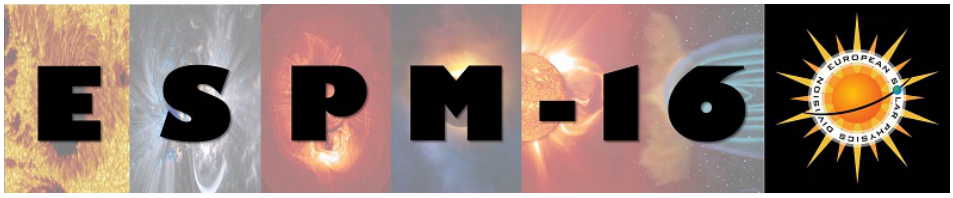

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Two Classes of Eruptive Events during Solar Minimum

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During Solar Minimum, the Sun is relatively inactive with few sunspots observed on the solar surface. Consequently, we observe a smaller number of highly energetic events such as solar flares or coronal mass ejections (CMEs), which are often associated with active regions on the photosphere. Nonetheless, our magnetofrictional simulations during the minimum period suggest that the solar corona is still dynamically evolving in response to the large-scale shearing velocities on the solar surface. The non-potential evolution of the corona leads to the accumulation of magnetic free energy and helicity, which is periodically shed in eruptive events. We find that these events fall into two distinct classes. One set of events are caused by eruption and ejection of low-lying coronal flux ropes and could explain the origin of occasional CMEs during Solar Minimum. The other set of events are not driven by destabilisation of low-lying structures but rather by eruption of overlying sheared arcades. These could be associated with streamer blowouts which are often considered as potential candidates for stealth CMEs. The two classes differ significantly in the amount of magnetic flux and helicity shed through the outer coronal boundary. We additionally explore how other measurables such as current, open magnetic flux, free energy, coronal holes, and the horizontal component of the magnetic field on the outer model boundary vary during the two classes of event. This study emphasises the importance and necessity of understanding the dynamics of the coronal magnetic field during Solar Minimum.

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