



## **Estimation of convective precipitation from cloud-to-ground lightning data over Taiwan**

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### **Abstract**

Among the various meteorological phenomena, convective activity is one, which has attracted the attention of meteorologists during the last several decades. In fact, lightning and convective precipitation are two related phenomena of thunderstorms, which are one of the crucial factors of natural disasters like heavy precipitation, flooding, hail, and lightning. Considerable number of research reports on thunderstorms is found for United States and for tropical areas but in comparison with that the number of studies over mid-latitude areas, specifically over Taiwan, is too few. However, the lightning and thunderstorm events are very frequent in Taiwan and meteorologists have considered them as relevant for characterizing the meteorology of Taiwan.

In this paper the spatial and temporal variation of cloud-to-ground (CG) lightning and total precipitation as well as convective precipitation during the summer season have been extensively analyzed using the CG lightning data as detected by the lightning detection network installed by the Tai-Power Company of Taiwan and the hourly precipitation data acquired by the weather stations of the Central Weather Bureau of Taiwan for the year 2004-2006. Precipitation data were collected from hundreds rainfall measuring stations spread over Taiwan for the same period. For the present study the temporal and spatial scales of one month and  $0.1^{\circ}$  latitude  $\times$   $0.1^{\circ}$  longitude, respectively, were selected to determine the seasonal and monthly convective precipitation in terms of rain yield during the months of peak lightning activity. Finally the results have been compared with the results reported by researcher from other part of the world.