SEVERE CONVECTIVE STORMS
Sorry closed early due to storms.

Management
convection

kən'vekSH(ə)n/
noun
The movement caused within a fluid by the tendency of hotter, less dense material to rise and colder, denser material to sink under the influence of gravity, which results in transfer of heat.
**Thunderstorm** (from Glossary of the American Meteorological Society)

*noun*

In general, a local storm, invariably produced by a cumulonimbus cloud and always accompanied by lightning and thunder, usually with strong gusts of wind, heavy rain, and sometimes with hail. Sometimes called an *electrical storm.*
Severe hail report density

2010-present
Severe wind report density
Lightning stroke density

Map courtesy of Chris Vagasky, Vaisala
Annual Severe Convective Storm Insured Losses - AON
Severe Convective Storm Hazards and Loss

Loss by SCS Hazard from Risk Management Solutions

Hail
Hail accounts for 70% of annual average loss. In any given year hail is 60-80% of the damage produced by severe convective storms.

Wind & Tornadoes
Severe winds both from straight-line wind events and tornadoes account for about 20% of average annual loss.

Lightning
Lightning, including fires started by lightning accounts for about 10%
Vulnerable Roof Covers

U.S. & Canada only countries that the dominant roof covers are: ASPHALT SHINGLES

Most building materials are not designed to resist large hail
Ingredients for a Catastrophic Hailstorm

Big Hail
Damage to structures begins often at hail sizes above 1.5 inches (3.8 cm)

Lots of Hail + Wind
High concentrations of hail embedded in strong winds make even small hailstones damaging

Major metro
Our suburban environment is growing quickly. We build larger and closer together than ever before

Vulnerable Roof Covers
U.S. & Canada only countries that the dominant roof cover is asphalt shingles

Most building materials are not designed to resist large hail
IBHS Closed Claims Study 2012: Dallas-Fort Worth Hail Event

- 92% Roof damage
- 79% asphalt shingles
- 5% Other building components
- 2% Windows
- 1% Walls

Adapted from Brown et al. (2015)
TORNADOES DRIVE THE TAIL OF THE LOSS DISTRIBUTION
Greensburg, Kansas
Primarily shingle loss
The big picture
Wind & hail

Legend
Tornado track densities per grid cell contours

- 1-5 Tracks
- 5-10 Tracks
- 10-15 Tracks
- 15-20 Tracks
- 20-25 Tracks
- 25-30 Tracks
- > 30 Tracks

Hail v. Conveotive Winds
Prediction Map
Data sources: Allen et. al. (2017), Lombardo and Zickar (2019)

Grid
- 10% annual exceedance probability for convective winds > 60 mph & hail < 1 inch
- 10% annual exceedance probability for convective winds > 60 mph and hail 1-2 inches
- 10% annual exceedance probability for hail > 2 inches