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The active Sun and its implication for the heliosphere
oral preferred

3D Structure of CMEs The STEREO/SECCHI view

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Since the start of the STEREO mission operations in early 2007, 565 classical large-scale coronal mass ejections (CMEs) have been identified in STEREO/SECCHI/COR2 synoptic movies until the end of 2010. These CME events compare about one to one with those SOHO/LASCO/C2 CMEs of the SOHO/LASCO CME catalogue when the angular widths exceed forty degrees, i.e., the typical widths of classical three part-structured CMEs. Out of these events, a best-of list of almost 120 CMEs has been established based on the clearance of the CMEs white-light appearances in the COR2 field of view ranging from 2.5-15 solar radii. The events were observed under spacecraft separation angles ranging from 0 to 175 degrees. Each CME was studied carefully by applying the Graduated Cylindrical Shell (GCS) model developed by Thernisien, Howard and Vourlidas (2006) based on the 3-D concept for CMEs derived by Cremades and Bothmer (2004). We present a statistical overview of the SECCHI GCS modeling results, including a comparison with the photospheric and low corona source region characteristics. For a number of cases, the CME modeling could be applied successfully to heliocentric distances reaching well inside the field of view of the SECCHI/HI 1 telescope (< 40 solar radii). Analysis of deviations from the modeling results with respect to the identified CME source region locations yields important implications for the overall 3D topology of CMEs and their near Sun and heliospheric evolution.