

Geospace response to the early September 2017 solar eruptions

This 4-11 September 2017 interval was one of the most flare-productive periods of solar cycle 24. Solar active regions (AR) 2673 and 2674 both matured to complex magnetic configurations as they transited the disk. AR2673 issued three X-class flares and multiple partial halo ejecta. Combined, the two active regions produced more than a dozen M-class flares. As a parting shot AR2673 produced: 1) an X-9 level flare; 2) an associated moderate solar energetic particle event; and 3) a ground level event, as it arrived at the solar west limb on 10 September. From 4 -16 September the radiation environment at geosynchronous orbit was at minor storm level and 100 MeV protons were episodically present in geostationary orbit during that time frame. The early arrival of the coronal mass ejection associated with the 6 September X-9 flare produced severe geomagnetic storming on 7 and 8 September. The full set of events was bracketed by high-speed streams that produced their own minor-to-moderate geomagnetic storming.

In this joint session, we will discuss the magnetosphere-ionosphere-thermosphere (MIT) impacts of the storm and geospace disturbances. This was a major storm during the September equinox so it affords the opportunity to compare responses in the fairly evenly illuminated polar regions. We wish to highlight CEDAR and GEM observations and models that allow a better understanding of the dynamics of the MIT system and space weather effects that may have resulted from solar wind and MIT coupling. Discussion of responses to the flares, shocks, sheaths, ICMEs and high-speed streams of the interval are particularly encouraged.