Explore Weather Dataset

Building Environment

Create Weather database and two tables in Snowflake:

Here is the link of how to build tables and load data from Amazon S3.

- severe_weather

	EPISODE_ID	EVENT_ID	STATE	STATE_FIPS_CODE	EVENT_TYPE	CZ_TYPE	CZ_FIPS_CODE	CZ_NAME	WFO	...	EVENT_BEGIN_TIME
1	154212	929077	Te	48	hail	C	39	BRAZORIA	HGX		2021-01-06 17:31:00.000
2	154212	929080	Te	48	hail	C	167	GALVESTON	HGX		2021-01-06 18:05:00.000
3	154212	929079	Te	48	hail	C	167	GALVESTON	HGX		2021-01-06 18:21:00.000
4	154418	930323	Mi	28	hail	C	29	COPIAH	JAN		2021-01-25 23:03:00.000
5	154418	930324	Mi	28	hail	C	101	NEWTON	JAN		2021-01-25 23:45:00.000
6	154418	930325	Mi	28	hail	C	85	LINCOLN	JAN		2021-01-26 00:46:00.000
7	154436	930381	Ar	4	hail	C	19	PIMA	TWC		2021-01-24 11:00:00.000
8	154436	930381	Ar	4	hail	C	19	PIMA	TWC		2021-01-24 11:00:00.000
9	154455	930415	Te	48	hail	C	305	LYNN	LUB		2021-01-24 23:00:00.000
10	154455	930415	Te	48	hail	C	305	LYNN	LUB		2021-01-24 23:00:00.000

- state_sizes

	...	STATE_FIPS_CODE	STATE_NAME	AREA_LAND_METERS	AREA_WATER_METERS
1		60	American Samoa	197,759,069	1,307,243,751
2		72	Puerto Rico	8,868,701,898	4,922,576,715
3		69	Commonwealth of the Northern Mariana Islands	472,292,529	4,644,252,458
4		66	Guam	543,555,844	934,337,453
5		78	United States Virgin Islands	348,021,896	1,550,236,199
6		25	Massachusetts	20,204,387,828	7,130,663,019
7		44	Rhode Island	2,677,787,140	1,323,663,210
8		50	Vermont	23,874,197,924	1,030,383,955
9		23	Maine	79,887,659,040	11,745,717,739
10		9	Connecticut	12,542,497,381	1,815,617,293

Basic Queries

Here is the link of SQL queries and the visualization is made by Tableau.

1. Top 10 most destructive storms – in terms of property damage.

	EPISODE_ID	TOTAL_PROPERTY_DAMAGE
1	162128	12,147,750,000
2	158930	3,501,688,000
3	155491	2,800,360,000
4	164114	2,000,000,000
5	162539	1,695,650,000
6	162538	1,290,000,000
7	160029	740,800,000
8	159708	502,015,000
9	157639	500,455,500
10	163555	470,920,000

2. Total injuries by event type

	EVENT_TYPE	ALL_INJURIES
1	tornado	1,707
2	flash flood	232
3	winter weather	198
4	thunderstorm wind	122
5	lightning	74
6	excessive heat	67
7	wildfire	46
8	dust storm	37
9	flood	32
10	high wind	30
11	winter storm	30
12	dense fog	27
13	rip current	26
14	heavy snow	17
15	strong wind	16

3. Number of tornadoes and tornado injuries in an episode.

	EPISODE_ID	ALL_INJURIES	TORNADO_EVENTS
1	164438	1,038	24
2	164737	192	59
3	155525	60	2
4	156666	56	42
5	159616	42	8
6	159557	34	2
7	165022	31	19
8	158383	22	8
9	156532	20	2
10	165322	16	52
11	156855	16	11
12	159612	16	10
13	157931	14	4
14	165057	12	4
15	160029	12	2
16	165020	11	3
17	154937	10	4
18	155842	8	10
19	156425	6	46

4. Top 10 states with the most total property damage.

State	Property Damage
Lo	15,675M
Ke	2,852M
Co	2,647M
Ne	2,038M
Te	1,808M
Pe	1,755M
Mi	955M
Ar	503M
Ca	382M
Wa	375M
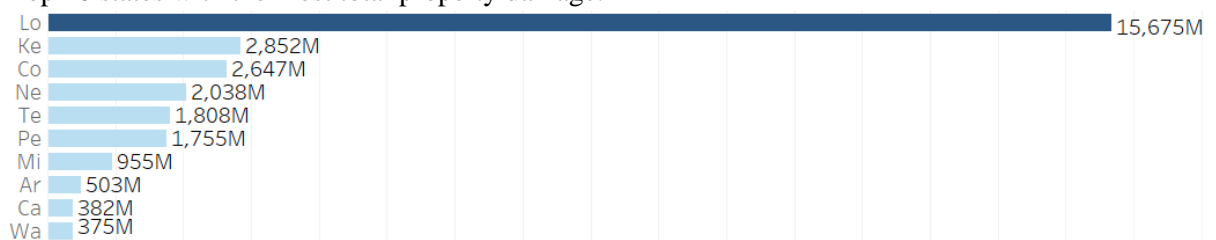
5. The property damage for each event and cumulative damage for the state.

