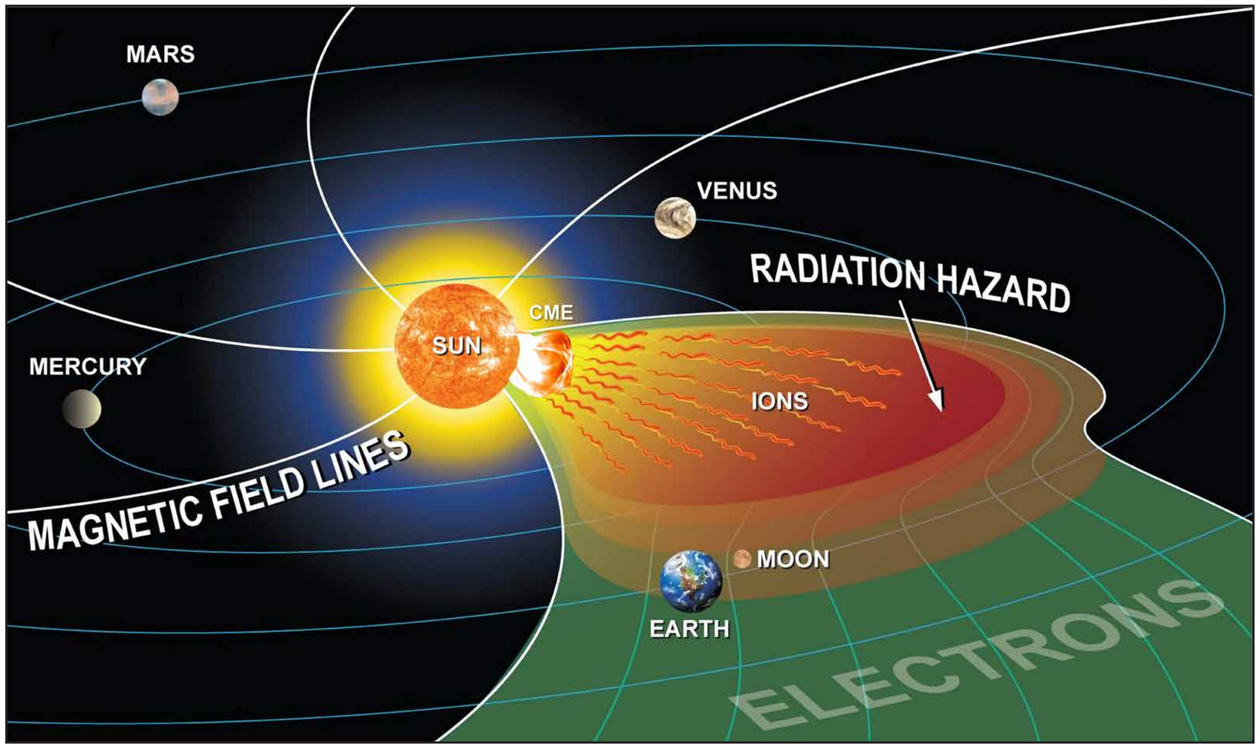
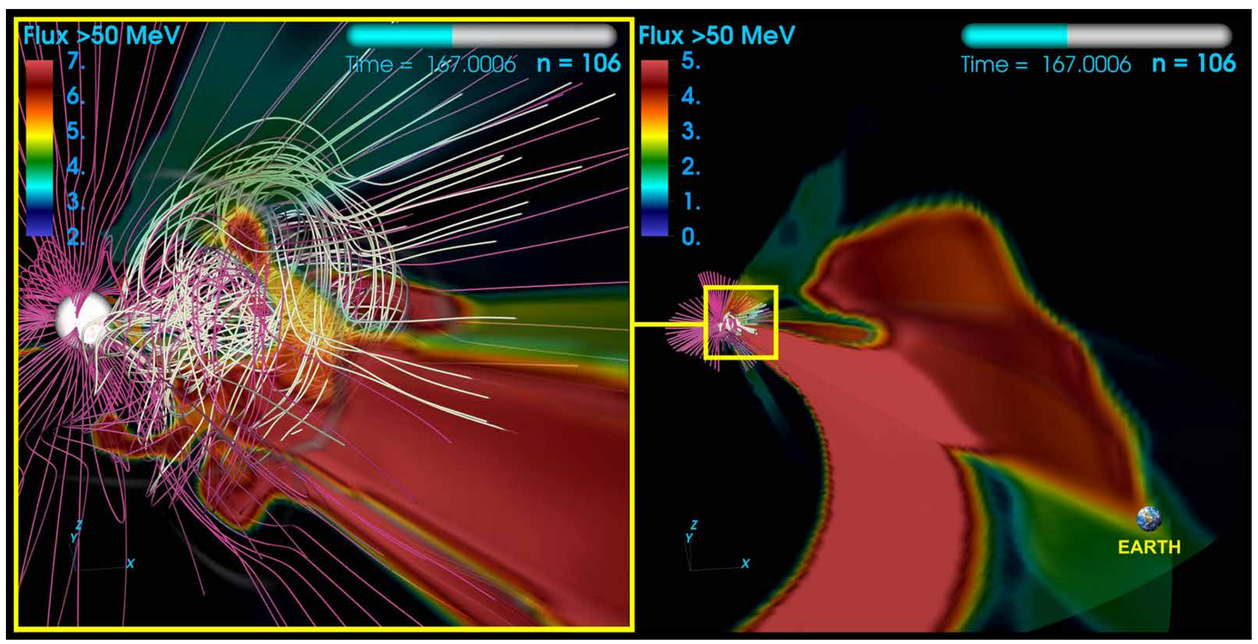


Schematic of a solar particle event caused by a coronal mass ejection. The accelerated ions pose technological and human hazards in space. *Arik Posner, NASA Headquarters*



Snapshot of a magnetohydrodynamic simulation of the July 2000 Bastille Day coronal mass ejection, showing integrated energetic particle fluxes (colored areas) above 50 mega-electron volts (MeV). At left, the magnetic field lines are indicated (pink and white lines), along with the divergence of velocity (white contour). *Cooper Downs, Ronald Caplan, Predictive Science Inc.*

National Aeronautics and Space Administration

Shields Up! Towards Forecasting Solar Particle Threats Through Simulation

Solar storms, in the form of coronal mass ejections (CMEs) and solar flares, can produce large solar particle events (SPEs). These SPEs pose a significant technological hazard to aircraft avionics, communications, and navigation, and are a possible health risk for airline crews and passengers. In space, SPEs can be hazardous for crews of spacecraft in low-Earth orbit, the International Space Station, and future interplanetary missions. To help face this challenge, we have developed the SPE Threat Assessment Tool (STAT) to model CME-generated events. STAT combines state-of-the-art magnetohydrodynamic computations with a cutting-edge solar energetic particle model to predict SPE fluxes on Earth and at other interplanetary locations.

Ronald Caplan, Jon Linker, Predictive Science Inc.