

Influences on the timing of Sudden Stratospheric Warmings

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Extreme stratospheric polar events, in the form of sudden stratospheric warmings (SSWs) have been shown to impact weather at the surface in the Northern Hemisphere, so an ability to accurately forecast them would improve forecast skill. Many studies have shown that statistical skill can be gained from knowledge of the QBO, ENSO and solar cycle phase, but only in general terms of whether a warming is likely sometime during the winter season. More accurate forecasts of the timing within the winter is desirable but current forecast models perform poorly in this respect. This study examines the factors that influence the timing of SSWs using several case studies of both displaced and split vortex winters. Using the Met Office Unified Model experiments are performed in which various regions of the atmosphere are nudged towards observations to explore their importance in determining the timing of the SSW evolution. Results from experiments will be described, with particular emphasis on the role of the upper equatorial stratosphere.