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The space weather in Saturn's radiation belts

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Thanks to the Cassini mission, we now possess a very comprehensive set of observations from Saturn's radiation belts. The volume and quality of the dataset is such that the highly desired research subject of comparative planetary radiation belts is a realistic goal. A significant progress has been particularly achieved in our understanding of space weather effects in the planet's radiation belts, despite the limitation of the single point measurements by Cassini and the lack of an upstream solar wind monitor. The long-duration of the Cassini mission allowed us to understand the average, global configuration of the ion and electron radiation belts and therefore decompose a series of variability signatures into their temporal and spatial component. Signatures of corotating interaction regions, interplanetary coronal mass ejections, transient radiation belts or even those from stochastic variations of magnetospheric electric fields are now routinely identified in the energetic particle dataset of the Magnetospheric Imaging Instrument (MIMI) of Cassini. In this talk, we will review signatures of space weather in Saturn's radiation belts, with characteristic time scales of few minutes/hours (e.g. injection events) to weeks (CIRs, ICMEs) and years (solar cycle).