

Plasma diagnostics and magnetic complexity of a post-flare active region with Hinode/XRT: spatial and temporal evolution

Susanna Parenti

Institut d'Astrophysique Spatiale, Fr; Royal Observatory of Belgium, Be

Fabio Reale

INAF; Univ. Palermo, IT

Katharine K. Reeves

Harvard-Smithsonian Center for Astrophysics, USA

Abstract. Flares may be localized phenomena in active regions, but the magnetic and plasma responses may propagate to a larger area. In this work we investigate the temporal evolution of a flaring active region making particular attention to the morphological complexity, and of the temperature and emission measure distributions. We consider Hinode/XRT data of a C1.1 flare observed on the 12th November 2006. We analyze the time sequence of the XRT emission maps, in combination and comparison with TRACE maps, to investigate the rapid changes in the complexity of the flaring loops. XRT filter ratios are used to derive temperature and emission measure maps and evolution. The analyzed flare includes several brightening. Our analysis shows systematically a maximum of tangling of the flaring loops just before each event. Very fine details of the coronal topology may be identified. Thermal maps show fine, evolving spatial structuring. Temperature and emission measure variations show up in great detail, and we are able to detect a secondary heating of larger loops close to the proper flaring region and to estimate the flare energy and its repartition in these different areas.