
PEM036-04

Room: Function Room A

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Space weather observations using the Global Muon Detector Network (GMDN)

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A solar disturbance propagating away from the Sun affects the pre-existing population of galactic cosmic rays (GCRs) in a number of ways. Most well-known is the "Forbush Decrease" (FD), a region of suppressed cosmic ray density located downstream of an Interplanetary Coronal Mass Ejection (ICME) shock. Some particles from this region of suppressed density leak into the upstream region and, traveling nearly at the speed of light, they race ahead of the approaching shock and are observable as a precursory loss cone (LC) anisotropy far into the upstream region. LCs are characterized by intensity deficits confined to a narrow pitch-angle region around the sunward direction along the Interplanetary Magnetic Field (IMF) and are typically visible 4-8 hours ahead of shock arrival for shocks associated with major geomagnetic storms. The directional intensity of high energy cosmic rays can be monitored by the global network of muon detectors. This paper reports on recent results from the space weather observations using the Global Muon Detector Network (GMDN) which has been in operation since March, 2006.

Keywords: space weather, galactic cosmic ray, muon detector network