

KEVIN M. SIMMONS AND DANIEL SUTTER

DEADLY SEASON

Analysis of the 2011 Tornado Outbreaks



AMERICAN METEOROLOGICAL SOCIETY

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DEDICATION

Kevin Simmons

To my children, Drew and Haley.

Dan Sutter

To my beautiful and wonderful wife, Natalie.

FOREWORD

Prior to 1950 there was no public forecasting of tornadoes in the United States. The average number of tornado fatalities has decreased over the decades since then, a testament to the value of that information and its increasing accuracy and timeliness, which enables the public to take shelter. No tornado had killed more than 40 people in the years 1980 through 2010. In recent years there was some sense that, in the absence of a violent tornado hitting some major outdoor venue, the days of multiscore-fatality tornadoes were largely over. That false hope was shattered in 2011 as violent tornadoes took aim on communities with devastating results. They brought 550 fatalities—the most in the United States since 1936. The tornado that hit Joplin, Missouri on May 22 caused 159 direct deaths and additional indirect fatalities, making it the deadliest individual tornado in the United States since 1947. A pair of Alabama tornadoes on April 27 killed 72 and 64 people, ranking them as the next two deadliest tornadoes in the United States since 1957. With 316 fatalities, April 27, 2011 tied with March 21, 1932 as the second-deadliest day of tornadoes, trailing only March 18, 1925—the