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Poster
A number of space weather events occurred during a very active phase of the Sun in May 2024 including several strong M and X class X-ray flares. Following these flares and the associated coronal mass ejections elevated levels of highly energetic protons were measured in Low-Earth Orbit that have the potential to increase the dose rate at aviation altitudes. However, one of the events also caused a temporary reduction of the intensity of galactic cosmic radiation (GCR) measured by ground-based neutron monitors during a Forbush decrease. During this period of temporary decreased intensity of cosmic radiation, another event in turn led to a small increase in neutron monitor count rates, a ground level enhancement, the first of its kind since October 2021.
The complex evolution of the different components of these space weather events was analyzed with the PANDOCA model, developed at the German Aerospace Center for the assessment of radiation exposure in aviation. The expected impact on the radiation field and the related variations in the effective dose at aviation altitudes were calculated and compared to quiet space weather conditions. The calculations were based on measurements of the integral proton flux by the Geostationary Operational Environmental Satellites (GOES) and count rates of ground-based neutron monitors during the critical phases of the events.

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