Cyclones over the Southern Ocean: A COSMIC analysis

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Studies that track cyclonic centers using reanalysis data have been used widely for many years to gain an understanding of the frequency of these events. However, a number of recent studies have started to combine the locations of the cyclones as a function time with satellite data to obtain composites of the cyclones properties and examine the cyclones influence. This study uses cyclone tracking data derived from the ERA-interim reanalyses and compares information about boundary layer height and gravity wave activity calculated from COSMIC soundings. The first analysis examines the geographical distribution of boundary layer height relative to cyclone centers to gain some understanding of how this might impact cloud production. The second analysis examines the potential impact of baroclinicity on the production of gravity waves via examination of the gravity wave activity in the stratosphere derived from COSMIC observations. This study therefore highlights the potential of COSMIC observations to be used synergistically with other meteorological products using two quite different pieces of information derived from COSMIC data.