

Supplementary Materials for PIRG7-GA-2010-268288 SEP PROJECT

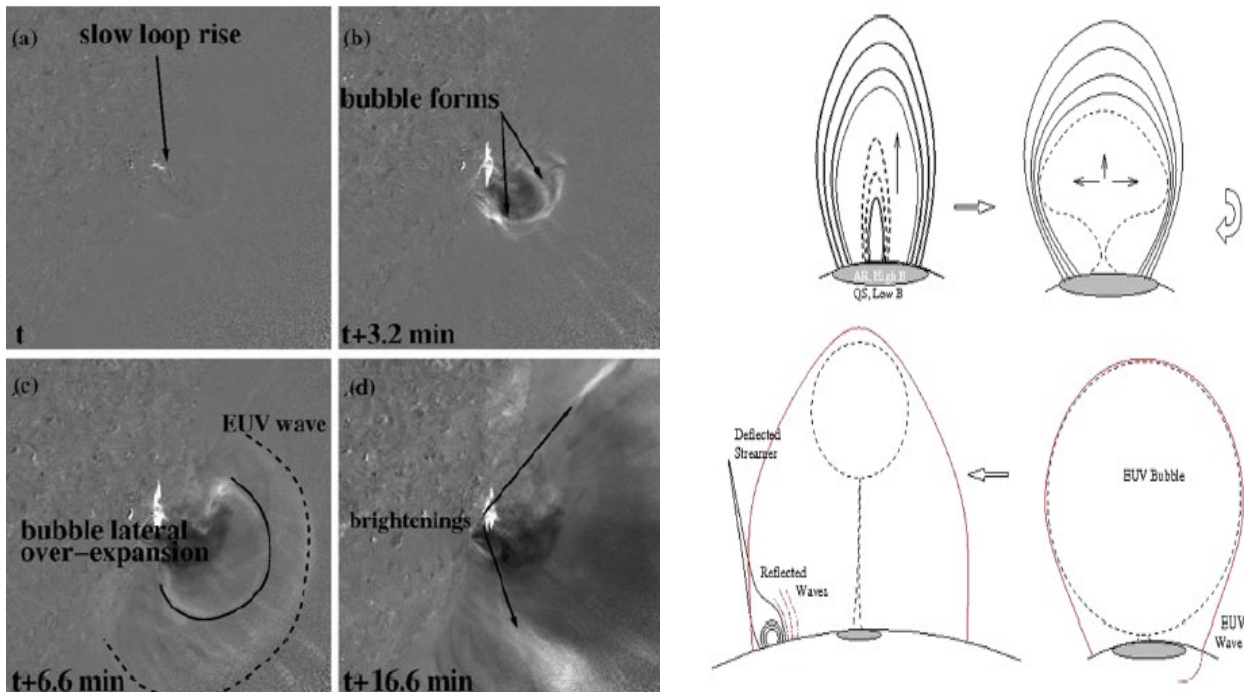


Fig 1: Towards a coherent picture of solar EUV waves and related phenomena. Left panel: AIA/SDO observations of the formation of an EUV wave caused by the strong lateral expansion of the erupting flux associated with a Coronal Mass Ejection (CME) onset during June 2010. Right panel: conceptual scenario of EUV wave formation based on the strong lateral expansion of early CMEs which simultaneously explains both wave and non-wave components and carries a heated debate on this topic towards its closure. From Patsourakos and Vourlidas 2012.

