

## Study on characteristics of relationship between Akebono satellite potential and electron density

MORINO, Naoki<sup>1\*</sup>, ISHISAKA, Keigo<sup>1</sup>, KITAMURA, Naritoshi<sup>2</sup>, SHINBORI, Atsuki<sup>3</sup>, ONO, Takayuki<sup>2</sup>, KUMAMOTO, Atsushi<sup>4</sup>, NISHIMURA, Yukitoshi<sup>5</sup>, MATSUOKA, Ayako<sup>6</sup>

<sup>1</sup>Toyama Pref. Univ., <sup>2</sup>Department of Geophysics, Graduate School of Science, Tohoku University, <sup>3</sup>Research Institute for Sustainable Humanosphere (RISH), Kyoto University, <sup>4</sup>Planetary Plasma and Atmospheric Research Center, Graduate School of Science, Tohoku University, <sup>5</sup>Department of Atmospheric and Oceanic Sciences University of California, Los Angeles, <sup>6</sup>Research Division for Space Plasma, Institute of Space and Astronautical Science, Japan Aerospace Ex

It has been investigated the relation between satellite potential and electron density in the magnetosphere and the field of the solar wind. There is good correlation between them. In ionosphere, plasmasphere and radiation area such as electron density is from  $1/\text{cc}$  to  $10^7/\text{cc}$ , however, it wasn't investigated using satellite potential. In this study shows characteristics of relationship between Akebono satellite potential and electron density. The way we get a satellite potential is measuring potential difference between a probe applied bias current and a satellite. During from 1 May, 1989 to 31 August, 1990 the probe had been applied bias current. In this term, the relation was investigated but the others which bias current wasn't applied isn't investigated. It is found out that sometimes the duration bias current isn't applied is correlated closely. We investigate plasma scalelength at surrounding a satellite in case correlation is closely between satellite potential and electron density as bias current was not applied The area which we can estimate the electron density from satellite current is expanded and we are able to obtain the electron density ever before.

Keywords: akebono, electron density, satellite potential