

Calibration of Weather Radars in Southeast Queensland

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In Australia there is an extensive network of weather radars for all the major cities and along most of the tropical coastlines. The information obtained from this network can be used to calculate the rainfall intensities for areas within the radar range. Methodology for calibrating weather radars has been well developed for the tropics and temperate regions in Australia. The reflectivity-rainfall intensity (Z - R) relationships, however, have not been developed for the subtropical region in southeast Queensland. The purpose of this paper is to extend the calibration of the network for the weather radar stations located at Marburg and Mount Kanighan in Queensland. Data for the period from January 1999 to December 2001 has been obtained for both the rain gauge network within the radar ranges and the weather radar images. This data will be analysed on a daily and hourly basis to determine the climatological Z - R relationships for both radar stations, and their dependences on the type of rainfall events as either widespread or convective, and the spatial variation of rainfall intensities.

The two radar stations in Southeast Queensland have the smallest distance between them than any other two stations within the network in Australia. The overlapping area of the radar ranges is significant. Within the overlapping area there are over forty rain gauges. Therefore an additional objective of the paper is to determine whether the combined use of the two radars and the rain gauge network in the overlapping area can provide more accurate rainfall measurements than from single radar readings.