**Weather- Snow Day Science**

*Lesson 2-Clues from Weather Data*

**INVESTIGATION QUESTION:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Last time, we observed some interesting videos of hail (ice) falling from the sky and thought about other weather events where there was a lot of precipitation.

If you were at a spot where you knew a hailstorm was going to occur, what are some observations you would make to figure out what caused the hailstorm to happen?

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Below you will see a radar image of hailstorm that took place near Fort Scott, Kansas. **Annotate the image by recording your observations and wonderings/questions.**

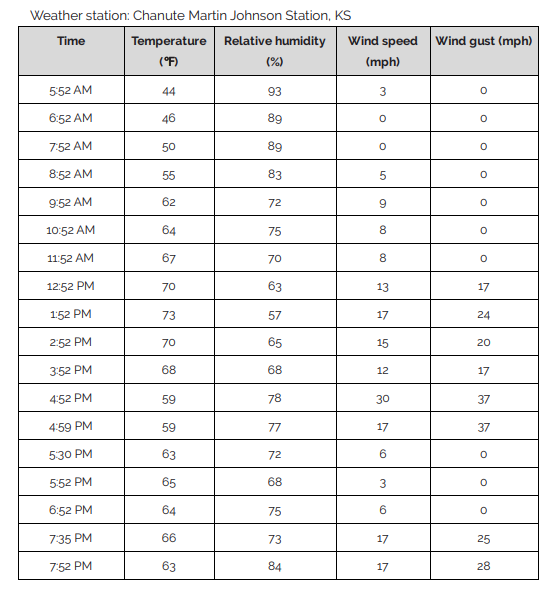
A close up of a map

Description automatically generated

**ANALYZING PRECIPITATION EVENTS**

**KANSAS HAILSTORM**

* Below you will find weather data from the nearest weather station about a hailstorm that took place at 4:25 p.m. in Fort Scott, Kansas. Some of the hailstones from this storm measured 3.00+ inches in diameter. Annotate the table with your observations and your wonderings/questions. Pay attention to the following:
* **Overall temperature**
* **Temperature changes**
* **Overall humidity**
* **Humidity changes**
* **Changes in wind**
* **Time of day**
* **Time of year**

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On the other case files provided for the other 7 sites, annotate the data tables with your observations and your wonderings/questions.

