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Modelling the Production of Cosmogenic Radionuclides due to Galactic and Solar Cosmic Rays

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Cosmogenic radionuclides such as ^{10}Be , ^{14}C and ^{36}Cl are a product of the interaction of high energetic primary cosmic ray particles, in particular galactic cosmic rays (GCR), with the Earth's atmosphere. Because GCRs are modulated on their way through the interplanetary medium the GCR-induced production of these radionuclides is anti-correlated to the solar cycle. In addition, during phases of strong solar activity also solar energetic particle (SEP) events occur frequently. While the production due to GCRs can be seen as background production, in particular so-called Ground Level Enhancement (GLE) events, strong SEP events which can be detected at the Earth's surface, may strongly contribute to the production of ^{10}Be , ^{14}C and ^{36}Cl , a topic by now highly discussed in the literature. Using energy spectra of modern GLE events we will investigate the influence of 58 out of the 71 GLEs and statistically investigate the possibility to detect such events in present ice-core and tree-ring records.

Collaboration

– not specified –

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