

# **An Overview of Significant Wind-Driven Hail Events in the Great Plains**

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Significant wind-driven hail (SWDH) events are a rare but extremely hazardous form of severe weather across the United States. Although the National Weather Service has recently begun to include Impact Based Warning tags within Severe Thunderstorm Warnings, which include specific “Call to Action” statements for wind-driven hail, there is little existing research on SWDH environments or radar precursors.

This study details a comprehensive climatology of 207 SWDH events across the United States from 2010-2019, examining a multitude of environment and radar characteristics. While SWDH occurs across the United States, it was found that events were largely concentrated across the central U. S. Great Plains during warm season months. Over 95% of SWDH-producing storms exhibited supercell characteristics within environments with moderate to strong instability and deep layer shear.

In addition to a climatology established in this study, we also present three common radar signatures associated with SWDH producing storms, discuss a few particularly severe SWDH events, and briefly discuss implications in the warning decision environment.