



Lightning Activities and Earthquakes

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The lightning activity is one of the key parameters to understand the atmospheric electric fields and/or currents near the Earth's surface as well as the lithosphere–atmosphere coupling during the earthquake preparation period. In this study, to see whether or not lightning activities are related to earthquakes, we statistically examine lightning activities 30 days before and after 78 land and 230 sea $M > 5.0$ earthquakes in Taiwan during the 12-year period of 1993–2004. Lightning activities versus the location, depth, and magnitude of earthquakes are investigated. Results show that lightning activities tend to appear around the forthcoming epicenter and are significantly enhanced a few, especially 17–19, days before the $M > 6.0$ shallow (depth $D < 20$ km) land earthquakes. Moreover, the size of the area around the epicenter with the statistical significance of lightning activity enhancement is proportional to the earthquake magnitude.