378	Al	995207	flood	500,000	53,579,820
379	Al	995207	flood	500,000	55,079,820
380	Al	995207	flood	500,000	54,079,820
381	Al	995207	flood	500,000	54,579,820
382	Am	951100	heavy rain	10,000	20,000
383	Am	951100	heavy rain	10,000	10,000
384	Am	951114	high wind	20,000	40,000
385	Am	970577	flash flood	20,000	120,000
386	Am	970577	flash flood	20,000	100,000
387	Am	970577	flash flood	20,000	80,000
388	Am	970577	flash flood	20,000	60,000
389	Am	970650	flash flood	10,000	160,000
390	Am	970650	flash flood	10,000	150,000
391	Am	970650	flash flood	10,000	140,000
392	Am	970650	flash flood	10,000	130,000

6. The damage to crops by states.

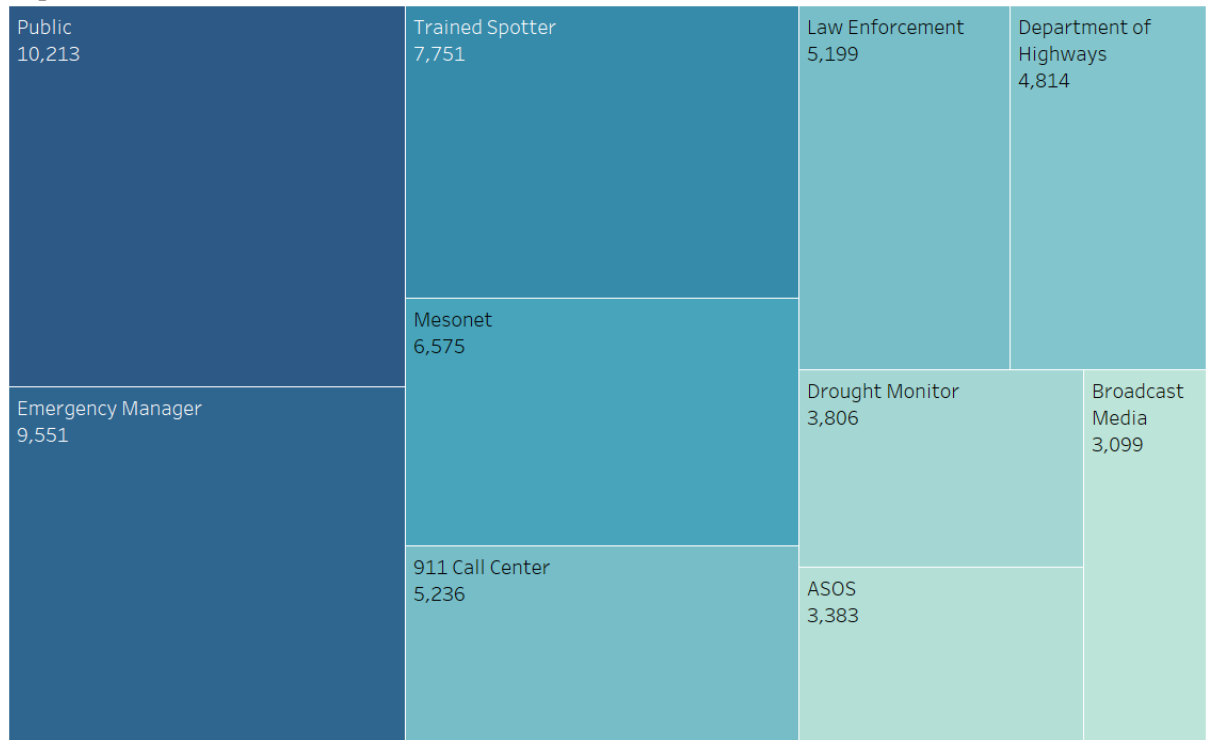| State	Value
Te	572M
Ne	325M
So	114M
Io	83M
Mi	30M
Pe	24M
Ka	12M
Ha	7M
No	7M
Wi	6M
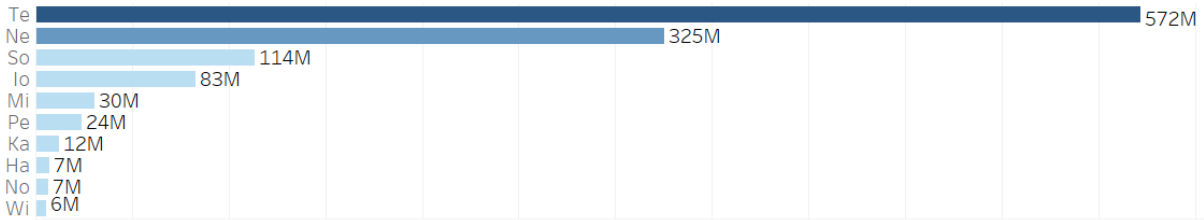
7. The property damage for each event and average property damage for the last 3 events

