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Classifying fog depth using data from commercial microwave links

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Developing tools for reliable spatial mapping of fog with limited effort and low implementation costs is desirable. Commercial microwave links (CMLs) that form the infrastructure for data transmission between cellular base stations have been proven to be most useful for weather monitors including fog and in particular, rainfall sensing . Previous work had demonstrated the ability to generate 2-D fog maps on a national scale from existing commercial microwave network actual measurements based on measurements of the signals level in a given network of CMLs complemented with records from humidity gauges deployed in the region to improve the resulting product. Our paper focuses on fog level classifications into thick, medium or light fog.

Previous works used several fog events for performance evaluation. Here, those events and several more are used for verification of the classification method and to demonstrate the operation of the proposed algorithm for generating a reliable fog levels mapping.

The classification performance was verified against visibility stations spread across the country. We found our proposed algorithm to have outstanding fit to meteorological observations.

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