

# **Ground-based observations of unusual atmospheric light emissions**

Lightning Effects on the Middle and Upper Atmosphere (including TLEs)

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Unusual atmospheric light emissions were observed from a station located in Shandong Province of East China. The morphology of these events mainly contains a bright glowing spot that remains visible for 60 to 160 ms, which is distinctly different from any known type of TLEs (i.e., sprites, halos, elves, gigantic jets, blue jets, and blue starters) that are well recognized in the literature, and are possibly new type of transient luminous events (TLEs). The comparison between the observation of four events and the data from lightning detection networks does not suggest a strong correlation with intense parent lightning activity in the adjacent area. The events reported in this paper imply the existence of a new phenomenon whose mechanism remains to be investigated with further observations and complementary lightning measurement.