

A07a **Coronal characteristics before the large flare onset**

Shinsuke Imada, Yumi Bamba, Kanya Kusano (Nagoya University)

A solar flare is a sudden brightening observed in almost all wavelengths. Flares are powered by the sudden (timescales of minutes to tens of minutes) release of magnetic energy stored in the corona. They are mainly followed by a colossal coronal mass ejection also known as a CME. CMEs typically reach Earth a day or two after the event. Solar flares strongly influence the local space weather in the vicinity of the Earth. So far, various studies aiming to predict when and where the flare will occur. Most of studies are mainly discussed through the photospheric/chromospheric activity before the flare, although there are some studies about the coronal features before the flare onset.

In this talk we will discuss the coronal features before the famous large flare occurring on December 13th, 2006. We used HINODE/EIS, XRT, and SOHO/EIT data to discuss the coronal features in the large scale (\sim a few 100 arcsec) before the flare onset. What we found is as follows: 1) the upflows in and around active region were growing from a few to a few ten km/s a few 10 hours before the flare onset, 2) the expanding coronal loops were clearly observed a few hour before the onset, 3) Xray intensity was gradually getting weaker toward the onset. From those observed signatures, we interpret that the outer part (low density loops) of active region is expanding a few 10 hours before, and inner part (high density loops) is expanding a few hour before the onset. From this view point, we will discuss what is happening in the corona before the flare onset. We also discuss the flare predictability by using these coronal features.