Solar-Wind Charge Exchange X-ray Emission from the Earth Magnetosheath Observed with the Suzaku X-ray Astronomy Observatory

Kazuhisa Mitsuda[1]; Noriko Yamasaki[2]; Ryuichi Fujimoto[3]; Dan McCammon[4]; Iku Shinohara[5]; Ayako Matsuoka[2]; Kiyoshi Maezawa[2]

[1] ISAS,JAXA; [2] ISAS/JAXA; [3] Physics, Kanazawa Univ.; [4] Wisconsin Univ.; [5] JAXA/ISAS

Suzaku, the fifth in a series of Japanese X-ray astronomy satellite, detected time variable X-ray line emissions from highly ionized ions of C, O, Ne, and Mg during an observation of a blank sky region where no bright X-ray source exists. Those emission lines are most likely arising from highly-ionized ions in the solar wind which penetrate into the Earth magnetosheath and interact with neutral H atoms by charge exchange process (Fujimoto et al. 2007, Publications of Astronomical Society of Japan, 59, S133). In this paper, we will report the results of further analysis of the observation. We investigated ground- and space-based observations of proton precipitation data and found episodes of proton-flux increase which we consider directly connected to the X-ray emission lines observed with Suzaku data. We will compare the absolute X-ray line intensities and the proton flux assuming ion abundance in the solar wind and the theoretical charge exchange cross sections.