

A NEW SPACE WEATHER SERVICE IN BULGARIA: THE MULTI-ENERGY PROTON EVENT CATALOG

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We present the results from a recently completed study on the identification, analysis and solar origin association of solar energetic protons over nearly two solar cycles (1996-2017). Data with the highest temporal resolution of 1 minute is used from SOHO/ERNE instrument over 10 channels covering the energy range from 14 to 131 MeV. Statistical correlations with solar flares and coronal mass ejections are performed and compared to earlier results.

A dedicated web-site to host the proton catalog is available at <https://catalogs.astro.bas.bg/> and the results (times, amplitudes, quick-look plots) will be provided freely to the scientific community. This new service is hosted and will be supported in the future by the Institute of Astronomy and National Astronomical Observatory – Bulgarian Academy of Sciences.

OCCURRENCE RATE AND CAUSAL RELATIONSHIP OF EXTREME SPACE WEATHER EVENTS

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As extreme space weather phenomena in this study are considered all solar flares above X9, the fastest coronal mass ejections, the strongest geomagnetic storms and the most-intense in proton flux solar energetic particles. These phenomena are mutually interconnected and/or occur in close succession. The extremes of each category in the recorded history of ground-based and satellite observations are identified and their occurrence rates are calculated. A set of criteria is proposed to relate a given geoeffective event with its origin and the accompanying space weather phenomena. The results are presented and discussed.