DECEMBER 27TH MAGNETAR EVENT OBSERVATIONS BY MARS GLOBAL SURVEYOR. R. J. Lillis, D. A. Brain, J. S. Halekas, D. L. Mitchell, R. P. Lin, *Space Sciences Laboratory, University of California, Berkeley, CA 94720, USA, (rlillis@ssl.berkeley.edu)*

At 21:30 UT on December 27th, 2004, the largest ever gamma ray burst was observed by a number of spacecraft, including SWIFT, WIND, GOES, RHESSI, and others. At Mars, the Electron Reflectometer (ER) experiment onboard Mars Global Surveyor (MGS) also observed the event near 21:13 UT. It was characterized by a very short intense spike of counts at high energies, characteristic of penetrating radiation. Twenty minutes later, an unusual response was observed in the Martian ionosphere. A significant enhancement was seen at low energies (<500 eV), coincident with a dropout in flux at higher energies (>1 keV).

We will present an overview of the event as observed by the MGS ER. As more detailed spacecraft ephemeris information becomes available, we will look in more detail at the time history, energy spectrum, and angular distribution of the initial spike and the subsequent ionospheric response. We will also compare the timing of the event with that observed by spacecraft at Earth, and compare and contrast the ionospheric response with that at Earth.

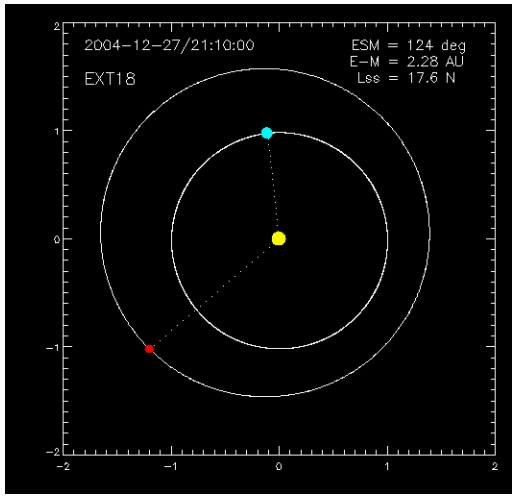

Figure 1: Positions of Mars and Earth in the ecliptic plane at the time of the event. The event was within five degrees of the sun as seen at Earth.

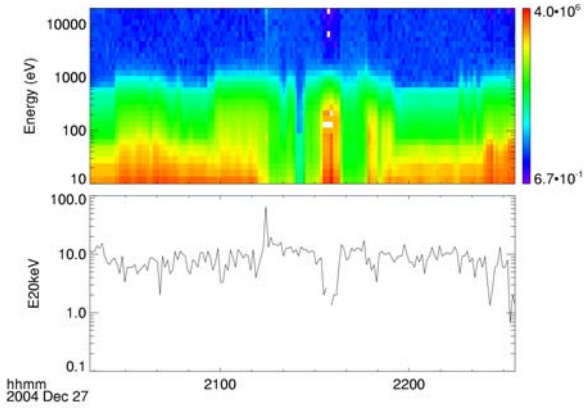

Figure 2: Energy spectrogram from the MGS ER, and a count rate time series from the highest energy channel (20 keV). Penetrating radiation can most easily be observed in this channel.