

Effects of 2012 solar energetic particle events measured near multiple planets in the inner solar system

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The solar energetic particles (SEPs) observed at the Earth exceed 6000 PFU at >10 MeV protons in January 23 and March 7 associated with M8 and X5 flares and associated coronal mass ejections, respectively. The SEP flux is the largest in the last 8 years. Mercury, Venus, and Mars are on the same side of the Sun, making particularly the March event very unique to understand the radiation effect at multiple planets and to understand the SEP distribution itself via the comparison of the observations and models at different positions. Indeed, there are operating spacecrafts, not only near the Earth, but near Mercury, Venus, and Mars in addition to Stereo spacecrafts which provide information on the environment of interplanetary space. In this presentation, we overview the 2012 solar flare events and report the observations by spacecrafts (Mars Express, Venus Express and others) at multiple planets.

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