

FORECASTING SOLAR ENERGETIC PARTICLE EVENTS USING CHANGES IN ELECTRON FLUX

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Given our growing dependence on satellite technology for communication and innovation, the potential interference from Solar Energetic Particle (SEP) events is a growing concern. Using observations from the Geostationary Operational Environmental Satellites (GOES) 13 and 15, we have been comparing proton data associated with Solar Energetic Particle (SEP) events with electron activity around the times in which SEP events were observed. The goal of this comparison was to examine whether or not an increase in electron flux is predictive of an SEP event. We found a strong correlation between peak electron flux and peak proton flux. However there were also large spikes in electron flux before many of the SEP events. We found that the average lead-time up to events from the peak of electron flux was 170.84 hours, or 7.1 days. This average lead-time, as well as the corresponding minimum lead-time of 4.3 hours and maximum lead-time of 526.7 hours, or 21.94 days, could be valuable in forecasting SEP events.