Coronal Mass Ejections and associated Shocks: Build-up and propagation in a complex environment

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The high cadence and multi-temperature observations obtained by the Atmospheric Imaging Assembly (AIA) instrument onboard the Solar Dynamic Observatory (SDO) combined with extreme ultraviolet imagery from the STEREO/SECCHI suite is contributing to a deeper understanding of coronal dynamic phenomena already observed by former missions from single view points. In particular, they help shed light on the genesis and early development of coronal mass ejection events. Aided by radio imaging, we analyzed the early stages of a particular couple of homologous CME events that were observed to experience a strong deflection in latitude before reaching two solar radii. Extreme ultraviolet images obtained from two quasi-perpendicular perspectives show that the overall progress of both events in the low corona can be synthesized as follows: i) formation of a CME bubble minutes after an, interestingly, moderate X-ray flare; ii) development of a shock wave, which appears to be driven by the CME feature during its early development; iii) deceleration of the lateral expansion rate of the CME, which apparently leads to the decouple of the CME shock, allowing its free propagation until apparently stopped at a coronal hole boundary; and iv) reflection of a wave–like feature at that boundary. Solar radio emissions, namely Type II, Type III, and dm bursts, were also recorded along their development. In this work, we use this comprehensive data set to investigate how the ambient coronal structures affected the crucial milestones in the development of these events, and in particular attempt to unravel the direction of propagation observed in the SOHO/LASCO field of view (FoV), which radically differs from the direction observed in the AIA FoV.