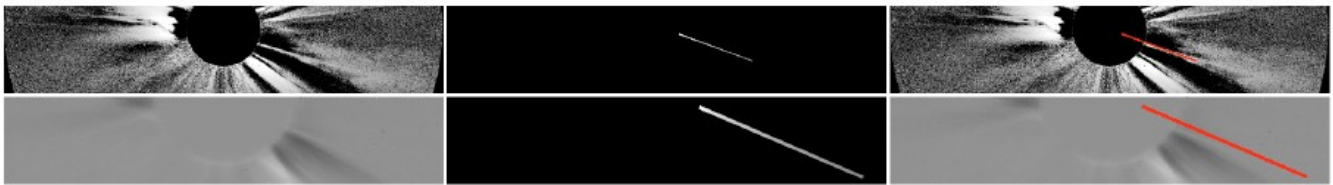
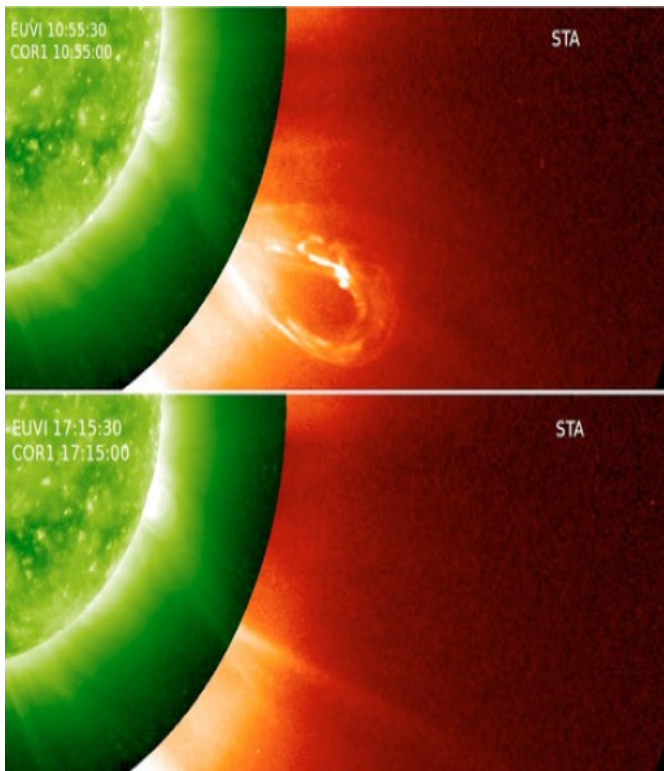


Fig 2: Stereoscopic observations of a post-eruption current sheet in the wake of a Coronal Mass Ejection (CME) during April 2008 as observed by the coronagraphs on-board the STEREO and SOHO spacecraft. Linear structures in the wake of CMEs are often observed (e.g. upper panel). Our multi-viewpoint observations and 3D modeling of the CME and of the linear structure demonstrated a causal relationship between the two structures, thus reinforcing a current sheet interpretation of the former (lower panel). From Patsourakos and Vourlidas 2011.

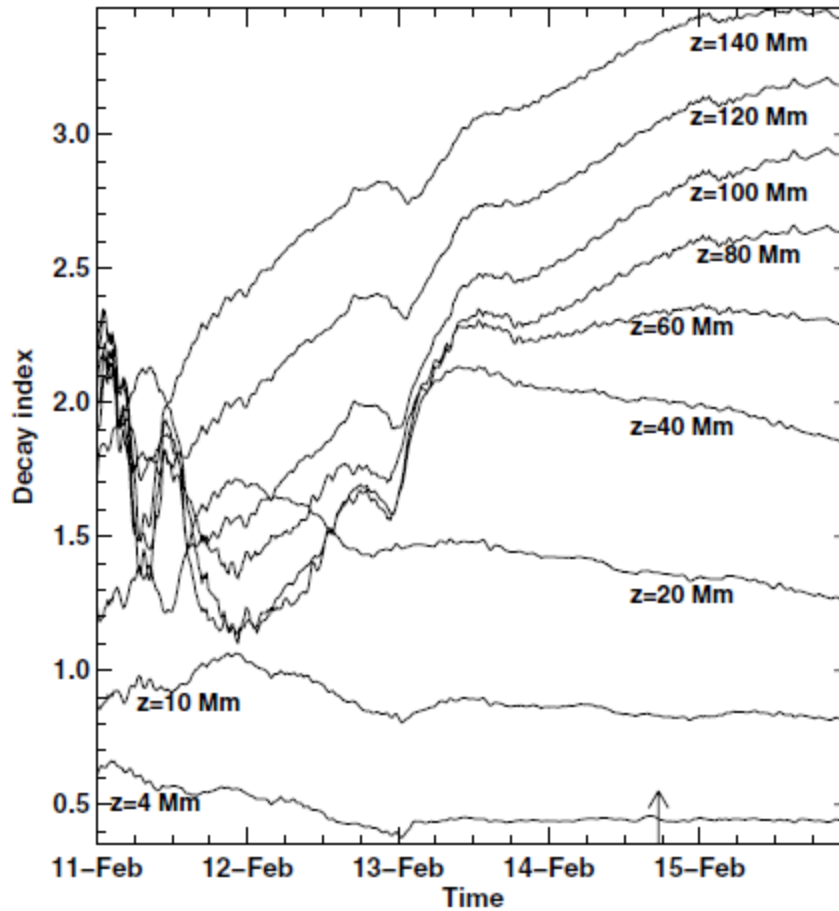


Fig 3: Assessing the role of the decrease with height (decay-index) of the magnetic field overlying a solar active region which led to several Coronal Mass Ejections during February 2011. The temporal variations of the decay-index indicate that they were not a critical parameter for the initiation of the observed CMEs. From Nindos, Patsourakos and Wiegmann 2012.

