

Coordinated spacecraft-ground observations of global sprite activity

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Lightning is a significant source of electrical power in the atmosphere. Recent discoveries of lightning induced transient luminous events called blue jets, sprites, and elves, which are occurring in the stratosphere, mesosphere and lower ionosphere, respectively, provided dramatic new evidence on the electrodynamical coupling from the cloud top to the ionosphere. It has been also found that intense currents flow inside the sprites as radiating powerful electromagnetic waves. Thus these transient luminous events would have a powerful influence on the energetics, dynamics and chemistry of the lower and middle atmosphere. However, global activity of these luminous events and their solar activity modulation have not been investigated so far due to the lack of satellite observations. The ISUAL instrument on board ROCSAT-2 satellite aims at global monitoring of sprites and other transient luminous events. The satellite will be launched in summer of 2003 and the ISUAL instrument will be operated over 5 years until 2008. We will introduce the outline of this instrument and its contribution to the next SCOSTEP's project 'CAWSES' which will be carried out in the period of 2004-2008.