Accepted Manuscript

Measurement of secondary cosmic ray intensity at Regener-Pfotzer height using low-cost weather balloons and its correlation with solar activity

Ritabrata Sarkar, Sandip K. Chakrabarti, Partha Sarathi Pal, Debashis Bhowmick, Arnab Bhattacharya

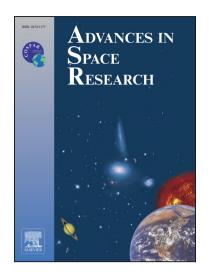
PII: S0273-1177(17)30343-5

DOI: http://dx.doi.org/10.1016/j.asr.2017.05.014

Reference: JASR 13222

To appear in: Advances in Space Research

Received Date: 12 January 2017 Revised Date: 9 May 2017 Accepted Date: 10 May 2017



Please cite this article as: Sarkar, R., Chakrabarti, S.K., Pal, P.S., Bhowmick, D., Bhattacharya, A., Measurement of secondary cosmic ray intensity at Regener-Pfotzer height using low-cost weather balloons and its correlation with solar activity, *Advances in Space Research* (2017), doi: http://dx.doi.org/10.1016/j.asr.2017.05.014

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Measurement of secondary cosmic ray intensity at Regener-Pfotzer height using low-cost weather balloons and its correlation with solar activity

Ritabrata Sarkar^{a,*}, Sandip K. Chakrabarti^{b,a}, Partha Sarathi Pal^a, Debashis Bhowmick^a, Arnab Bhattacharya^a

^aIndian Centre for Space Physics, 43 Chalantika, Garia Station Rd., Kolkata 700084, West Bengal, India

^bS.N. Bose National Centre for Basic Sciences, JD Block, Salt Lake, Kolkata 700097, West Bengal, India

Abstract

Cosmic ray flux in our planetary system is primarily modulated by solar activity. Radiation effects of cosmic rays on the Earth strongly depend on latitude due to the variation of the geomagnetic field strength. To study these effects we carried out a series of measurements of the radiation characteristics in the atmosphere due to cosmic rays from various places (geomagnetic latitude: $\sim 14.50^\circ$ N) in West Bengal, India, located near the Tropic of Cancer, for several years (2012-2016) particularly covering the solar maximum in the 24th solar cycle. We present low energy (15 – 140 keV) secondary radiation measurement results extending from the ground till the near space (~ 40 km) using a scintillator detector on board rubber weather balloons. We also concentrate on the cosmic ray intensity at the Regener-Pfotzer maxima and find a strong anti-correlation between this intensity and the solar activity even at low geomagnetic latitudes.

Keywords: Cosmic ray, Regener-Pfotzer height, Solar activity, X-ray detector, Weather balloon-borne mission *PACS*: 94.20.wq, 94.05.Sd, 95.55.-n, 95.55.Ka, 96.60.Q

Email addresses: ritabrata.s@gmail.com (Ritabrata Sarkar), sandipchakrabarti9@gmail.com (Sandip K. Chakrabarti), parthasarathi.pal@gmail.com (Partha Sarathi Pal), debashisbhowmick@gmail.com (Debashis Bhowmick), arnabseacom@yahoo.com (Arnab Bhattacharya)

^{*}Corresponding author

Download English Version:

https://daneshyari.com/en/article/5486136

Download Persian Version:

https://daneshyari.com/article/5486136

Daneshyari.com