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Preliminary data from the new muon telescope located in the Southern Space Observatory at São Martinho Serra, RS, Brasil

J. F. Savian(1, 3), M. R. da Silva(2), A. Dal Lago(2), C. R. Braga(1, 3), L. C. N. dos Santos(1,3), C. W. S. da Silva(1,3), S. M. da Silva(1,3), V. F. Andrioli(1,3),

K. Munakata(4), N. J. Schuch(3)

(1) Space Science Laboratory of Santa maria – LACESM/CT/UFSM, Brasil, (2) National Institute for Space Research – INPE/MCT, Brasil, (3) Southern Regional Space Research Center – CRSPE/INPE/MCT, Brasil, (4) Physics Departament, Faculty of Science, Shinshu University, Matsumoto Japan.

(savian@lacesm.ufsm.br/ +55-553220-8021)

Large geomagnetic storms are primarily caused by interplanetary disturbanses associated with coronal mass ejection (CMEs). The cosmic ray particles of intensities $>$ 1GeV are normally suppressed by a factor of $\sim$1 to 10% downstream the CME shock and within the CME ejecta following the shock. In addition to these intensity depressions, called “Forbush decreases” (FDs), precursory phenomena appearing upstream the CME shock have also been reported. Munakata et. al. (2000) have identified cosmic ray precursors with lead times ranging from six to nine hours prior to the storm sudden commencement (SSC) and demonstrated that the muon detector network may provide useful information for space weather forcasting. In early March 2001, a small prototype muons detector was installed at Sao Martinho da Serra (29˚26’24”S, 53˚48’38”W, above 500m sea level), at the SSO of INPE, Brazil. The detector consists of two horizontal layers of plastic scintillators separated by 1.73 m, with an intermediate 5 cm thick layer of lead to absorb the soft component in cosmic rays in the atmosphere. Each layer comprises a 2x2 array of 1 m^2 unit detectors (1m x 1m x 0.1m plastic scintillator viewed by a photomultiplier tube of 12.7 cm diameter) giving a total detection area of 4 m^2. In December 2005 this detector was upgraded to a 7x4 configuration, enlarging its detection capability. In this work we present some prelim-

inary data from this new muon telescope. This study is important for the monitoring of energetic cosmic rays and their response to interplanetary magnetic disturbances, and in the near future it will be used for space weather forecasting.