

Tornado Clusters in Ireland: the case of 1st January 2005

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I. INTRODUCTION

Research on tornadoes in Ireland has proceeded through the analysis of specific individual case studies. This approach is beginning to show the relative importance of the winter season for some of the more damaging tornadoes that have occurred. A second significant outcome has been the recognition of occasions when more than one tornado has developed from the same storm system as it has crossed the country, although few such events have been reported in the literature. This study examines a series of winter tornadoes that developed across Ireland on 1st January 2005. The tornadoes all occurred within a short time of each other in Counties, Westmeath, Meath and Armagh. However, more were reported than actually occurred due to public confusion between tornadoes and other weather phenomena.

II. RESEARCH

The research analyses how the event was a product of a rapidly advancing well defined cold front that contained a number of embedded storm cells orientated north - south. The interaction between these contributed significantly to the development of the tornadoes and the study traces this through a radar imagery sequence available for the period. The key ingredients for tornado development are examined both in the lower and upper troposphere, including wind shear, convective parameters and moisture profiles. The essential ingredients of this event are then compared with similar clusters of tornadoes that appear to have occurred on other occasions in Ireland. Their significance in the tornado profile for Ireland is assessed.

III. RESULTS AND CONCLUSIONS

Although there is a growing awareness in Ireland that tornadoes are a normal part of the climatic profile of the country, there is little awareness of the possible occurrence of tornado clusters and tornado outbreaks. This study concludes that clusters of different sizes do occur with a measurable frequency, even though the records of such events are still not complete. This has an important bearing on the nature of the tornado risk in Ireland.

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