

Characteristics of long-term variation of the Jovian synchrotron radiation at a frequency of 327MHz

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The Jovian synchrotron radiation (JSR) is a radio wave emitted from the relativistic electrons in the Jovian radiation belt, which has information of dynamics of high-energy particles and electromagnetic disturbances in the Jovian inner magnetosphere. The intensity variation of JSR, however, has been little understood in its timescales and origin. We have observed JSR for several months a year since 1994 to reveal characteristics of the flux variations especially at the time scales of days to months (short-term) and years (long-term). The regular observations have been made at a frequency of 327MHz by using parabolic cylinder antennas of the Solar Terrestrial Environment Laboratory, Nagoya University. We have derived the JSR flux densities for 1994 - 2005 by reevaluation of galactic background (BG) flux densities to derive actual JSR flux densities using a new technique to estimate BG: we have observed a calibration star which was actually used in past JSR observations and BG radiation at a time. Because the period of the JSR observation corresponds to nearly one solar activity cycle, it enables to compare JSR flux variations with solar and solar wind activities and investigate physical processes of the variations. In our presentation, we will introduce characteristics of long-term variation of JSR and discuss the physical dynamical process in the Jovian radiation belt.