

Development status of Iitate Jovian radio wave data archive as a unit of integrated archives of data from multiple ground stations for collaboration with Juno

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Jovian radio emissions in decametric wavelength range (DAM, 20-40MHz) observed by ground stations and spacecraft have brought us various information on Jovian magnetospheric activity: The source field line of Io-related DAM is connected to Io in the inner magnetosphere. The energy of Io-related DAM is supplied by Io-Jupiter current system. The source field line of Non-Io-related DAM is connected to the outer magnetosphere. The intensity of non-Io-related DAM seems to be affected by the interaction between the outer magnetosphere and solar wind.

The merit of the ground-based observations is that high sensitivity antenna and high time resolution receiver can be employed without limitations of the equipment mass and downlink data rate, which often becomes issues in spacecraft observations. On the other hand, the demerit of the ground-based observation with single station is coverage: The ground station cannot observe Jovian radio emission while the Jupiter is below the horizon. However, this demerit can be solved by combining datasets from multiple stations in different longitude range. Virtual Observatory (VO) could be a promising solution for such combined data analyses. In preparation of the collaborative ground-based radio wave observation with Juno, which will start the in-situ observations of the Jovian polar magnetosphere in this summer, the researchers working on ground-based observations of Jovian radio wave in Europe, US, and Japan started collaborations such as having a new support portal for collaborative planning of ground-based observations.

Wideband radio spectrogram data obtained at Iitate observatory since 2004 in CDF format have been provided via Iitate HF radio wave data archive. In addition, we finished setup of a new repository server for VO interface at Tohoku University in 2015 with supports of Paris Observatory team. This server will be the first step for integrated browsing of the Jovian radio wave data from multiple ground stations via VO interface, which will be useful also for collaborative studies of Jovian polar magnetosphere with supports of JSPS Bilateral Program "Coordinated observational and theoretical researches for Jovian and Kronian auroral radio emissions" between France and Japan. We also plan to add information on Jupiter's synchrotron radio observation made at the Iitate observatory into the VO repository server in near future.

Keywords: Jovian decametric radio wave, Virtual Observatory (VO), Juno