Takeshi Sakanoi  
Title/Affiliation  Assistant Professor/ Planetary Plasma and Atmospheric Research Center, Graduate School of Science, Tohoku University  
Specialized Field  Planetary upper atmospheric physics  
Research Subject  Terrestrial and planetary upper atmospheric dynamics from visible and infrared remote sensing  

Objective:  
file-auroral structure obtained from simultaneous image-particle observation data by the Reimei satellite  

Results:  
The purpose of this study is to investigate the fine-scale (~km) auroral dynamics using the simultaneous image-particle data obtained by the Reimei satellite with high-time and high-spatial resolutions.  

The multi-spectral auroral camera on the Reimei satellite was developed by our Tohoku University team. Since the successful launch in August 2005, Reimei has been operated continuously for about 4 years. In 2008 and 2009, using the Reimei data various studies were carried out by researchers including international collaborations, and these results are published in refereed papers in addition to the presentations in conferences. Unfortunately, the electron sensor on Reimei was broken in August 2008, and the ion sensor and the camera are now operated. Since the solar activity will rise after 2009, we can still expect to obtain scientific outputs from the unique data set by Reimei. Out of results based on Reimei data, the following topics have been investigated mainly by Takeshi Sakanoi.  
- Fine-scale dynamics of pulsating aurora  
We have revealed the characteristics of electron precipitations associated with pulsating auras, and the distribution of source region. We proposed the generation process that the pitch-angle scattering process in the magnetic equator plays key role on the generation of precipitating electrons that produce pulsating aurora.  
- Multi-spectral imaging of sprites and airglows at mid- and low-latitudes from space  
We started the limb measurements by the Reimei camera from March 2008 to obtain the sprite and airglow imaging data.  
- Optical remote sensing of N2+ ion upflow in the polar region
From the statistical study based on the Reimei optical data, it is found that N2+ ions rise upward around the Cusp region during the magnetically disturbed period, and these are transported to the polar cap region. We also carried out the special operation of EISCAT/ESR radars from Dec. 2008 to Jan. 2009.

Publications:

Journals:
8. 坂野 井健, 小 館 格 久, 岡野 章 一, 笠羽 康 正, 佐藤 毅 彦, 木星 赤外 オーロラ 高 分 散 分 光 観 測 に よ る 木 星 電 離 圏 プ ラ ズ マ 運 動, 平 成 20 年 度 大 気 圏 シ ノ ボ デ ウム 集 錄, 2009.
9. 坂野 井健, 山崎 敦, 大塚 唯 一, 田口 眞, 阿部 琢 美, 武山 芸 英, 小 淵 保 幸, 齊藤 昭
則，江尻省，中村卓司，鈴木睦 2，久保田実，吉川一朗，星野尾一明，坂野井和代，藤原均，山本 衛，石井守，陣英克，河野英昭，ISS-IMAP 搭載可視分光撮像装置 VISI による大気光観測計画，平成 20 年度大気圏シンポジウム集録，2009.
10. 坂野井健，山崎敦，藤原均，平原聖文，浅村和史，江尻省，鈴木臣，中村卓司，佐藤光輝，高橋幸弘，岡野章一，れいめい衛星搭載カメラによる大気光・スプライト観測，平成 20 年度宇宙科学シンポジウム集録，2009.
11. 田口 真，吉田 和哉，坂本 祐二，庄司 泰弘，高橋 幸弘，坂野井 健，気球搭載望遠鏡による金星観測，平成 20 年度大気球シンポジウム集録，2008.