



Planetary space weather effects on the bow shock, the magnetic barrier and the ion composition boundary at Venus

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We present case studies of six interplanetary coronal mass ejections (ICMEs) interacting with the induced magnetosphere of Venus. All ICMEs were driving interplanetary shocks. The events were selected based on STEREO measurements obtained in 2010 and 2011, and the Venusian plasma environment was simultaneously studied by Venus Express. Here we focus mainly on the location of the planet's bow shock (BS) and the ion composition boundary (ICB) during these ICME passages at Venus. We find that increased solar wind dynamic pressure inside the ICME sheaths has no influence over the location of the Venusian BS. The small magnetosonic Mach numbers inside magnetic clouds however cause the bow shock to appear at anomalously large distances from the planet. The magnetic field intensity inside the planet's magnetic barrier increased significantly during these ICME passages but the observed size of the magnetic barrier was not found to diminish. The position of the ICB at the nightside was found closer to the planet during ICME passages which is attributed to the increased solar wind dynamic pressure.