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Aerosol and thermodynamic effects on tropical cloud systems during TWPICE and ACTIVE

P. T. May¹, G. Allen², G. Vaughan², and P. Connolly²

¹Centre for Australian Weather and Climate Research – A partnership between the Bureau of Meteorology and CSIRO, Australia

²University of Manchester, UK

Abstract. Regularly occurring storms over the Tiwi Islands, north of Darwin, Australia are used as a laboratory for investigating the relative importance of thermodynamic parameters, shear and aerosols on the amount and intensity of convection over the islands during the pre-monsoon and monsoon break periods of the 2005–2006 summer wet season. Storm systems on individual days are characterised by simple metrics derived from polarimetric radar data. The analysis shows clear dependencies on thermodynamic and shear parameters. The shear dependence was unexpected, as high shear implied less activity, but this is likely an island effect. There are some indications of a dependence of storm intensity on aerosol, but mid-level moisture differences may also play a role.

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