

The first observational results of Japanese total lightning network associated with severe weather phenomena in 2014

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There has been a lot of attention to the relationship between the lightning activity and severe weather. In particular, total lightning is one of the promising physical parameters for nowcasting the severe weather phenomena such as heavy rain, tornadoes, and wind gusts. In this paper, we first time report the preliminary results of Japanese Total Lightning Network (JTLN) deployed by UEC group. We analyze the temporal dependence of the lightning data focusing on major wind gust events occurred over Japan in 2014. As a result, we found the superiority in the total lightning rather than cloud-to-ground and intra-cloud lightning to identify forthcoming severe weather events.

Keywords: lightning, nowcasting, wind gust, severe weather, total lightning