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Observational constraint on Jovian active longitude controlling decameter emissions

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The occurrence probability of the Io-controlled Jovian decameter radio emissions depends on both the central meridian longitude (CML) and the phase of the satellite Io. Recent investigations by Galopeau *et al.* (*J. Geophys. Res.* 112, 2007) have shown that some specific Jovian 'active' longitudes favour the radiation by considering that the emissions are produced near the local gyrofrequency, along an active magnetic field line carried away by Io along its revolution around Jupiter, within a hollow cone of constant angle. This model involves the cyclotron maser instability as the mechanism at the origin of the radio emission. The observed occurrence probability happens to be larger in some specific regions of the CML-Io phase diagram, the so-called Io-controlled emissions and well-known as Io-A, Io-B, Io-C and Io-D 'sources'. In the present investigation, we model four boxes representing the typical Io-controlled source regions in this diagram. We discuss the consequences and the constraints on the location of the Jovian active longitude at the origin of the Io-controlled radiation simultaneously for both hemispheres. The first results show that the active longitude model can only explain part of the emissions coming from restricted zones of the CML-Io phase diagram. This is particular the case for the emissions of the Io-D source.