Japan Geoscience Union Meeting 2011
(May 22-27 2011 at Makuhari, Chiba, Japan)

PEM030-07 Room:303 Time:May 27 18:00-18:15

Basic research on space weather alert for space probes: Comparison EUV and X-ray emissions during solar flares

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Space weather researches have become more and more important, according to the expansion of the ”humanosphere” to space. On the other hand, space weather researches are mainly for circumterrestrial space, and it is insufficient to forecast the radiation hazard for deep space probes that are located far from the earth.

We aim to forecast and evaluate the radiation hazard for such space probes far from the earth by using data taken by Extreme Ultra Violet Imager (EUVI) on board Solar Terrestrial RElations Observatory (STEREO). For this purpose, we have to know how much we can predict flares by using only EUV full-disk images. Therefore, we start with validating how accurately we can predict flares by using EUV images taken by Extreme ultraviolet Imaging Telescope (EIT) on board Solar and Heliospheric Observatory (SOHO). We compared EUV fluxes for flares with X-ray GOES fluxes, and found a positive correlation between them. We also examined the temporal properties in EUV emissions both for flare-productive and non flare-productive regions.

Keywords: solar flare, active region, space weather, extreme ultraviolet, soft X-ray