



Characterising the predictability and variability of sting jet windstorms

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Sting jet windstorms present a mesoscale phenomenon which has been documented to occur in at least some Shapiro-Keyser type extratropical cyclones. A number of studies have shown that sting jets are associated with the release of conditional symmetric instability in the cloud head of such cyclones, near the region of frontal fracture that typifies these cyclones. The general evolution of a sting jet is now well described, however questions remain regarding the variability in key characteristics of the phenomenon and their predictability. Recently, other authors have documented sting jets in two cyclones that tracked across Scotland in the winter of 2011-2012; Friedhelm and Ulli. We investigate these cases with sting jet resolving ensemble simulations of these cyclones using the Met Office Unified Model. Two ensemble simulations are created for each case. The first is made by forecasts initiated at various lead times. Initial condition perturbations obtained from the operational global ensemble prediction system are used to create a second 24 member ensemble for each case. The simulations are analysed to provide an estimation of predictability of sting jets and the variability in their characteristics when they do occur.