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KANSAS STORM EVENTS DATA

This **ReadMe** document covers seven storm events datasets in Kansas. Storm types include Blizzard, Flood, Hail, Ice Storm, Tornado, Wildfire, and Wind. Source data were downloaded from the National Oceanic Atmospheric Administration (NOAA) Storm Events Database for 1950 to mid-2023 as available. A separate description of each event dataset is provided, including concerns regarding spatiotemporal representation and completeness.

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Data Source

Source data were obtained from the NOAA Storm Events Database and choosing "Kansas" for the search area (direct link).

Data Processing

The data were processed using a python script developed in a Jupyter notebook that is included in the ZIP download file.

Data Organization

The Kansas storm events data are organized into five levels (Level-0, Level-1, Level-2, Level-3, Level-4) described as follows:

***Level-0**:* Level-0 is the raw source data as downloaded from NOAA and organized into event-specific spreadsheets. These are the unprocessed storm events data.

***Level-1**:* Level-1 is the scaled storm damages data. The scaling is the conversion of the provided storm damage dollar values (which are contemporary with each event) to 2023 U.S. Dollars. The inflation calculator was used to estimate the dollar equivalent of the reported values in 2023 dollars. Level-1 is derived from Level-0 data.

***Level-2**:* Level-2 is the sorted weather data by unique events. Multiple records from the same events are reconciled into single records. Level-2 is derived from Level-1 data.

***Level-3**:* Level-3 is the weather data summarized by county. Level-3 is derived from Level-2 data.

***Level-4**:* Level-4 is the weather data summarized by year. Level-4 is derived from Level-2 data.

Storm Event Types

[1] Blizzard: The Kansas blizzard data cover 1996 to mid-2023. The data include the following fields: event id, county name, start date, end date, start time, end time, property damage, crop damage, injury, and death. Additional event details are sometime provided in event narrative and episode narrative fields. The blizzard source data are provided at the county level.

[2] Flood: The Kansas flood data cover 1996 to mid-2023. The data include the following fields: event id, county name, start date, end date, start time, end time, crop damage, property damage, injury, and death. Additional details are sometimes provided in event narrative and episode narrative fields. The flood source data are provided at the county level.

[3] Hail: The Kansas hail data cover 1955 to mid-2023. The data include the following fields: event id, county name, start date, end date, start time, end time, hail magnitude, property damage, injury, and death. Additional details are sometime provided in an event narrative field. The hail source data are provided at the county level and sometimes include a geographic coordinate.

[4] Ice Storm: The Kansas ice storm data cover 1996 to mid-2023. The data include the following fields: event id, county name, start date, end date, start time, end time, property damage, crop damage, injury, and death. Additional details are sometime provided in event narrative and episode narrative fields. The ice storm source data are provided at the county level.

[5] Tornado: The Kansas tornado data cover 1950 to mid-2023. The data include the following fields: event id, county name, start date, end date, start time, end time, tornado magnitude (EF scale), property damage, injury, and death. Some records include geographic coordinates for start and end points. Additional details are sometime provided in event narrative and episode narrative fields.

[6] Wildfire: The Kansas wildfire data cover 1996 to mid-2023. The data include the following fields: event id, county name, start date, end date, start time, end time, property damage, crop damage, injury, and death. Additional details are sometimes provided in event narrative and episode narrative fields. The wildfire source data are provided at the county level.

[7] Wind: The Kansas wind data cover 1955 to mid-2023. The data include the following fields: event id, county name, start date, end date, start time, end time, wind magnitude, property damage, crop damage, injury, and death. Additional details are sometimes provided in event narrative and episode narrative fields. The wind source data are provided at the county level and sometimes include a geographic coordinate.

Data Format

[1] Excel: The seven datasets are organized in Excel spreadsheets for each level. The summarized county data (Level-3) for all seven weather events are provided in a single spreadsheet.

[2] Shapefile: The weather datasets are also provided in shapefile format, which can be points, lines or polygons.

Disclaimer

Datasets may be incomplete, especially during early years (unreported events) and recent years (reporting lag). In addition, data collection methods have varied over time. For questions about the raw data, see the FAQ section of the NOAA repository. Further inquiry can be directed to NOAA.

