Sprites observed from the summit of Mt. Fuji and their parent thunderstorm

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Transient Luminous Events (TLEs) are the flash phenomena observed from the top of and above thunderstorms accompanied with active strikes. To detect the family of TLEs (e.g. sprites, jets, ELVEs), since 2012, we have installed and operated high-sensitivity charge coupled device (CCD) camera at the summit of Mt Fuji in summer season. We have succeeded in observing various TLEs from the first operation. It was found that some sprites were associated with the positive cloud-to-ground strikes (+CGSs) in the stratiform region of mesoscale convective system (MCS) but one sprite was associated with the +CGS in the leading convective line of MCS. Both region of MCS were analyzed using C-band weather radar operated by Japan meteorological agency. In this study, we present the samples of TLEs family observed from the summit of Mt Fuji, radar echo structures of stratiform and convective region, the differences of relative displacement and duration time between sprites, sprite-producing +CGSs and their optical cloud flash, which was detected by CCD camera, in the convective and stratiform region.

Keywords: Transient Luminous Events , Sprites, Thunderstorm, Mesoscale convective system, Positive cloud to ground strikes, Mt. Fuji

