

Extending the definition of a cyclone system

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Previous studies have proposed to define the size, or extent, of a cyclone system as the area enclosed by the outermost SLP contour containing only the cyclone centre in question (Wernli & Schwierz, 2006). We introduce the concept of a ‘common system’, which is defined as a system which has two or three such cyclone minima within its outermost contour, with the aim of better capturing the full size of these systems. Using the ERA40 and ERA40 Interim reanalysis data sets, we compute a climatology which includes such ‘common systems’ and compare it with similar climatologies generated using the single-centre system method and a simpler fixed-radius system method. We compile statistics on the frequency of such ‘common systems’ and the effect this has on cyclone track length and cyclone size, paying particular attention to the extreme storms in our cyclone database. We also assess the impact changes in cyclone size has on capturing the maximum winds and precipitation associated with these systems.