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Hail Size: What We Know Around the World

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Just how big can hail get? The spatial return interval for US hail size based on the period 1979-2013 is explored using observations and refined by deriving parameters for an extreme value model for hail size occurrence.

Observations of hail size in the US show heavy quantization toward fixed diameter reference objects and are influenced by spatial and temporal biases similar to those noted for occurrence. Large portions of the continent are found to have experienced hail in excess of 12.5 cm in the past 30 years, and much of the rest of the continent hail in excess of 2.5 cm, including the West Coast. Maximum-recorded hail sizes have been growing larger in the most recent decade, mainly in response to improved records of these events and increasing report frequency. These data limitations motivate exploration of extreme value distributions to represent the return periods for various hail diameters. These results reveal that large hail sizes in excess of 10 cm are likely for return periods between 10-20 years for much of the region east of the Rockies, and at periods of less than 5 years in the Central Plains.

Evaluating our understanding of hail size outside of the US to place these results into context, this presentation will explore the distributional characteristics of observations and their associated environments in North America, Europe and Australia, revealing that at least in terms of hail, perhaps the US is less of an outlier for absolute maximum size than first thought.