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## Analysis of the CME and associated gradual SEP event of March 2013

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We present the study of the propagation of energetic particles through a non-parkerian, data-driven solar wind solution for the event of 15 March 2013. In the study, we employed the recently coupled models EUHFORIA (EUropean Heliospheric FORecasting Information Asset) and PARADISE (PArTicle Radiation Asset Directed at Interplanetary Space Exploration).

An Earth-directed, asymmetric, full halo CME erupted from the Sun on March 15, 2013. An associated GOES M1.1 X-ray flare was observed originating from the active region 11692, reaching its peak intensity at 06:58 UT. Shortly after, at 7:12 UT, a CME was observed by coronagraphs at both STEREO and SOHO/LASCO spacecraft. During March 16, the particle counts at L1 were enhanced, and measurements show different profiles for different energy ranges, with a distinct two-step increase in the lower energy channels lasting for several days.

The 3D MHD heliospheric solar wind and CME evolution model EUHFORIA was used to simulate this event, with special emphasis on fitting the modeled and observed CME characteristics and signatures at Earth. The energetic particles (SEPs) were simulated with the newly developed solar energetic particle transport model PARADISE. The EUHFORIA simulation results were employed as the time-dependent ambient plasma characteristics. Particle populations with different characteristics were explored with the aim to accurately describe and reproduce the in situ measured particles. Moving sources of particles were incorporated in order to model the CME shock-generated part of the population. The first results of this complex simulation will be shown in this presentation.

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