the variation correlates with the Jovicentric declination of the earth (De) rather than the solar and/or solar wind activities. Now, plausible causalities of the variation are considered to be geometrical effects; i.e., the De value which directly relates to amount of reachable rays to the earth from the source regions and the geocentric declination of Jupiter which relates to incidence angle of the radio wave to the terrestrial ionosphere (i.e., the ionospheric shielding effect) (see Oya et al., 1984; Kawauchi, 2002, references are there in). However, when we think the solar cycle dependence on the terrestrial radio activity, such as auroral kilometric radiation (see Kumamoto et al., 2003), the solar and/or solar wind control on the planetary radio emissions may not be negligible for the long term variations. Furthermore, relationship between Io's volcanic activity and Jupiter's magnetic activities has not been understood well.

In order to assess the previously proposed causalities and the other effects, we have investigated occurrence features of Jupiter's radio emissions using the radio wave data observed by the WIND satellite. The data has an advantage of enabling us to avoid the terrestrial radio shielding effect and to obtain the pure nature. We have derived occurrence probabilities from the data observed in the range of 1 to about 14MHz around Jupiter's occultation periods since 1995. The result is controversial; i.e., the yearly occurrence probabilities show almost monotonous decrease from 1995 to 2006 and gradual increase after 2007 for both Io-related and non Io-related components, which do not seem to correspond to variations of De and solar and/or solar wind activities. In the presentation, we will introduce the WIND data analysis and the results precisely, and discuss causalities of the long term variations.

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