	EVENT_ID	EVENT_TYPE	DAMAGE_PROPERTY	...	AVG_DAMAGE_LAST_3_EVENTS
1	927829	dense fog	20,000		20,000
2	927831	dense fog	150,000		85,000
3	927835	dense fog	100,000		90,000
4	928390	winter storm	40,000		96,666.666
5	928391	winter storm	30,000		56,666.666
6	928482	dense fog	20,000		30,000
7	928528	winter storm	50,000		33,333.333
8	929081	tornado	500,000		190,000
9	929081	tornado	500,000		350,000
10	929089	wildfire	100,000		366,666.666
11	929335	strong wind	1,000		200,333.333
12	929336	strong wind	1,000		34,000

8. Top 10 most common sources of severe weather information.

Public 10,213	Trained Spotter 7,751	Law Enforcement 5,199	Department of Highways 4,814
	Mesonet 6,575	Drought Monitor 3,806	Broadcast Media 3,099
Emergency Manager 9,551	911 Call Center 5,236	ASOS 3,383	

9. Categorize the sources. (If the number is greater than 2,000 then as a major source, else as minor)

	SOURCE	⋯ SOURCE_COUNT	SOURCE_CATEGORY
1	Public	10,213	major source
2	Emergency Manager	9,551	major source
3	Trained Spotter	7,751	major source
4	Mesonet	6,575	major source
5	911 Call Center	5,236	major source
6	Law Enforcement	5,199	major source
7	Department of Highways	4,814	major source
8	Drought Monitor	3,806	major source
9	ASOS	3,383	major source
10	Broadcast Media	3,099	major source
11	NWS Storm Survey	2,718	major source
12	Social Media	2,348	major source
13	AWOS	2,258	major source
14	COOP Observer	2,177	major source
15	River/Stream Gage	2,122	major source
16	Fire Department/Rescue	1,882	minor source
17	CoCoRaHS	1,808	minor source
18	State Official	1,607	minor source
19	Official NWS Observations	1,488	minor source
20	Amateur Radio	1,195	minor source

