

Multiwavelength observations of the flare activity in September 2005

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It is well-known that a lot of activities take place on the solar surface. Among them, a coronal mass ejection (CME) is one of the most influential solar events in human life. Since a CME is the phenomenon that a massive amount of plasma in the solar corona erupts into the interplanetary space at a high speed, the erupting plasma disturbs geomagnetic field and causes geomagnetic storms.

Owing to its importance, some joint observation campaigns were planned. In September 2005, the solar filament observations campaign (JOP178) and international campaign of Climate and Weather of the Sun-Earth System (CAWSES) were performed. NOAA Active Region (AR) 10808, appeared in September 2005, produced many flares that affected the Earth's magnetosphere greatly. Since an X17 class flare occurred at the solar limb on September 7th, at least 10 X-class and 25 M-class flares were produced in this region. When an X6.2 class flare on 9th and an X1.5 class flare on 13th occurred, halo CMEs were observed and accompanying geomagnetic storms occurred. Moreover, a filament eruption was observed on the solar surface during the flare on September 13th, which was thought to be the early phase of the CME.

We observed this active region nearly every day after its appearance on the solar disk using Solar Magnetic Activity Research Telescope (SMART) at Hida Observatory of Kyoto University. Full-disk observation at high spatial resolution is one of the merits of H alpha observation with SMART, and another point we should note here is that full-disk H alpha wing images whose wavelengths are 0.5 and 0.8 angstrom shifted from the line center are obtained. We will report on the results of the studies on the developing process of this active region and discuss the condition of geo-effective flares.