Fatalities Associated with Non-convective High Wind Events in the U.S.

Alan W. Black* and Walker S. Ashley
Meteorology Program, Department of Geography, Northern Illinois University

Research Goals

- Very little, if any, past research has focused on the hazards associated with non-convective, high-wind phenomena.
- This study examines reported fatalities due to these events for the 26-yr period 1980-2005 to illustrate the overall risk and vulnerability across the U.S. to these "storms."

Methodology

- The dataset was transcribed and compiled from NCDC's *Storm Data*. Data recorded for each casualty event included: a) the geographic location of the casualty, b) place/structure of casualty occurrence (e.g., vehicle, boat, outdoors, etc.), and c) whether the casualty was associated with a felled tree.

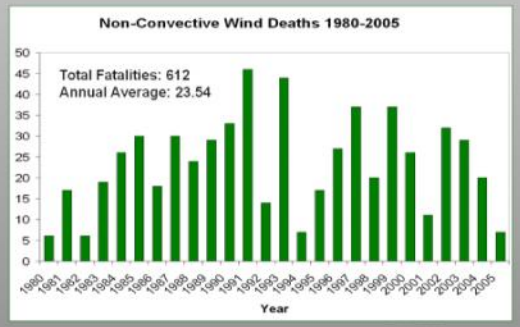

Figure 1. Number of non-convective wind fatalities per year, 1980-2005.

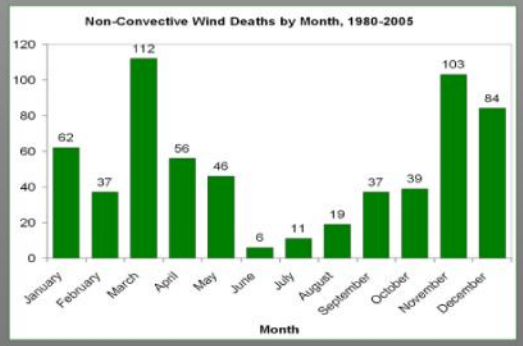

Figure 2. Number of non-convective high wind fatalities per month, 1980-2005.

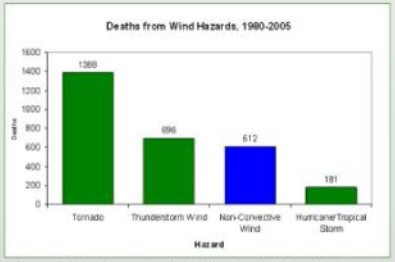

Figure 3. The distribution of fatalities by all wind-related hazards, 1980-2005.

- Non-convective wind fatalities are as numerous as thunderstorm wind fatalities. This illustrates that non-convective winds can be as hazardous as wind phenomena associated with thunderstorms.

Figure 4. Number of non-convective, high-wind fatalities in an 80x80 km grid, 1980-2005.

Figure 5. Number of a) vehicle fatalities, b) tree-related fatalities, c) blowing dust & snow-related vehicle fatalities, and d) tree-related vehicle fatalities in an 80x80 km grid, 1980-2005.

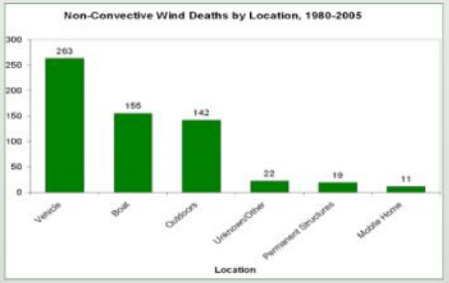

Figure 6. Number of non-convective, high-wind fatalities by location/structure of occurrence, 1980-2005.

Conclusions

- Most non-convective wind fatalities occurred in the Northeast and along the West Coast.
- These fatalities tend to occur between the months of November and March.
- Most fatalities occur in vehicles. 72% of vehicle fatalities were due to felled trees or blowing dust/snow.
- 33% of fatalities across all categories were due to a felled tree.

Future Research

- Determine the types of non-convective windstorms that are contributing to these fatality distributions.
  - Are more fatalities associated with extratropical cyclones (dry slots?), gradient winds, downslope winds, etc.?
  - What are the spatial and temporal distributions of the "storms" producing these non-convective wind fatalities?

*Email correspondence: zapeta@gmail.com