10. Total property damage and cumulative damage by months.

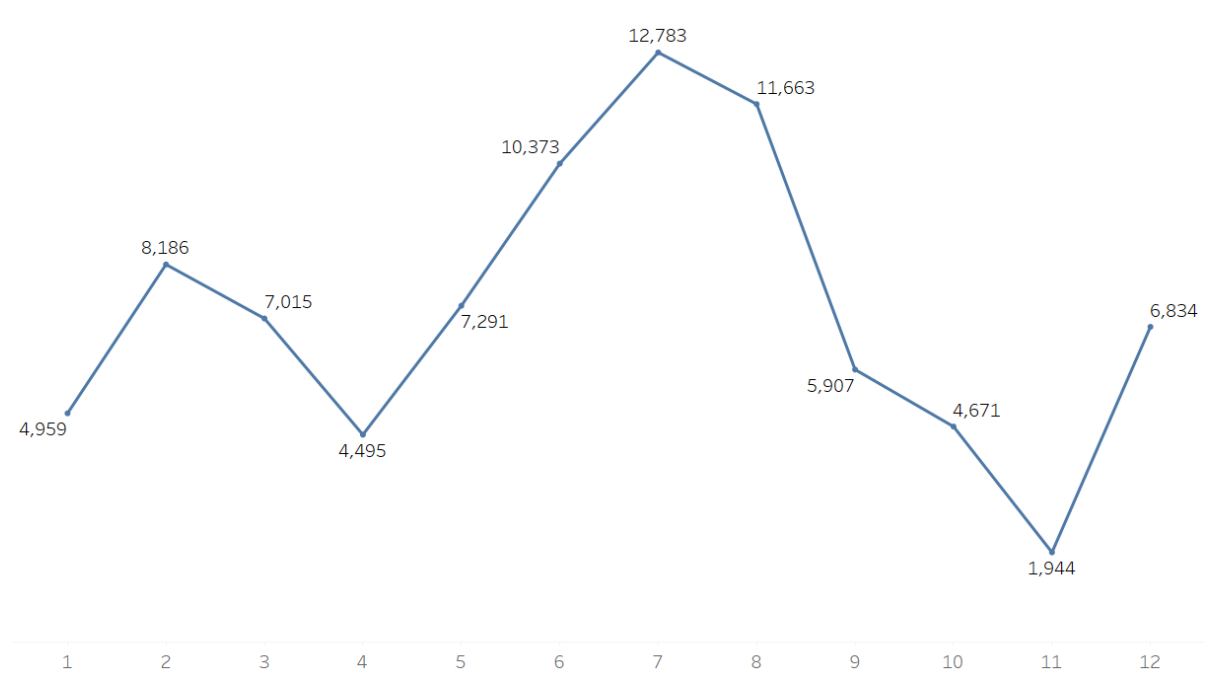|	MONTH	⋯	TOTAL_DAMAGE	CUMULATIVE_DAMAGE
1	1		325,927,700	325,927,700
2	2		363,301,420	689,229,120
3	3		3,731,208,540	4,420,437,660
4	4		640,980,420	5,061,418,080
5	5		3,650,544,470	8,711,962,550
6	6		1,274,946,340	9,986,908,890
7	7		1,185,816,770	11,172,725,660
8	8		13,157,826,740	24,330,552,400
9	9		3,646,643,960	27,977,196,360
10	10		166,750,740	28,143,947,100
11	11		351,374,950	28,495,322,050
12	12		2,165,412,620	30,660,734,670

11. The relationship between the size of the state and the number of storm events by state.

	STATE_NAME	TOTAL_STORM	AREA_LAND_KM	STORM_PER_KM
1	District of Columbia	105	158.34	0.66
2	Maryland	2,011	25,151.73	0.08
3	New Jersey	1,389	19,048.85	0.07
4	Hawaii	952	16,634.01	0.06
5	Massachusetts	896	20,204.39	0.04
6	Rhode Island	97	2,677.79	0.04
7	Connecticut	440	12,542.5	0.04
8	Virginia	3,678	102,000	0.04
9	Kentucky	3,382	102,000	0.03
10	New York	3,310	122,000	0.03
11	Pennsylvania	3,224	116,000	0.03
12	West Virginia	1,663	62,266.23	0.03
13	Mississippi	1,861	122,000	0.02
14	Vermont	468	23,874.2	0.02
15	Delaware	117	5,046.62	0.02

12. Top 10 states with storm-related deaths.

State	Deaths
Texas	179
Kentucky	171
Oregon	139
New Jersey	110
Arizona	107
Tennessee	84
Louisiana	62
Alabama	62
California	56
Florida	35
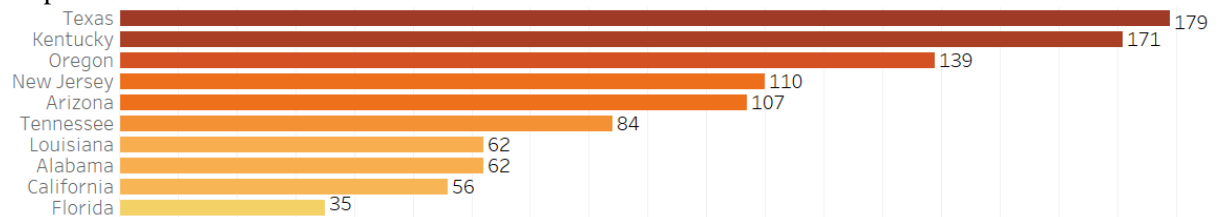
13. Total events by months.

14. Total events and cumulative events by months, quarters, and year.

	YEAR	QUARTER	...	MONTH	NUMBER_OF_EVENTS	CUMULATIVE_EVENTS
1	2,021	1		1	4,959	4,959
2	2,021	1		2	8,186	13,145
3	2,021	1		3	7,015	20,160
4	2,021	2		4	4,495	24,655
5	2,021	2		5	7,291	31,946
6	2,021	2		6	10,373	42,319
7	2,021	3		7	12,783	55,102
8	2,021	3		8	11,663	66,765
9	2,021	3		9	5,907	72,672
10	2,021	4		10	4,671	77,343
11	2,021	4		11	1,944	79,287
12	2,021	4		12	6,834	86,121