



ID contributo: 18

Tipo: oral

# Major solar energetic particle events on the multi-millennial time scale: Fluence above 200 MeV

*mercoledì 7 settembre 2016 12:15 (15 minuti)*

A reconstruction of major solar energetic particle (SEP) events can be done for the distant past (centennial-millennia) by using data on the cosmogenic isotopes  $^{14}\text{C}$  and  $^{10}\text{Be}$  in stratified and independently datable terrestrial archives (tree trunks or polar ice cores). However, the energy spectrum of SEP is hardly possible to evaluate directly. Here we use a new index, the integral fluence of an SEP above 200 MeV, so called F200, which is related to the effective energy of the production of the cosmogenic isotopes by SEP in the Earth atmosphere. This index is robust against the assumptions on the exact shape of the energy spectrum of the event in a wide range of parameters. Using several records of cosmogenic isotopes, we present a reconstruction of the F200 fluence for major SEP events in the past, and also assess the occurrence probability density function for extreme events. In particular, we evaluate that extreme SPEs with  $\text{F200} > 10^{10} \text{ cm}^{-2}$  may occur no more frequently than once per 10 000 years or even rarer up to never.

**Autore principale:** Prof. USOSKIN, Ilya (University of Oulu)

**Coautore:** Dr. KOVALTSOV, Gennady (Ioffe Physical-Technical Institute, St. Petersburg, Russia)

**Relatore:** Prof. USOSKIN, Ilya (University of Oulu)

**Classifica Sessioni:** Parallel