

## X-ray Observations of the 14 July 2000 flare

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A CME took place on 14 July 2000 and it caused a magnetic storm. Related to this CME, an X-class flare was observed with Yohkoh. In soft and hard X-rays, a large arcade-structure and a two-ribbon structure are clearly observed, respectively. We have not previously observed such a clear ribbon structure in hard X-rays. This suggests electrons are accelerated in the whole system of this arcade, not merely in a particular dominant loop. A pair of bright sources were observed in the two ribbons. Assuming these sources correspond to footpoints of a reconnected magnetic loop, we can guess the coronal magnetic field configuration. In addition to this, the motion of these sources indicates spatial progress of the energy-release.

A halo-CME took place on 14 July 2000. This CME hit the earth's magnetosphere and caused a magnetic storm. Related to this CME, an X-class flare occurred. The Yohkoh satellite observed the early phase (10:11 - 10:13 UT) and the after-the-peak phase (10:19:40 UT - ) of this flare. We investigated evolution of coronal features observed in X-rays, which have some information of the energy-release (magnetic reconnection) in the corona.

In soft X-rays, a large arcade-structure is observed with Yohkoh/SXT. Its width and length are ~ 30,000 km and ~ 120,000 km, respectively. The western half of the arcade is almost aligned to the E-W direction, but the eastern half to the NE-SW direction. This flare starts at the western half and then the brightest region moves to the east half. After Yohkoh restarts observations, hard X-ray intensity increases at ~ 10:24 UT, reaches its peak at ~ 10:27 UT, and goes back to the previous intensity level at ~ 10:30 UT. Before this spike, a two-ribbon structure is clearly observed in the energy range above 30 keV. These ribbons correspond to footpoints of the western half of the soft X-ray arcade. We have not previously observed such a clear ribbon-like structure in hard X-rays, although Yohkoh/HXT has observed more than 1,000 flares in its first nine years. Most hard X-ray flares have shown a single source, double sources, or multiple point-like sources in the energy range above 30 keV. Why has the hard X-ray observation of a two-ribbon structure proven so difficult, when it is so common in H-alpha? This observation suggests that electrons are in fact accelerated in the whole system of this arcade, not merely in a particular dominant loop.

A pair of bright compact sources are observed in the two ribbons. Assuming these sources correspond to footpoints of a just-reconnected magnetic loop, we can guess the coronal magnetic field configuration just after the energy release occurred. In addition to this, the motion of these sources indicates spatial progress of the energy-release (magnetic reconnection). In this paper, the relationship between an erupting feature (plasmoid)

and a coronal arcade (aftermath of magnetic reconnection), is also discussed.