

ON THE NEAR GROUND LEVEL ELECTRIC FIELD RESPONSE TO FORBUSH DECREASES AT SWIDER OBSERVATORY

Z. KOBYLINSKI (1), M. Kubicki (2) and S. Michnowski (3)

- (1) The Higher School of National Economics Geodesy, Real Property and Environmental Engineering Faculty, Kutno, Poland, e-mail: zbigniewkobylnski@yahoo.com
- (2) Institute of Geophysics, Polish Academy of Sciences, Warszawa, Poland, e-mail: swider@igf.edu.pl
- (3) Institute of Geophysics, Polish Academy of Sciences, Warszawa, Poland, smichn@igf.edu.pl

Energetic charged particles of galactic cosmic rays (GCR) and stronger energetic solar particles penetrate deep into lower atmosphere ionizing the air and affect onto the value and distribution of electric conductivity, the electric field and other atmospheric electric parameters. The response of the atmospheric electric field (AEF) at ground level to the GCR is difficult to distinguish due to large amount of factors affecting the measured vertical component E_z of AEF. In spite of it we examine a possible influence of the short time scale effects namely the Forbush decreases of GCR intensity onto the AEF registered at Swider Observatory in 1954-2004 interval. The AEF the average diurnal values under analysis have been taken only from the days with the fair weather conditions. We have used the superposed epoch analysis to the separated data sets for geomagnetically quiet days and disturbed days. The preliminary results show that the atmospheric potential gradient decreases on the day before and increases on a 2 – 4 days after the Forbush effects. These results are discussed and compared with previously published results obtained from studies of Nagycenk observatory data (Marcz, 1997), Paratunka station (Kuznetsov and Cherneva, 2008) and Apatity observatory (Kasatkina et al, 2003) data sets. The study GCR effects in atmospheric electricity, taking into account a physical mechanisms of such influence, can help us to understand better the character of solar activity impact on the climate change.

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Z. Kobylnski , The Higher School of National Economics Geodesy, Real Property and Environmental Engineering Faculty, Kutno, Poland,
e-mail: zbigniewkobylnski@yahoo.com