

# Towards using radar data to understand changes in sub-daily rainfall extremes: An Australian case study.



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## Long lived radar Stations





# Analysis approach

Convert reflectivity to rainfall Compute max, time of max and other properties for each month Seasonally max, mean, work out time of max. Apply QC , mask.

Compute DJF (Summer) events. All values occurring on the same (local) day.

Compute cumulative beam blockage fraction and Topography For each event sample randomly. Do GEV fits and uncertainty analysis.



### The University of Edinburgh Example Event





#### The Univer Ratio of radar to gauge DJF mean rain





# Fractional sensitivity for location and scale parameters





- There is a lot of value in Radar data but processing it is hard work.
- Little evidence of coherent enhanced extremes related to inter-annual temperature.
  - Though some stations do show increase in extremes consistent with 7%/K.
  - Different from expectations where would expect at least 7%/K increase.
- However, there may still be some non-climate related signal in the radar data.
  - There is a negative trend in ratio between radar and gauge mean rain in latter part of some radar stations record.



#### **Fits to GEV**

