

Relationship between CMEs and solar activities in the lower corona

Satoshi Masuda[1], Takashi Miyawaki[1]

[1] STEL, Nagoya Univ

The relationship between CMEs and solar activities in the lower corona, e.g., solar flares, filament eruptions, has been discussed by many authors. However, most of papers only compare the timing of both phenomena and show some statistical results. In order to understand their physical relationship, a detailed event study is needed.

We analyzed a CME observed with SOHO/LASCO on 18 January 2000 and the corresponding lower-corona activities observed with Yohkoh/SXT and SOHO/EIT. In LASCO images, there are three clear signatures. They are a bright leading edge, and two bright cores inside the leading edge. The first core, which appears earlier, moves from south-east to north-west and the second one moves just toward west. The other one appears later and moves
In the solar corona, a solar flare took place and a plasmoid ejection is observed in soft X-rays and EUV. Also a coronal dimming is observed in EUV and a bright thin structure, that might be a lower part of a large-scale bright loop, is observed at the both edges of the dimming region.

We tried to connect these lower-corona activities to the features seen in the CME, considering mass, timing (time-height relation), shape, and direction of motion.

The results are as follows;

- (1) The leading edge of the CME corresponds to the bright structure at the edge of the dimming region. This structure might correspond to large-scale loops connecting between two active regions located in the northern and southern hemisphere.
- (2) The CME core, observed in the early phase, corresponds to the soft X-ray/EUV plasmoid.

These results are important to understand the relationship between lower-corona activities and CMEs.