**BLIZZARD OF 1967**

Below you will weather data from the nearest weather station to Lansing, Michigan on the days surrounding a historic, “paralyzing” blizzard. A record amount of snow, 24 inches, fell January 26-27, 1967. Annotate the tables with your observations and your wonderings/questions.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **January 25, 1967** | | | | | | |
| **Time** | **Temperature** | **Humidity** | **Wind** | **Wind Speed** | **Wind Gust** | **Pressure** |
| 1:00 AM | 57 F | 83 % | SW | 23 mph | 0 mph | 28.79 in |
| 4:00 AM | 54 F | 75 % | SSW | 20 mph | 0 mph | 28.78 in |
| 7:00 AM | 43 F | 86 % | WSW | 28 mph | 0 mph | 28.93 in |
| 10:00 AM | 37 F | 86 % | WSW | 20 mph | 0 mph | 29.03 in |
| 1:00 PM | 35 F | 85 % | WSW | 20 mph | 0 mph | 29.08 in |
| 4:00 PM | 34 F | 82 % | W | 18 mph | 0 mph | 29.14 in |
| 7:00 PM | 0 F | 85 % | W | 12 mph | 0 mph | 29.22 in |
| 10:00 PM | 0 F | 82 % | W | 15 mph | 0 mph | 29.22 in |
| **January 26, 1967 – Approximately 15 inches of snow fell** | | | | | | |
| **Time** | **Temperature** | **Humidity** | **Wind** | **Wind Speed** | **Wind Gust** | **Pressure** |
| 1:00 AM | 31 F | 82 % | NW | 7 mph | 0 mph | 29.27 in |
| 4:00 AM | 30 F | 82 % | N | 13 mph | 0 mph | 29.29 in |
| 7:00 AM | 28 F | 85 % | NNE | 15 mph | 0 mph | 29.30 in |
| 10:00 AM | 24 F | 88 % | ENE | 17 mph | 0 mph | 29.30 in |
| 1:00 PM | 24 F | 88 % | NE | 13 mph | 0 mph | 29.23 in |
| 4:00 PM | 25 F | 92 % | ENE | 14 mph | 0 mph | 29.15 in |
| 7:00 PM | 25 F | 92 % | NE | 15 mph | 0 mph | 29.13 in |
| 10:00 PM | 25 F | 92 % | NE | 18 mph | 0 mph | 29.02 in |
| **January 27, 1967 – Approximately 9 inches of snow fell** | | | | | | |
| **Time** | **Temperature** | **Humidity** | **Wind** | **Wind Speed** | **Wind Gust** | **Pressure** |
| 1:00 AM | 25 F | 96 % | NE | 20 mph | 0 mph | 28.85 in |
| 4:00 AM | 26 F | 92 % | NNE | 23 mph | 0 mph | 28.72 in |
| 7:00 AM | 25 F | 96 % | NNE | 26 mph | 0 mph | 28.60 in |
| 10:00 AM | 26 F | 92 % | NNE | 23 mph | 0 mph | 28.56 in |
| 1:00 PM | 24 F | 91 % | N | 21 mph | 0 mph | 28.54 in |
| 4:00 PM | 22 F | 92 % | NNW | 18 mph | 0 mph | 28.59 in |
| 7:00 PM | 22 F | 92 % | NNW | 20 mph | 0 mph | 28.67 in |
| 10:00 PM | 21 F | 92 % | NNW | 17 mph | 0 mph | 28.69 in |
| **January 28, 1967** | | | | | | |
| **Time** | **Temperature** | **Humidity** | **Wind** | **Wind Speed** | **Wind Gust** | **Pressure** |
| 1:00 AM | 23 F | 85 % | WNW | 21 mph | 0 mph | 28.69 in |
| 4:00 AM | 25 F | 78 % | WNW | 16 mph | 0 mph | 28.72 in |
| 7:00 AM | 27 F | 78 % | WNW | 21 mph | 0 mph | 28.77 in |
| 10:00 AM | 24 F | 84 % | WNW | 21 mph | 0 mph | 28.82 in |
| 1:00 PM | 28 F | 72 % | WNW | 21 mph | 0 mph | 28.86 in |
| 4:00 PM | 29 F | 72 % | W | 18 mph | 0 mph | 28.88 in |
| 7:00 PM | 28 F | 75 % | WNW | 14 mph | 0 mph | 28.96 in |
| 10:00 PM | 27 F | 78 % | NNW | 12 mph | 0 mph | 29.01 in |

