[구SE-13] Mass constraints of coronal mass ejection plasmas observed in EUV and X-ray passbands

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Coronal mass ejection (CME) plasmas have been observed in EUV and X-ray passbands as well as in white light. Mass of CME has been determined using polarized brightness observed by the Large Angle and Spectrometric Coronagraph Experiment (LASCO) on board Solar and Heliospheric Observatory (SOHO). Therefore, this mass obtained from the LASCO observation indicates the total CME mass. However, the mass of CME plasma in different temperatures can be determined in EUV and X-ray passbands using observations by SOHO/EIT, STEREO/EUVI, and Hinode/XRT. Prominence/CME plasmas have been observed as absorption or emission features in EUV and X-ray passbands. The absorption features provide a lower limit to cold mass. In addition, the emission features provide an upper limit to the mass of plasmas in temperature ranges of EUV and X-ray. We determine the mass constraints using the emission measure obtained by assuming the prominence/CME structures. This work will address the mass constraints of hot and cold plasmas in CMEs, comparing to total CME mass.

[구SE-14] Dependence of solar proton events on their associated activities: CME parameters

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In this study we have examined the occurrence probability of solar proton events (SEPs) and their peak fluxes depending two CME parameters, linear speed and angular width. For this we used the NOAA SPE events and their associated CME data from 1997 to 2006. As a result, the probability strongly depends on two parameters as follows. In the case of halo CME whose speed is equal to and faster than 1500km/s, 36.1% are associated with SPEs but in the case of partial halo CME ($120° \leq AW < 359°$) whose speed is $400 \leq V < 1000$ km/s, only 0.9% are associated with SPEs. When we consider only front-side CMEs, 45.3% are associated with SPEs in the first case and 1.8% are associated with them in the second case. Both of whole CME data group and front-side CME data group have similar tendencies. The probabilities are different as much as 4.9 to 23 times according to the CME speed and 1.6 to 6.5 times to the angular width. We have also examined the relationship between CME speed and proton peak flux as well as its dependence on angular width (partial halo CME and halo CME), longitude (east, center, and west) and direction parameter (< 0.4 and ≥ 0.4). Our results show that the relationships strongly depend on longitude as well as direction parameter. In addition, the relationship using the radial CME speed based on a cone model has a higher correlation coefficient than that using the projected CME speed.