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## The source and solar precursors of the solar energetic particle events of September 2017

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Large gradual solar energetic particle (SEP) events associated with high-energy protons (up to tens of GeV) can cause hazardous space weather conditions at Earth, pose a severe radiation risk for crewed spaceflight and a significant threat to near-Earth technological assets. We currently do not understand where the SEP seed population originates from and what specific features of a solar active region could be the sources of SEPs. In this study, we investigate the evolution of NOAA active region (AR) 12673, which was the source of four SEP events including one ground level enhancement (GLE 72) in September 2017. We analyse numerous eruptive events from AR 12673, which were either SEP or non-SEP productive, that occurred over a time period of several days between 4-10th September 2017. This is in order to determine what solar precursors, particularly what parameters, configuration and evolution of the magnetic field along with the eruption characteristics are important in SEP-productive source regions and eruptive events. SEP forecasting would hugely benefit from a more advanced understanding of the role of the pre-event source regions and their characteristics.

### Student poster?

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