

**P58 Analyzing the structure and dynamics of Tropical Cyclone Yasi (2011) through WRF v3.4.1 simulations**

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Tropical Cyclone Yasi was a rapidly intensifying, category 5 storm that made landfall on the Queensland coastline of Australia on February 3rd 2011. A previous study of an ensemble of physics sensitivity simulations with WRF v3.4.1 of Tropical Cyclone Yasi has demonstrated that simulations of the event on a 12km nested domain are highly sensitive to the cumulus parameterization chosen. The sensitivity to the cumulus parameterization dominates the outcome of the simulation relative to the microphysics parameterization, the planetary boundary layer, the surface drag coefficient or the ocean mixed layer scheme chosen. The cumulus parameterization scheme affects the resulting intensity, trajectory and timing of the simulated cyclone. This study focuses on the analysis of the vertical profiles of the simulated storm with differing cumulus schemes. There is a discernable difference in the representation of temperature and moisture through the system, and to a lesser extent the wind structures. The differences in the simulated vertical temperature and moisture profiles within the tropical cyclones are heightened as the simulated systems approach landfall. These analyses of the vertical structures of the systems provide an important insight in to the dynamics and mechanisms behind the intensification of Yasi towards the coastline that will be discussed. Preliminary simulations of Tropical Cyclone Ita, which made landfall on the Queensland coastline in April 2014, carried out using the same WRF v3.4.1 set up as for Yasi may be shown and analyzed.