Three-dimensional total lightning characteristics of convective cells observed by the Tokyo LMA in the summer season in Tokyo Metropolitan area

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The National research Institute for Earth science and Disaster resilience, Japan (NIED) has observed three-dimensional total lightning with Lightning Mapping Array in Tokyo metropolitan area (Tokyo LMA) since 2017. In this study, we report various total lightning characteristics of convective cells observed by the Tokyo LMA in the summer season. Three convective cells developed at around 14:00 JST on 30 August 2017 in Tokyo. They were located at a short distance each other, and they merged into a multi-cell thunderstorm after a while. The total lightning characteristics of the three convective cells before they merged into the multi-cell thunderstorm are as follows: in one convective cell which was located in the middle of the cells, IC lightning flashes preceded the first CG lightning for about 20 minutes. On the other hand, a CG lightning flash firstly occurred in another convective cell. In the other convective cell, IC lightning flash spreceded the multi-cell thunderstorm had normal tripole structures. In addition, several bolt-from-the-blue were observed in these three cells.

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