日本国内での豪雨に伴う雷放電を用いた降水量の推定
Estimating rainfall in heavy rain events using lightning data in Japan

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In this study, we examined the relationship between total lightning (TL) and heavy rainfall in high spatio-time resolution by using 37 severe thunderstorms in Japan. TL is continuously monitored by the Japanese Total Lightning Network (JTLN) deployed by UEC and operated jointly by UEC and EarthNetworks, whilst high spatio-temporal precipitation data is obtained by eXtended Rader Information Network (XRAIN) operated by Ministry of Land, Infrastructure, Transport and Tourism in Japan. As a result, positive linear relation with rather high cross correlation ($r2 \sim 0.54$ between TL and Precipitation Volume (PV) [m3] has been obtained. The cross correlation between TL and PV is much higher than that for cloud-to-ground lightning (CG) and PV. Although the slope of linear relation (TL vs. PV) varies depending on heavy rain events, TL can be promising tool to estimate severe rainfall.

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