Contribution ID: **988** Type: **Talk**

Active regions with super-productivity in Solar Energetic Particles

Friday 18 July 2025 13:50 (15 minutes)

An average solar active region (AR) does not usually generate any enhancement in Solar Energetic Particles (SEPs) near Earth. A small subset of regions are able to produce one or a few SEP events and these are typically taking place at times of fairly good magnetic connection with near-Earth locations via the interplanetary magnetic field (IMF). However a small minority of ARs are super-productive in SEPs, generating events throughout their solar passage on the disk, as viewed from Earth, from eastern to western longitudes. An example is AR 10930, active in December 2006, which produced GLE 70 but also two eastern SEP events. Another is AR 5747, generating three GLEs in October 1989. This presentation will compare the features and particle events of several SEP-super-productive ARs and identify any commonalities. Here super-productivity is defined in terms of the high energy (˜100 MeV) proton component of SEPs, which is the most important for Space Weather. Properties of the associated solar flares and Coronal Mass Ejections will be considered to identify how these may have contributed to super-productivity. A discussion of whether specific features of the IMF and magnetic connection may have facilitated propagation of the energetic particles to Earth will be presented.

Collaboration(s)

Author: DALLA, Silvia (University of Central Lancashire)

Co-authors: HYNDMAN, Ruth (University of Central Lancashire); LAITINEN, Timo (University of Central Lancashire); BHAGWATH, Damini (University of Central Lancashire); Dr KNIPP, Delores (University of Colorado Boulder); Dr WATERFALL, Charlotte (NASA Goddard Space Flight Center)

Presenter: DALLA, Silvia (University of Central Lancashire)

Session Classification: SH

Track Classification: Solar & Heliospheric Physics