



Compression Strategies for Super Resolution WSR-88D Radar Data

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Objectives

- Develop a better method for lossless compression of Super Resolution Weather Radar data.
 - Determine properties of weather radar data that can be exploited to achieve better compression than could be achieved with general-purpose lossless compression algorithms.
 - Develop encoding/decoding algorithms that utilize these properties.
 - Conduct an empirical investigation to determine compression savings of resulting algorithm.

Background

- Weather radar data is increasingly collected for use in real time but transmission bandwidth is a limiting issue.
- The National Weather Service will be *increasing* the size of the weather radar data to Super Resolution.
- A method for lossless compression of this data on a radial-by-radial basis is needed.
- General-purpose compression programs are not tuned to the properties of weather radar data.

Results

- A method focusing on the delta (difference) between range bins of super resolution radar data has been developed and named *super resolution delta compression* (SRDC).
- SRDC was tested on sample Level II reflectivity product data from S-band Doppler weather radars, and was compared with two general purpose compression programs and an existing custom compression scheme.
- SRDC compression is more than 15% better than the next best scheme and ~47% better than uncompressed.

Relevant References

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