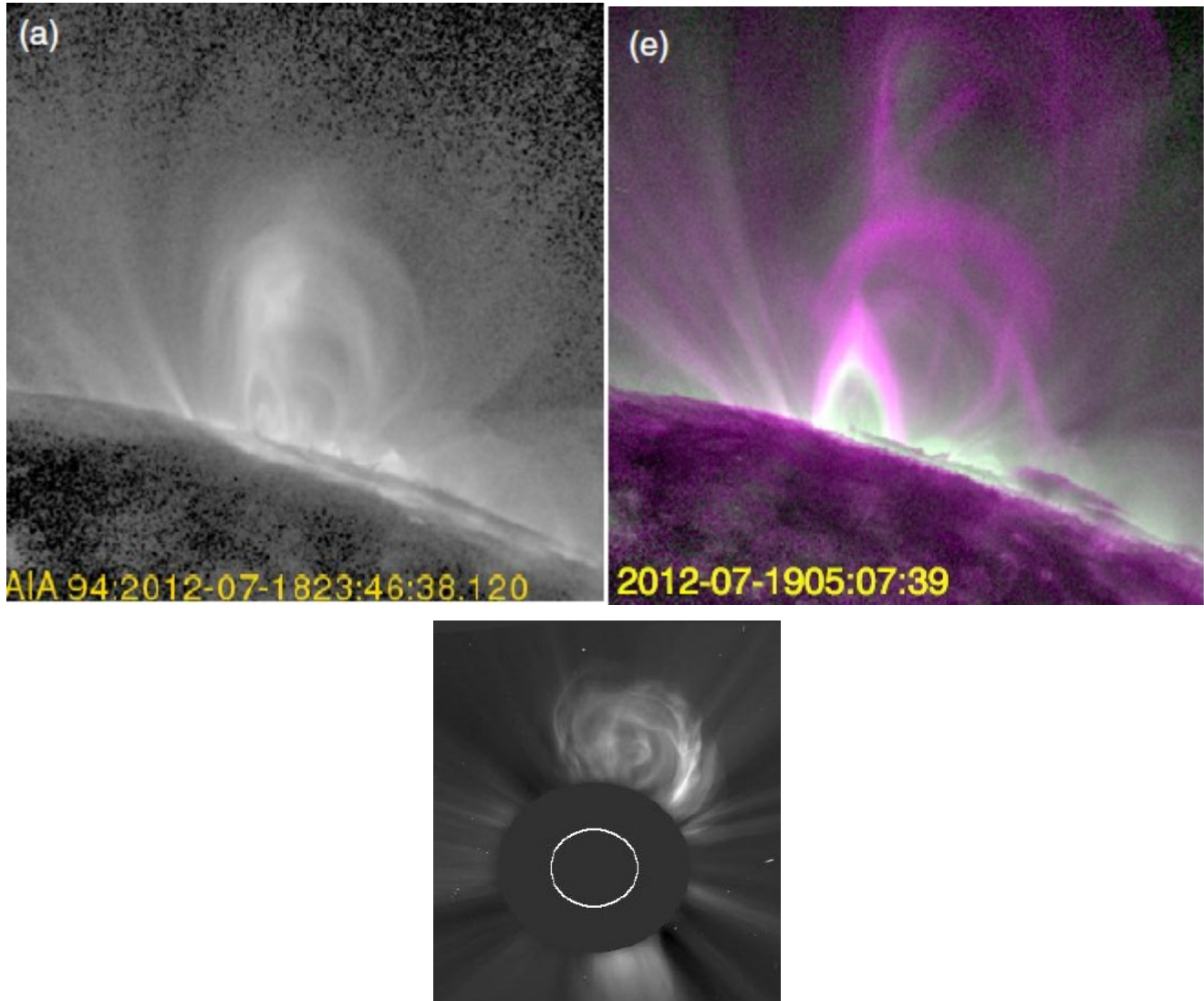


Fig 4: First observations of the formation and subsequent destabilization and eruption of a magnetic flux rope during 18th and 19th July 2012 respectively taken by AIA on SDO. Formation of a flux rope structure (“eight” shape) during a confined flare (left panel). Eruption of the formed by the previous event flux rope several hours afterwards (right panel). The flux rope eruption led to a Coronal Mass Ejection (CME) later on observed by LASCO on SOHO (lower panel). The existence of flux ropes before the onsets of or their formation during CMEs represents nowadays a central point of CME research. From Patsourakos, Vourlidas and Stenborg 2013. Research featured in NASA PR: http://www.nasa.gov/mission_pages/sdo/news/flux-ropes.html.

