木星電波の情報とは？ - II

三澤 浩昭 [1]; 土屋 史紀 [2]; 森岡 昭 [3]
[1] 東北大・理・惑星プラズマ大気; [2] 東北大・理・惑星プラズマ大気; [3] 東北大・理・惑星プラズマ大気

What do we know from activities of Jupiter’s radio emissions? - II

Hiroaki Misawa[1]; Fuminori Tsuchiya[2]; Akira Morioka[3]
[1] PPARC, Tohoku Univ.; [2] Planet. Plasma Atmos. Res. Cent., Tohoku Univ.; [3] Planet. Plasma and Atmos. Res. Cent.,Tohoku Univ.

Since the early 1990s, observations for Jupiter’s aurora have been intensively made in UV and IR ranges. Auroral phenomena are one of good indicators of magnetic activities of planetary magnetospheres. Planetary radio phenomena also tell us the magnetic activities, but our knowledge seem to be limited since we do not realize well where and how the radio emissions are generated, particularly for the emissions which have no relation with the Galilean satellites.

We have made comparative surveys between Jupiter’s UV aurora and HOM to DAM radio activities using the aurora data observed with HST/ACS and radio wave data observed with WIND/WAVES. The Planetary Atmospheres and Space Science Group of Boston University made intensive observations for the Jovian aurora from February to June, 2007 using HST. The observations provided a precious opportunity to make precise source surveys of the radio emissions.

From the preliminary analyses based on the comparison between radio and aurora intensities, it is suggested that radio intensities of non satellite controlled component show low correlation with the auroral intensity from some confined areas like bright spot regions. This result infers that radio waves of non satellite controlled component might be generated from wider polar area, such as (some part of) the main oval and/or polar emission regions, and observed as summed up emissions. Further comparisons between radio intensities and auroral intensities emitted from wider polar regions have been made for confirming the expectation.

In the presentation, we will introduce the comparative surveys between the auroral and radio activities, and discuss what observed radio phenomena inform us. Some comparative surveys between auroral UV and radio activities and solar wind parameters will also be shown for discussing energy source of the auroral phenomena.

Acknowledgements: We would greatly appreciate J. Clarke and J. Nicoles of Boston University for providing Jupiter’s aurora images and M. Kaiser, J.-L. Bougeret and the WIND/WAVES team for providing the radio wave data.