**RAINED OUT**

Below you will weather data from the nearest weather station to Lansing, Michigan on the days of rain that prevented seventh grade MacDonald Middle Students from participating in a field trip. Annotate the tables with your observations and your wonderings/questions.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Time | **Temperature** | **Dew Point** | **Humidity** | **Wind** | **Wind Speed** | **Wind Gust** | **Pressure** | **Condition** |
| 11:36 PM | 71 F | 65 F | 81 % | N | 20 mph | 29 mph | 29.00 in | Thunder in the Vicinity |
| 11:49 PM | 70 F | 66 F | 88 % | N | 13 mph | 23 mph | 29.01 in | Heavy T-Storm |
| 11:53 PM | 69 F | 66 F | 90 % | N | 8 mph | 20 mph | 29.00 in | Heavy T-Storm |
| **October 2, 2019** | | | | | | | | |
| 12:01 AM | 68 F | 67 F | 96 % | N | 5 mph | 0 mph | 28.99 in | Light Rain |
| 12:09 AM | 69 F | 67 F | 93 % | SE | 3 mph | 0 mph | 28.98 in | Light Rain |
| 12:53 AM | 69 F | 67 F | 93 % | CALM | 0 mph | 0 mph | 28.98 in | Cloudy |
| 1:15 AM | 69 F | 67 F | 93 % | NNW | 6 mph | 0 mph | 28.99 in | Cloudy |
| 1:21 AM | 69 F | 67 F | 93 % | N | 10 mph | 0 mph | 29.00 in | Light Rain with Thunder |
| 1:28 AM | 68 F | 66 F | 93 % | NW | 9 mph | 24 mph | 29.02 in | Heavy T-Storm |
| 1:31 AM | 68 F | 66 F | 93 % | NNW | 9 mph | 24 mph | 29.02 in | Heavy T-Storm |
| 1:42 AM | 68 F | 66 F | 93 % | NE | 6 mph | 0 mph | 29.01 in | Heavy Rain |
| 1:45 AM | 68 F | 66 F | 93 % | VAR | 5 mph | 0 mph | 29.01 in | Heavy Rain |
| 1:53 AM | 68 F | 65 F | 90 % | ESE | 3 mph | 0 mph | 29.01 in | Light Rain |
| 2:53 AM | 67 F | 66 F | 97 % | SE | 3 mph | 0 mph | 28.98 in | Mostly Cloudy |
| 3:53 AM | 67 F | 65 F | 93 % | ESE | 5 mph | 0 mph | 28.96 in | Mostly Cloudy |
| 4:53 AM | 67 F | 65 F | 93 % | CALM | 0 mph | 0 mph | 28.97 in | Partly Cloudy |
| 5:28 AM | 67 F | 65 F | 93 % | NNE | 6 mph | 0 mph | 28.97 in | Mostly Cloudy |
| 5:36 AM | 67 F | 65 F | 93 % | NNE | 6 mph | 0 mph | 28.97 in | Mostly Cloudy |
| 5:43 AM | 67 F | 65 F | 93 % | NE | 14 mph | 0 mph | 28.97 in | Fog |
| 5:45 AM | 66 F | 65 F | 96 % | NE | 13 mph | 0 mph | 28.97 in | Fog |
| 5:53 AM | 64 F | 63 F | 96 % | NNE | 10 mph | 0 mph | 28.98 in | Fog |
| 6:00 AM | 63 F | 62 F | 97 % | NNE | 10 mph | 0 mph | 28.98 in | Fog |
| 6:15 AM | 60 F | 59 F | 96 % | NNE | 10 mph | 0 mph | 28.99 in | Fog |
| 6:53 AM | 58 F | 57 F | 97 % | NNE | 10 mph | 0 mph | 29.01 in | Light Rain |
| 7:05 AM | 58 F | 57 F | 97 % | NE | 6 mph | 0 mph | 29.02 in | Light Rain |
| 7:19 AM | 58 F | 57 F | 97 % | NNE | 9 mph | 0 mph | 29.02 in | Light Rain |
| 7:53 AM | 57 F | 56 F | 96 % | NE | 9 mph | 0 mph | 29.02 in | Light Rain |
| 8:18 AM | 57 F | 56 F | 96 % | NE | 9 mph | 0 mph | 29.02 in | Light Rain |
| 8:53 AM | 58 F | 56 F | 93 % | NNE | 9 mph | 0 mph | 29.03 in | Cloudy |
| 9:53 AM | 58 F | 56 F | 93 % | NE | 14 mph | 22 mph | 29.04 in | Light Rain |
| 10:53 AM | 58 F | 56 F | 93 % | NE | 10 mph | 0 mph | 29.05 in | Light Rain |
| 11:53 AM | 59 F | 56 F | 90 % | NE | 13 mph | 0 mph | 29.05 in | Cloudy |
| 12:53 PM | 60 F | 57 F | 90 % | ENE | 15 mph | 0 mph | 29.05 in | Light Rain |
