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The SPREAdFAST proton events - statistical relationship with solar eruptive phenomena and transport conditions in the interplanetary space

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Solar energetic protons in solar cycle 24 accompanied by EUVI waves from SDO/AIA are analysed and presented. Multi-energy proton data from 10s to 130s MeV from the SOHO/ERNE instrument is used. Pearson and partial correlation analysis between the proton intensities and flare or CME parameters is performed. Additionally, the interplanetary conditions are inspected in terms of shock waves occurrence and large deviations from the nominal Parker spiral path. A comparison with the synthetic proton profiles in multiple energy bands produced with the new SPREAdFAST model (<https://spreadfast.astro.bas.bg/>) is performed and the results are discussed.

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