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SGO-Liulin flight in 2021 data analysis and comparison with model results

Measurements of the radiation background, particularly in the polar region are important. In general, there is a lack of systematic studies, and the obtained records so far are sparse. Most importantly, in the light of space weather research, measurements at flight altitudes are very welcome, particularly important to verify and improve the existing models accounting for this specific risk. They can be used to compare and eventually cross-calibrate different experimental set-ups, to provide the necessary scientific basis for improving the existing models and to study the polar atmospheric environment. Herein we report balloon-born measurements of the radiation environment in the polar stratosphere, performed during HEMERA stratospheric scientific balloon mission. The measurements were performed with a small portable device based on a silicon semiconductor: that is MDU Liulin. We derived the altitude profile of the atmospheric radiation in the Arctic region, namely between Estrange Kiruna, Sweden and Finnish Lapland. The measurements were compared with recently updated Monte Carlo based CRAC:DOMO (Cosmic Ray Induce Cascade: Dosimetric Model) model and was used also for verification of the greatly updated CRAC:CRII (Cosmic Ray Induce Cascade: Cosmic Ray Induce Cascade: Cosmic Ray Induced Ionization). According to our analysis, there is satisfactory agreement between the measurements and the models..

Collaboration(s)

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