EGU22-13288, updated on 09 Dec 2022
https://doi.org/10.5194/egusphere-egu22-13288
EGU General Assembly 2022

Measuring neutron monitor multiplicities at SANAE

Du Toit Strauss
Center for Space Research, North-West University, Potchefstroom, 2522, South Africa

We present new results of the neutron monitor (NM) multiplicity, as measured by the SANAE NM with updated electronics, down to 10 microseconds. We identify the high-multiplicity component, formed when high-energy particles interact with the NM and produce multiple neutrons in the lead producer. This component is absent in the lead-free monitors and is absent when testing the leaded NM with a low-energy neutron source. We study the pressure dependence of both the high- and low-multiplicity components, as well as the ratio thereof. We show how this ratio, as a proxy for the energy spectrum of atmospheric particles incident on the NM, changes during a relatively small Forbush decrease observed in November 2021.