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## **Analysis of location errors of the NLDN using lightning strikes to towers**

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### **Abstract**

The location accuracy of the U.S. National Lightning Detection Network (NLDN) was evaluated using as ground-truth rocket-triggered lightning data or video records at a few locations. No location accuracy estimates based on ground-truth data for the entire network are presently available. In this study, by using the NLDN data for the events attributable to lightning strike to towers, the location error of the NLDN over the entire network was evaluated. We found that, on average, the NLDN median location error roughly reduced by a factor of two after the upgrade completed in 2013. The location error in coastal regions and near borders was found to be larger than that in the interior of the network. Also, the locations in coastal regions are biased towards the water. The simulation results suggest the bias is caused by larger arrival time delays at farther stations due to electromagnetic wave propagation over the finitely-conducting ground.

### **Topic Areas**

Lightning Detection Systems Technology and Performance

### **Submission Format**

No preference