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RADIATION DOSE OF AIRCREWS DURING A SOLAR PROTON EVENT WITHOUT GROUND-LEVEL ENHANCEMENT

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A significant enhancement of radiation dose is expected for aircrews during ground-level enhancement (GLE) events, while the possible radiation hazard remains open question during non-GLE solar energetic particle (SEP) events. Using a new air shower simulation driven by the proton flux data obtained from GOES satellites, we show the possibility of significant enhancement of the effective dose rate of up to 4.5 $\mu\text{Sv/hr}$ at a conventional flight altitude of 12 km during the largest SEP event which did not cause a GLE. As a result, a new GOES-driven model (Kataoka et al., 2014) is proposed to give an estimate of the contribution from the isotropic component of the radiation dose in the stratosphere during non-GLE SEP events.

¹ Kataoka, R., Y. Nakagawa, and T. Sato (2014), Radiation dose of aircrews during a solar proton event without ground-level enhancement, submitted to *Annales Geophysicae*.