

Global Lightning and Sprite Measurements (GLIMS) from ISS

Tomoo Ushio^{1*}, Mitsuteru Sato², Takeshi Morimoto³, Makoto Suzuki⁴, Atsushi Yamazaki⁴, Yasuhide Hobara⁵, Umran Inan⁷, Ivan Linscott⁷, Hiroshi Kikuchi¹, Masayuki Kikuchi⁹, Yuji Sakamoto⁸, Ryohei Ishida⁶, Yukihiro Takahashi², Zen-Ichiro Kawasaki¹

¹Osaka University, ²Hokkaido University, ³Kinki University, ⁴JAXA, ⁵University of Electro Communications, ⁶Osaka Prefecture University, ⁷Stanford University, ⁸Tohoku University, ⁹NIPR

The Global Lightning and sprIte MeasurementS (GLIMS) on the International Space Station (ISS) is a mission to detect and locate optical transient luminous events (TLEs) and its associated lightning simultaneously from the non-sun synchronous orbit, and is scheduled to be launch from Japan in January, 2012 as part of the multi-mission consolidated equipment on Japanese Exposure Module (JEM). Our mission goals are (1) to detect and locate lightning and sprite within storm scale resolution over a large region of the Earths' surface along the orbital track of the ISS without any bias, (2) to clarify the generation mechanism of sprite, and (3) to identify the occurrence conditions of TLEs. To achieve these goals, two CMOS cameras, six Photometers, VLF receiver, and VHF interferometer with two antennas, are installed at the bottom of the module to observe the TLEs as well as causative lighting discharges at nadir direction during day and night time. Though the luminous events so-called sprite, elves and jets have been investigated by numerous researchers all over the world based mainly on the ground observations, some important problems have not been fully understood yet such as generation mechanisms of columniform fine structure and horizontal offset of some sprites from the parent lightning discharges. In the JEM-GLIMS mission, observations from our synchronized sensors are going to shed light on above-mentioned unsolved problems regarding TLEs as well as causative lighting discharges.

The GLIMS was launched to the ISS on July 2012 and started its initial observation from November 2012 after the initial testing succesfully. In this presentation, the mission overview and some intial results are briefly and firstly reported before some of the co-authors presents the interesting results more explicitly.

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