Panels (P)
Space Weather: Preparing for The Next Solar Maximum (PSW1)

STUDY OF INTERPLANETARY STRUCTURE PLASMA PARAMETERS AND GROUND COSMIC RAY MODULATION

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Interplanetary coronal mass ejections (ICMEs) are gigantic clouds of ionized gas launched from the Sun. These structures populate the interplanetary medium, frequently hit the planets. Depending on their characteristic and orientation, they may transfer their energy which is necessary to cause the geomagnetic storms, to the Earth's magnetosphere. ICMEs can be studied according to the variability of interplanetary magnetic field (IMF) and plasma parameters, such as, field intensity, direction, proton density (N_p), proton speed (V_P), radial component of

proton temperature (T_p), and plasma beta (β) which is defined as the ratio between thermal pressure and magnetic pressure. By using the minimum variance analysis (MVA) method, it is possible to identify the plane of maximum variance of the magnetic field data sets, and the eigenvector normal corresponding to the axis of the magnetic clouds. This allows to obtain the azimuthal (ϕ_k) and inclination (θ_k) axis orientation in relation to the ecliptic plane. The objective of this work is to study these ICME characteristics and their relation with modulation of ground level cosmic rays. To do this, IMF and plasma data from the Advanced Composition Explorer (ACE) spacecraft, and >50 GeV cosmic ray data from the multidirectional muon telescope installed in the Southern Space Observatory (OES/CRS/CIE/INPE - MCT) in São Martinho da Serra, Brazil, will be used. Geomagnetic response to the interplanetary structures will be studied using the Dst index.