

Joint STEREO-Hinode observations of EUV waves associated with CMEs and minor flares

Nariaki V. Nitta

LMSAL

Markus J. Aschwanden

LMSAL

Zoe A. Frank

LMSAL

Gregory L. Slater

LMSAL

Theodore D. Tarbell

LMSAL

Dominic M. Zarro

ADNET Systems, Inc.

Abstract. During the solar minimum between cycles 23 and 24, relatively intense (GOES M-class and C-class) flares often appear to lack eruptive behaviors, even though the active regions in which they occurred contain polarity separation lines that are highly sheared. Eruptive phenomena are found in association with minor flares in specific active regions that may not be particularly favored by prevalent CME or flare prediction methods. In this presentation, we report on a handful of B-class and C-class flares that were found by the EUV Imager on STEREO to accompany EUV waves and were also observed by the Hinode SOT. The EUV wave phenomenon is generally known to be a good indicator of the early development of a coronal mass ejection (CME), even though its relationship with the CME is still a hot topic. CMEs of varied magnitudes were indeed observed by the COR1 and COR2 coronagraphs on STEREO shortly after the EUV waves. All these events occurred in 2007, when the STEREO separation angle was in the range of 8-40 degrees, meaning that the combined data of EUVI with EIT or TRACE may provide 3-d information on the wave propagation and surrounding coronal structures. The high tempo-spatial resolution SOT data help us locate the earliest signature of the EUV wave. The dimming region left behind by one of our EUV waves appears to intersect the EIS slit that shows enhanced non-thermal broadening at coronal temperatures. The XRT captured the associated eruption from the S-shaped region. We discuss possible origins of the EUV waves using these joint datasets.