[포SS-22] Solar Flare and CME Occurrence Probability Depending on Sunspot Class and Its Area Change

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We investigate the solar flare and CME occurrence rate and probability depending on sunspot class and its area change. These CMEs are front-side, partial and full halo CMEs associated with X-ray flares. For this we use the Solar Region Summary(SRS) from NOAA, NGDC flare catalog, and SOHO/LASCO CME catalog for 16 years (from January 1996 to December 2011). We classify each sunspot class into two sub-groups: "Large" and "Small". In addition, for each class, we classify it into three sub-groups according to sunspot class area change: "Decrease", "Steady", and "Increase". In terms of sunspot class area, the solar flare and CME occurrence probabilities noticeably increase at compact and large sunspot groups (e.g., 'Fkc'). In terms of sunspot area change, solar flare and CME occurrence probabilities for the "Increase" sub-groups are noticeably higher than those for the other sub-groups. For example, in case of the (M+X)-class flares of 'Dkc' class, the flare occurrence probability of the "Increase" sub-group is three times higher than that of the "Steady" sub-group. In case of the 'Eai' class, the CME occurrence probability of the "Increase" sub-groups is five time higher than that of the "Steady" sub-group. Our results demonstrate statistically that magnetic flux and its emergence enhance solar flare and CME occurrence, especially for compact and large sunspot groups.

[포SS-23] A Preliminary Study for the Development of a Space Coronagraph

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코로나그래프는 우주환경의 변화의 주요원인인 코로나물질방출을 관측할 수 있는 핵심우주관측기이다. 지난 약 18여년간 운용되어 왔던 SOHO 위성의 LASCO (Large Angle and Spectrometric Coronagraph) 탑재체의 노후화로 인한 운용 종료를 앞두고 있어 새로운 코로나그래프의 개발이 시급하다. 본 연구에서는 우주환경예보의 활용과 태양코로나와 코로나물질방출에 관한 새로운 과학적 발견을 위해 적합한 위성용 코로나그래프의 개발방향을 제안하고 국제우주정거장이나 우리나라 위성을 활용하여 개발하는 경우에 극복해야 할 현실적인 기술 한계와 극복 방안에 대해 토의한다.