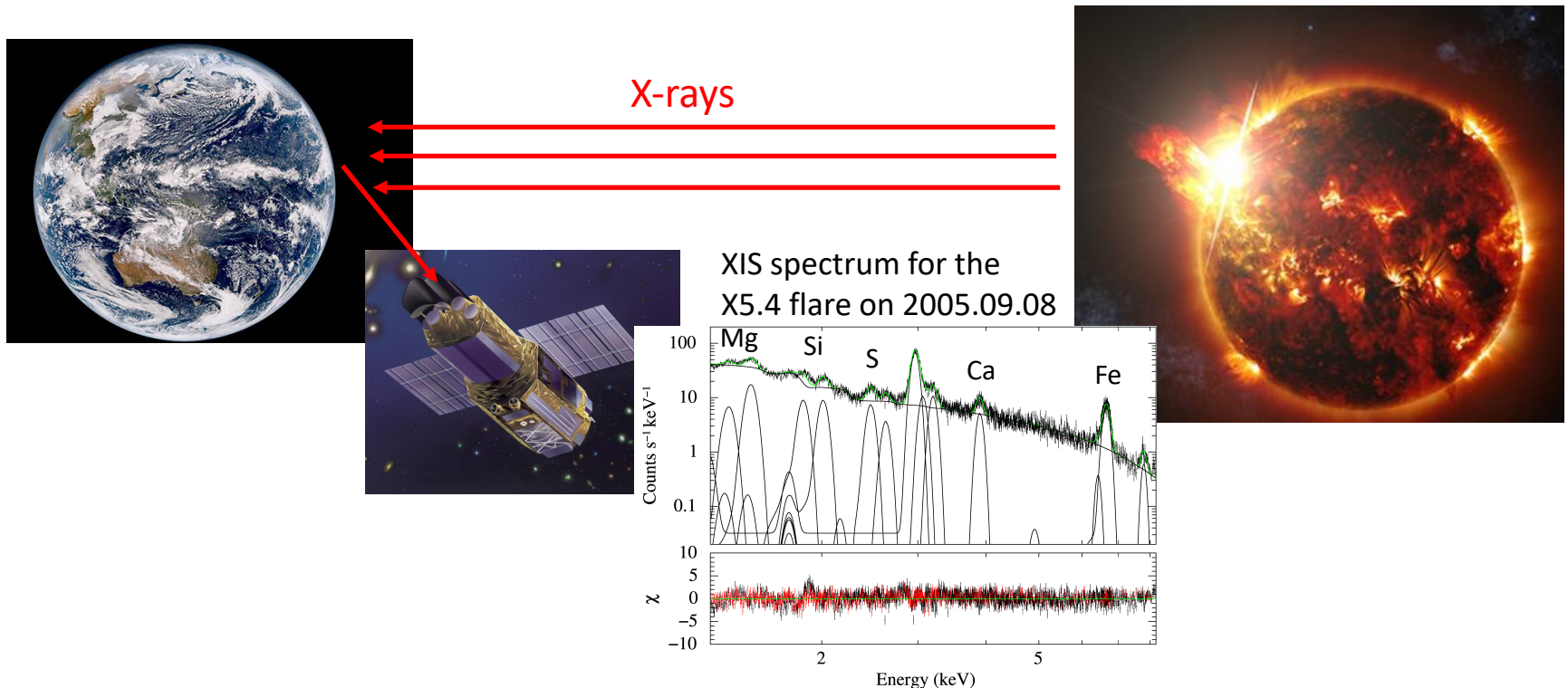


# Elemental Abundances of Huge Solar Flares Measured with Suzaku's XIS

P01

S. Katsuda<sup>1</sup>, M. Ohno<sup>2</sup>, K. Mori<sup>3</sup>, T. Beppu<sup>3</sup>, Y. Kanemaru<sup>3</sup>, M. S. Tashiro<sup>1</sup>, Y. Terada<sup>1</sup>, K. Sato<sup>1</sup>, K. Morita<sup>1</sup>, H. Sagara<sup>1</sup>, H. Murakami<sup>4</sup>, M. Nobukawa<sup>5</sup>, H. Tsunemi<sup>6</sup>, K. Hayashida<sup>6</sup>, H. Matsumoto<sup>6</sup>, H. Nakajima<sup>7</sup>, Y. Ézoe<sup>8</sup>, Y. Tsuboi<sup>9</sup>, Y. Maeda<sup>10</sup>, T. Yokoyama<sup>11</sup>, and N. Narukage<sup>12</sup>  
(1. Saitama U.; 2. Hiroshima U.; 3. U. Miyazaki; 4. Yohiku Gakuin U.; 5. Nara U. Edu.; 6. Osaka U.; 7. Kanto Gakuin U.; 8. TMU; 9. Chuo U.; 10. ISAS/JAXA; 11. U. Tokyo; 12. NAOJ)

The Earth albedo emission acquired with the XIS can be a unique clue to monitoring the solar activity between 2005 and 2015 with good energy resolution of  $E/\Delta E \sim 20$ .



# Elemental Abundances Measured

P01

We measured equivalent widths of various lines, from which we estimated their elemental abundances. For all flares, we found that **the Ca abundance is particularly enhanced!**

Preliminary!

| Date of flare | GOES class | S He $\alpha$ / S Ly $\alpha$ (kT) | Si/H | S/H  | Ca/H | Fe/H |
|---------------|------------|------------------------------------|------|------|------|------|
| 2005.9.7      | X17        | 0.43 (~1 keV)                      | 0.42 | 0.27 | 1.5  | 0.74 |
| 2005.9.8      | X5.4       | 0.45 (~1 keV)                      | 0.35 | 0.32 | 1.9  | 0.76 |
| 2005.9.9      | X6.2       | 0.51 (~1 keV)                      | 0.28 | 0.33 | 1.4  | 0.43 |
| 2006.12.5     | X9.0       | 0.74 (~1.2 keV)                    | 0.50 | 0.19 | 2.2  | 1.1  |
| 2006.12.13    | X3.4       | 0.72 (~1.2 keV)                    | 0.54 | 0.21 | 1.6  | 1.0  |
| 2012.3.7      | X5.4       | 0.10 (~0.6 keV)                    | 1.4  | 0.31 | 2.6  | 1.1  |
| 2013.5.13     | X2.8       | 0.38 (~1 keV)                      | 0.39 | 0.22 | 1.3  | 0.9  |
| 2014.10.24    | X3.1       | 0.61 (~1 keV)                      | 0.74 | 0.21 | 1.4  | 1.8  |
| Mean          | ---        | ---                                | 0.50 | 0.27 | 1.8  | 0.84 |

Note: The elemental abundances are given relative to those of the solar photosphere.

The abundance of Fe/H was estimated based on the assumption that kT of the Fe-K emitting plasma is 3.5 keV, whereas other elements are estimated at the temperatures inferred from S He $\alpha$  / S Ly $\alpha$  ratios.