



專題演講

Characteristics of ISUAL Blue Luminous Events

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摘要/Abstract :

ISUAL (Imager of Sprite and Upper Atmospheric Lightning), the scientific payload of FORMOSAT-2 satellite, is designed for a global survey of transient luminous events (TLEs). In addition to the TLEs, many blue luminous events (BLEs) are recognized from the triggered events. Generally, the BLEs are not triggered by lightning. They emit clear middle ultraviolet to blue emissions (230-450 nm). A few cases of the BLEs develop upwardly and form the blue jets or the type II gigantic jets. These upward jets from the thundercloud top are categorized to one type of TLEs. Based on the associated sferics of the BLE in the low frequency band, the ISUAL BLE is conjectured to be the accompanied light emissions from the narrow bipolar event (NBE), also called compact intracloud discharge (CID). From the coordinated sferics and optical observations, we suggest that a NBE-like event is related to the initiation breakdown and the optically observed blue jet or the type II GJ is the ensuing discharge if the environment favors its development. Based on the ISUAL spectrophotometer data, the emissions of the BLE are inferred to be mostly from the non-thermal air plasmas produced by the locally-enhanced electric field. The ISUAL BLE is suggested to be the emissions radiated from the corona or streamer discharges in the initial breakdown of the undisturbed air. Besides the middle ultraviolet to blue emissions, the far ultraviolet (150-280 nm) and red to near-infrared (608.9-753.4 nm) emissions were detected for some ISUAL BLEs. From the spectrophotometer and array photometer data, we found that the far ultraviolet and red to near-infrared photons come from the ionospheric signature above the BLE.

※歡迎聽講※

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