Prolonged release of >100 MeV protons from local radiation belts of the sun

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Solar proton events of 1989-2002 accompanied by ground level enhancements were considered. It is shown that solar proton intensity measured within 84-200 MeV energy band by the GOES proton detector might be approximated using the simple diffusion model assuming prolonged and multi step release of solar protons. The solar proton injection into the interplanetary space may last up to several hours since the onset of x-ray parent event. Up to now observations of gamma ray emission from decayed pions by the CGRO and GAMMA-1 space observatories on June 11 and 15, 1991 are a unique direct evidence for prolonged trapping/acceleration of >100 MeV protons in solar flares. Apparently processes of prolonged trapping and/or acceleration are common features of large solar flares and a notation of local radiation belts of the Sun should be introduced.