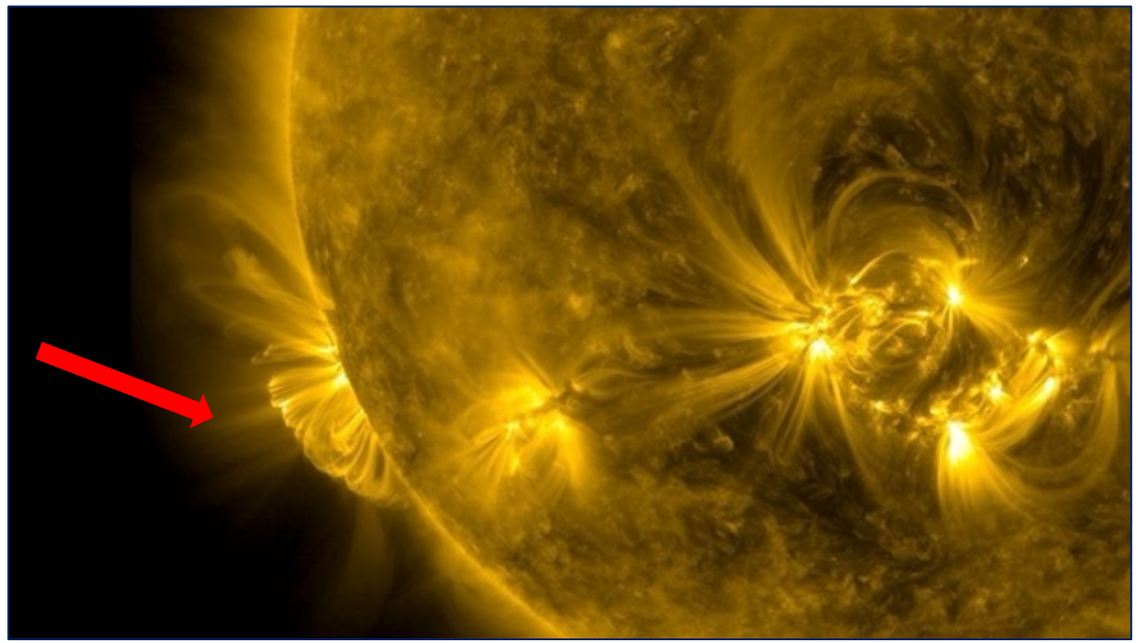
Data from Parker Solar Probe Used in Solar Event Analysis

- A new study investigates two successive interplanetary Coronal Mass Ejections (ICMEs) observed by Parker Solar Probe, as well as a solar energetic particle (SEP) event from one of the ICMEs. The researchers were from NASA Goddard Heliophysics Science Division, Johns Hopkins University Applied Physics Laboratory, NASA's Jet Propulsion Laboratory, and multiple universities and scientific institutions.

- SEPs are energetic charged particles (predominantly electrons and protons) traveling much faster than ambient particles in the space plasma. This work demonstrates that solar wind structures can influence the intensity of SEPs and should be considered when studying them.

- Successive ICMEs might generate the conditions for the most impactful space weather – including major SEP events and powerful geomagnetic storms such as the Carrington event. Better understanding of solar particle events is crucial for human exploration as they are one of the main hazards from the Sun for missions above low Earth orbit and Moon-to-Mars.



The Sun on November 29, 2020 showing flare loops associated with the eruption producing the second ICME that encountered PSP. This image was captured by NASA's Solar Dynamics Observatory and shows light in the 171 angstrom wavelength. ***Credit: NASA/GSFC/SDO***

Lario, D. (672), Richardson, I. G. (672), Palmerio, E., et al. Comparative Analysis of the 2020 November 29 Solar Energetic Particle Event Observed by Parker Solar Probe. The Astrophysical Journal. 920, 123 (2021). https://doi.org/10.3847/1538-4357/ac157f