



Effects of a CME on Mars

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We investigate the effects of a Coronal Mass Ejection (CME) on Mars. The magnetic field in the magnetic pileup region on Mars is dominated by the dynamic pressure from the solar as increased dynamic pressure compresses the magnetic pileup region causing a larger magnetic pressure, until this balances the solar wind pressure. As the dynamic pressure is severely increased during a CME, so is the magnetic pressure. A CME are also typically connected to a Solar Energetic Particle (SEP) event, causing large amounts of radiation. When the shock front of a CME arrives at Mars strong signals are seen in both the magnetic field data and in the radiation data. Based on Mars Global Surveyor (MGS) Magnetometer (MAG) and Electron Reflectometer (ER) data we study the radiation and magnetic field variations on Mars during a CME event. We also compare the effects on Mars to the effects on Earth for the same CME event. Finally we test the ability to predict the propagation of the event through the solar system by using a heliospheric MHD model (ENLIL) to model the solar wind parameters.