Correlations of current parameters with flash density from winter thunderstorms in Japan -
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In this work, Lightning Location System (LLS) data from the Japanese Lightning Detection Network (JLDN) are correlated with lightning current measurements from the New Energy and Industrial Technology Development Organization (NEDO) project which conducted lightning measurements on wind turbines during 2008-2013. The terminology of active and inactive winter thunderstorms from Fujii et al. (2013) [1] will be used as a reference to classify the discharge characteristics of the particular storm type. The results indicate that winter thunderstorms with a higher lightning activity are also characterized by higher charge, specific energy, and peak current. On the contrary, inactive winter thunderstorms produce not only fewer discharges but also show lower transferred charge amounts. Average charge and specific energy of individual flashes from very active winter thunderstorms with more than 1000 discharges are also lower compared to winter thunderstorms with 100 – 1000 discharges. Furthermore, it is shown that the height of the -10 degree isotherm is increasing with increasing lightning activity.

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