Data Description

The data columns used in the Excel files and shapefiles are as follows:

Table 1: Data attributes and definitions for county-level data.

Attribute	Meaning	Definition
County_name	County name	Name of county referenced by FIPS
Blizzard		
BlzDth	Blizzard death	Number of deaths caused by blizzard
BlzInj	Blizzard injury	Number of injuries caused by blizzard
BlzPrDmg	Blizzard property damage	Dollar amount of property damage caused by blizzard
BlzFrq	Blizzard frequency	Number of blizzard events
Flood		
FldDth	Flood death	Number of deaths caused by flood
FldInj	Flood injury	Number of injuries caused by flood
FldDmg	Flood damage	Dollar amount of damage caused by flood
FldFrq	Flood frequency	Number of flood events
Hail		
HailInj	Hail injury	Number of injuries caused by hail
HailPrpDmg	Hail property damage	Dollar amount of property damage caused by hail
HailCrpDmg	Hail crop damage	Dollar amount of crop damage caused by hail
HailSmDmg	Hail sum of damages	Dollar amount of damage (property + crop) caused by hail
HailFrq	Hail frequency	Number of hail events

HailFrq1p5	Hail frequency with size at least 1.5 inches	Number of hail events with hail size ***at least 1.5 inches***
HailFrq3	Hail frequency with size at least 3 inches	Number of hail events with hail size ***at least 3 inches***
HailMgAvg	Hail magnitude average	Mean hail diameter (inches)
HailMgMax	Hail magnitude maximum	Maximum hail diameter (inches)
Ice Storm		
IceDth	Ice storm death	Number of deaths caused by ice storm
IceInj	Ice storm injury	Number of injuries caused by ice storm
IcePrpDmg	Ice storm property damage	Dollar amount of property damage caused by ice storm
IceFreq	Ice storm frequency	Number of ice storm events
Tornado		
TorDth	Tornado death	Number of deaths caused by tornado
TorInj	Tornado injury	Number of injuries caused by tornado
TorPrpDmg	Tornado property damage	Dollar amount of property damage caused by tornado
TorCrpDmg	Tornado crop damage	Dollar amount of crop damage caused by tornado
TorSmDmg	Tornado sum of damages	Dollar amount of damage (property + crop) caused by tornado
TorMag	Tornado magnitude	Tornado magnitude on the EF scale
TorMagMax	Tornado magnitude	Maximum Tornado magnitude on the EF scale
TorLen	Tornado path length	Tornado path length (miles)
TorWdth	Tornado path width	Tornado path width (yards)
TorFrq	Tornado frequency	Number of tornado events
TorWind	Wind magnitude maximum	Maximum wind speed (knots)
Wildfire		
WdfDth	Wildfire death	Number of deaths caused by wildfire
WdfInj	Wildfire injury	Number of injuries caused by wildfire
WdfPrpDmg	Wildfire property damage	Dollar amount of property damage caused by wildfire
WdfCrpDmg	Wildfire crop damage	Dollar amount of crop damage caused by wildfire
WdfSmDmg	Wildfire sum of damages	Dollar amount of damage (property + crop) caused by wildfire
WdfFrq	Wildfire frequency	Number of wildfire events
Wind		
WindDth	Wind death	Number of deaths caused by wind
WindInj	Wind injury	Number of injuries caused by wind
WindPrpDmg	Wind property damages	Dollar amount of property damage caused by wind

WindCrpDmg	Wind crop damages	Dollar amount of crop damage caused by wind
WindSmDmg	Wind sums of damages	Dollar amount of damage (property + crop) caused by wind
WindFrq	Wind frequency	Count of frequency occurrence
WindFrq40	Wind frequency at least 40 knots	Count of wind frequency occurrence greater than or equal to 40 knots
WindFrq60	Wind frequency at least 60 knots	Count of wind frequency occurrence greater than or equal to 60 knots
WindFrq80	Wind frequency at least 80 knots	Count of wind frequency occurrence greater than or equal to 80 knots
WindMgAvg	Wind magnitude average	Mean wind speed (knots)
WindMgMax	Wind magnitude maximum	Maximum wind speed (knots)

Data Repository:

The Kansas storm event dataset is available for download through the Kansas Applied Remote Sensing website:

https://kars.geoplatform.ku.edu/pages/arise-kansas