| 1:53 PM | 59 F | 57 F | 93 % | NE | 10 mph | 0 mph | 29.06 in | Light Rain |
| 2:05 PM | 58 F | 56 F | 93 % | NE | 9 mph | 0 mph | 29.06 in | Rain |
| 2:53 PM | 57 F | 54 F | 89 % | NE | 12 mph | 21 mph | 29.06 in | Light Rain |
| 3:53 PM | 56 F | 54 F | 93 % | NNE | 9 mph | 0 mph | 29.09 in | Light Rain |
| 4:20 PM | 56 F | 54 F | 93 % | NE | 12 mph | 0 mph | 29.08 in | Light Rain |
| 4:28 PM | 56 F | 53 F | 90 % | NE | 9 mph | 0 mph | 29.08 in | Light Rain |
| 4:53 PM | 55 F | 53 F | 93 % | NE | 15 mph | 0 mph | 29.10 in | Fog |
| 5:00 PM | 55 F | 53 F | 93 % | NE | 10 mph | 21 mph | 29.10 in | Cloudy |
| 5:12 PM | 55 F | 52 F | 89 % | NE | 13 mph | 0 mph | 29.10 in | Light Rain |
| 5:51 PM | 54 F | 52 F | 94 % | NE | 12 mph | 0 mph | 29.10 in | Light Rain |
| 5:53 PM | 54 F | 52 F | 93 % | NE | 12 mph | 0 mph | 29.10 in | Light Rain |
| 6:00 PM | 54 F | 52 F | 93 % | NE | 9 mph | 0 mph | 29.11 in | Cloudy |
| 6:53 PM | 53 F | 50 F | 89 % | NE | 14 mph | 0 mph | 29.11 in | Cloudy |
| 7:07 PM | 53 F | 50 F | 89 % | NE | 12 mph | 0 mph | 29.13 in | Cloudy |
| 7:53 PM | 52 F | 50 F | 93 % | ENE | 10 mph | 0 mph | 29.15 in | Light Rain |
| 8:33 PM | 52 F | 49 F | 89 % | ENE | 15 mph | 22 mph | 29.12 in | Light Rain |
| 8:45 PM | 51 F | 49 F | 92 % | ENE | 14 mph | 21 mph | 29.11 in | Light Rain |
| 8:53 PM | 51 F | 49 F | 92 % | ENE | 13 mph | 25 mph | 29.11 in | Light Rain |
| 9:11 PM | 52 F | 49 F | 89 % | ENE | 14 mph | 0 mph | 29.11 in | Cloudy |
| 9:30 PM | 51 F | 48 F | 89 % | ENE | 15 mph | 21 mph | 29.11 in | Cloudy |
| 9:53 PM | 51 F | 48 F | 89 % | ENE | 14 mph | 0 mph | 29.11 in | Cloudy |
| 10:32 PM | 51 F | 48 F | 89 % | ENE | 10 mph | 0 mph | 29.11 in | Cloudy |
| 10:53 PM | 51 F | 49 F | 92 % | ENE | 12 mph | 0 mph | 29.10 in | Light Rain |

**MAKING SENSE:** Analyze the patterns that might help us determine what factors contribute most to precipitation events:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Precipitation Event** | **Temperature** | **Dew Point** | **Humidity** | **Wind** | **Pressure** |
| Hail |  | **X** |  |  | **X** |
| Snow |  | **X** |  |  |  |
| Rain |  |  |  |  |  |

**CONCLUSION**

|  |  |  |
| --- | --- | --- |
| **Activity:**  Analyzing Weather Data | **Problem/Question:**  What was the air outside like on days when it precipitated? (What factors contribute most to precipitation events?) | |
| **Claim(s):** | **Evidence:** |
| **Connections to *Why does a lot of precipitation fall at some times and not others?***   * What outside conditions do you predict would be necessary for a **snow day** to happen?  1. The outside air temperature would need to be: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. The humidity would need to be: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3. The changes in wind would be described as: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   1. The pressure would: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| **Future Steps**  1) We need to still figure out...  2) To figure this out, we could... | |