国際宇宙ステーションからの雷放電とスプライトの観測

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Global Lightning and Sprite Measurements from ISS

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Lightning and sprite measurement sensors(GLIMS) from the International Space Station (ISS) was succesfully launched into an orbit on July in 2012. In this presentation, the GLIMS mission is briefly introduced. Lightning is an electrical discharge which neutralizes the charge inside thunderstorm. In the early 1990s, optical transient luminous events (TLEs) occurring just above the thunderstorm were firstly reported by the US scientists and are associated with positive cloud-to-ground discharges with a large amount of charge. 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. Our goals are (1) to detect and locate lightning and sprite within storm scale resolution over a large region of the Earth’s 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.

Since it has been launched from Tanegashima launching site last year, the mission has been operated succesfully and observed more than 500 events. The initial observation results from each sensor will be briefly overviewd.