

Periodic bursts of Jovian non-Io DAM triggered by solar wind pulses..

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Abstract

Periodic radio bursts of the non-Io component of Jovian decametric radio emission (non-Io DAM) are typically observed during several Jupiter rotations in decametric frequency range from ~ 4 MHz to $\sim 12 - 16$ MHz between 300° and 60° of CML and exhibit strong periodicity with an averaged period of ~ 10.07 hours which is $\sim 1.5\%$ longer than the rotation period of the Jovian magnetosphere [1]. The radio sources of these bursts sub-corotate with Jupiter.

In this study we analyze the influence of the solar wind on occurrence of the periodic non-Io DAM bursts. The solar wind parameters measured by Ulysses and Wind spacecraft have been ballistically propagated to the position of Jupiter. The study has shown that the occurrence of the non-Io DAM periodic bursts is strongly correlated with solar wind conditions around Jupiter. In particular, the bursts started after significant enhancement of the solar wind ram pressure. Moreover, most of the episodes with periodic radio bursts were detected after strong "storms" of non-Io DAM emission - series of intense arc-like bursts, which are known to be significantly affected by the solar wind. We discuss a possible triggering of the periodic bursts by the strong solar wind pulses.

References

[1] Panchenko, M., H.O. Rucker, M. L. Kaiser, O.C. St. Cyr, J.-L. Bougeret, K. Goetz, and S. D. Bale, New periodicity in Jovian decametric radio emission, *Geophys. Res. Lett.*, Vol. 37, L05106, doi:10.1029/2010GL042488, 2010

Acknowledgements

The authors are pleased to acknowledge the Plasma Physics Data Center (CDPP), STEREO/WAVES, Ulysses/SWOOPS and Wind/SWE teams for access to data. This work was financed by the "Austrian Fonds zur Förderung der wissenschaftlichen Forschung" (project P20680-N16).