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## Evaluation for the tall-object Lightning Detection Ability of Guangdong-Hongkong-Macao Lightning Location System During 2016-2017

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### Abstract

With the development of metropolises, more and more high buildings are growing. The characteristics of tall object-lightning have caused extensive concern. The Tall-Object Lightning Observatory in Guangzhou (TOLOG) was set up to get the simultaneous optical and electromagnetic observation data for lightning occurring on high structures. In order to evaluation the applicability of data of Guangdong-Hong Kong-Macao Lightning Location System (GHMLLS) in tall-object lightning research, the lightning detection ability of GHMLLS was evaluated based on the observation data of 195 downward negative flashes, 25 negative upward flashes and 9 positive downward flashes, which were obtained at TOLOG during 2016 to 2017.

The results showed that the flash detection and the stroke detection of GHMLLS was about 93% and 93%. The arithmetic mean (median) value of the location error was about 361 (188), 252 (167) and 294 (173) m for the downward first negative strokes, the downward subsequent negative strokes and the upward negative strokes respectively. When the height of grounding point is less than (up to and above) 200 m, the identification accuracy of the Intro-Cloud (IC)/ Cloud-to-Ground (CG) classification was 99% (80%) and 93% (35%) for the downward negative first negative strokes and the subsequent negative strokes. The accuracy of the IC/ CG classification for the upward negative strokes was found to be only 17%.

**Topic Areas**

Lightning Detection Systems Technology and Performance

**Submission Format**

Oral