



Demonstration of a SEP Event Modeling Scheme Based on Routine ENLIL Runs

Janet G Luhmann (1), Dusan Odstrcil (2), Leila Mays (3), and Yihua Zheng (4)

(1) SSL, University of California, Berkeley, CA, United States (jgluhman@ssl.berkeley.edu), (2) George Mason University, Fairfax, VA, United States (dusanod@gmail.com), (3) Catholic University of America, Washington DC, United States (m.leila.mays@nasa.gov), (4) Goddard Space Flight Center, Greenbelt, MD, United States (yihua.zheng@nasa.gov)

The ENLIL heliospheric simulation including coronagraph image-based cone-model Coronal Mass Ejection (CME) injections is now capable of running almost continuously for time periods of up to a month. These runs produce outputs that include solar wind plasma and field histories at selected observation points including Earth, STEREO spacecraft, and Mars. They also provide the information needed for related SEP event modeling because they include both field line descriptions to points from the inner ENLIL boundary of ~ 20 Rsun to beyond the observer, as well as shock properties resulting from the cone model CMEs. We have initiated regular follow-on runs of a SEP code that uses ENLIL outputs including observer-connected shock jumps and field line geometries. The month-long duration of the ENLIL runs is found to be very important in the SEP event model calculations because of both accumulation of heliospheric SEP fluxes from frequent multiple shocks simultaneously present in the system, and the alteration of overall heliospheric field geometries and thus shock connectivities these transients. The results shown demonstrate only the first step toward one option for routine SEP modeling capability with ENLIL.