

Michael C. Kruk\*  
STG Inc., Asheville, North Carolina

Ethan J. Gibney  
IMSG Inc., Asheville, North Carolina

David H. Levinson and Michael Squires  
NOAA's National Climatic Data Center, Asheville, North Carolina

## 1. INTRODUCTION

Tropical cyclones pose a significant threat to life and property along coastal regions of the United States. As these systems move inland and dissipate, they can also pose a threat to life and property, through heavy rains, high winds, and tornadoes. While many studies have focused on the impacts from tropical cyclones on coastal counties of the United States, there was a need for a detailed climatology of the inland penetration of tropical cyclone wind fields.

The National Oceanic and Atmospheric Administration's (NOAA) National Climatic Data Center (NCDC) developed a comprehensive climatology of the inland winds from tropical cyclones for the eastern United States. This was done by using the historical Atlantic basin track data (Jarvinen et al. 1984) in concert with the historical extended best track dataset (Demuth et al. 2006) to comprise an average maximum extent of the winds at 34, 50, and 64 kt thresholds according to storm intensity. A unique storm-relative asymmetrical buffer was generated for each storm and was overlaid on a 30 km equal-area grid using GIS to depict those regions of the eastern United States that have historically been impacted by tropical cyclones.

While the results are shown as return intervals, the focus of this study was to produce a comprehensive climatology of the extent of inland winds from tropical cyclones in the eastern United States. While some locations east of the Rocky Mountains have never experienced such winds, the results are purely climatological in nature and no predictive trends or assumptions are provided or inferred. However, for those locations with higher return intervals, knowledge of where tropical storm-force winds or hurricane-force winds have most commonly occurred can better prepare local forecasters, emergency managers, county planners, and others to be even more vigilant to the myriad of threats tropical cyclones pose and recognize that their impacts often extend well inland from the coast.

The reader is referred to the full-length article on the subject (Kruk et al. 2010) for additional details.

## 2. REFERENCES

- Demuth, J., M. DeMaria, and J.A. Knaff, 2006: Improvement of advanced microwave sounder unit tropical cyclone intensity and size estimation algorithms. *J. Appl. Meteor.*, **45**, 1573-1581.
- Jarvinen, B. R., C. J. Neumann, and M. A. S. Davis, 1984: A tropical cyclone data tape for the North Atlantic Basin, 1886–1983: Contents, limitations and uses. NOAA Tech. Memo. NWS NHC 22, NOAA/National Hurricane Center, Miami FL, 21 pp. [Available from NOAA/Tropical Prediction Center, 11691 S.W. 17th St., Miami, FL 33165-2149.].
- Kruk, M.C., E.J. Gibney, D.H. Levinson, and M. Squires, 2010: The Climatology of Inland Winds from Tropical Cyclones for the Eastern United States. *J. Appl. Met. and Clim.*, **49**, 1538-1547

---

\* Corresponding author address: Michael C. Kruk, STG Inc., Asheville, NC 28801; email: [michael.kruk@noaa.gov](mailto:michael.kruk@noaa.gov)