

## EGU XXVI General Assembly ST017 Nice 2001

### HOW COSMIC RAYS INFLUENCE ON COSMIC WEATHER

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#### Abstract

Galactic cosmic rays (GCR ) and solar cosmic rays (SCR) are an important aspect of solar terrestrial physics and potentially a significant contributor to cosmic weather conditions. Sufficient data on proton fluxes with proton energies  $>1\text{MeV}$ ,  $>10\text{ MeV}$ ,  $>30\text{ MeV}$ ,  $>60\text{MeV}$ ,  $>100\text{MeV}$  and  $>1\text{GeV}$  are now available to permit the study of their long-term occurrence patterns.

Studying here the Galactic Cosmic Ray modulation at the Neutron Monitor energies and the proton events occurrence and fluence values over three complete 11-year solar cycles (1970-2000) we have obtained many interesting remarks, such as: the most outstanding solar proton events do not occur at the cycle maximum as it is defined by the  $R_z$  number, while the yearly low-energy proton fluxes follow the rate of 10 MeV and 30 MeV proton events occurrence. Moreover the parent flares of 10MeV and 30 MeV proton events have always an importance greater than M4, according to the GOES flare classification. On the other hand the galactic cosmic ray variations and the occurrence rate of proton events compared with the module of the interplanetary magnetic field, the solar wind energy flux, and solar magnetic field as a star present a high enough correlation.

After all these we can conclude that it is time to introduce a new solar activity index which can uniquely ascribe the observed consequences in space to their isolated sources on the SUN and propose some versions of such complex index.