

## Week#5 GIS Table Problems 2018

### Alaska Lightning Strikes

Download the 2018 *Lightning to Date* strike locations for Alaska from

<http://fire.ak.blm.gov/predsvcs/maps.php>

#### *Metadata For Map products And Data Downloads*

##### + Metadata

##### - Data (zipped filegeodatabases)

[AK\\_WildlandFire\\_Jurisdictions\\_2018](#) 

[Alaska\\_Fire\\_Management\\_Option\\_Changes\\_Over](#)

[FireHistory\\_1940\\_2017\\_GeoJSON](#) 

[FireHistory\\_Locations\\_1939\\_2017](#) 

[FireHistory\\_Perimeters\\_1940\\_2017](#) 

[Fire\\_Management\\_Options\\_2018](#) 

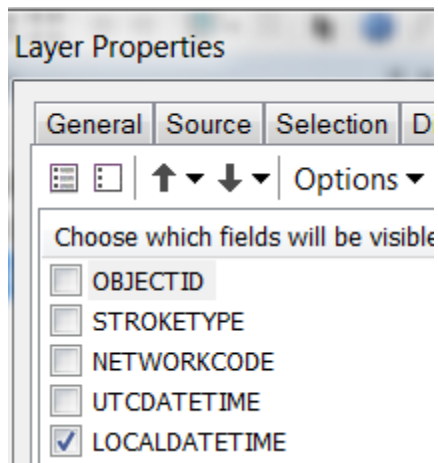
[Fire\\_Management\\_Zones\\_2017](#) 

[Historical\\_Lightning\\_1986\\_2017.gdb](#) 

[Lightning to Date.gdb](#) 

**Create a bar chart showing the percentage of lightning strikes by hour of day.**

#### 1) Make fields invisible



**except LOCALDATETIME**

#### 2) Add a field for hour of day and compute Hour of Day using Field Calculator DatePart function:

ThisYearToDate0802

	LOCALDATETIME
8/3/2018 5:54:31 AM	
8/3/2018 5:32:11 AM	
8/3/2018 5:24:25 AM	
8/3/2018 5:03:56 AM	
8/3/2018 4:42:50 AM	
8/3/2018 4:14:05 AM	
8/3/2018 4:07:00 AM	

Add Field

Name:

Type:

HOUR =  
 DatePart ("h", [LOCALDATETIME])

ThisYearToDate0802

	LOCALDATETIME	HOUR
8/3/2018 5:54:31 AM		5
8/3/2018 5:32:11 AM		5
8/3/2018 5:24:25 AM		5
8/3/2018 5:03:56 AM		5
8/3/2018 4:42:50 AM		4
8/3/2018 4:14:05 AM		4

**3) Use Frequency to output to table:**

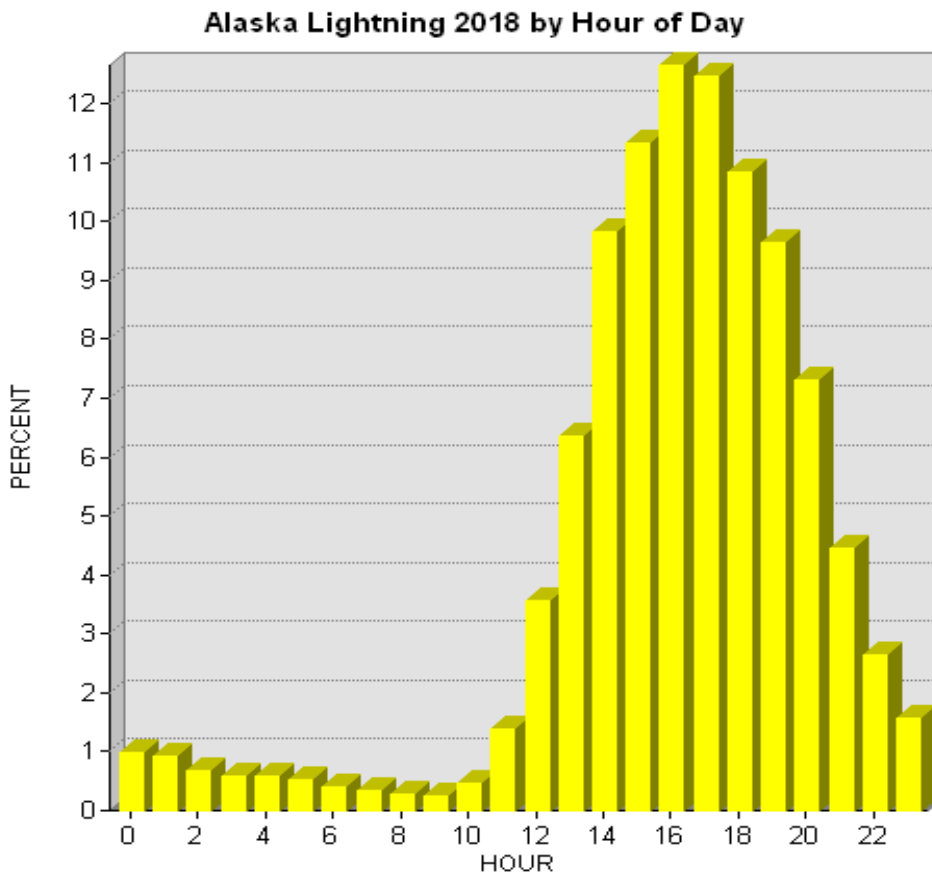
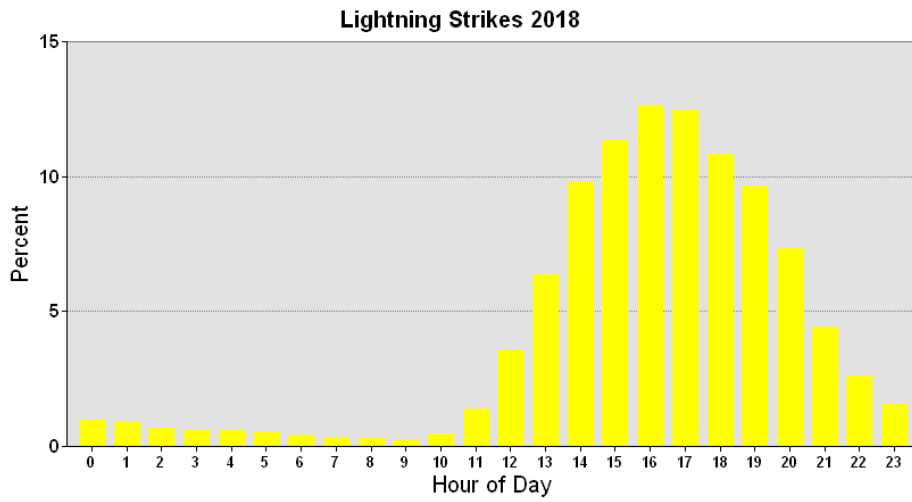
HOUR	FREQUENCY
0	764
1	711
2	535
3	459
4	452

**4) Add field and compute Percent for each row:**

PERCENT =  
 [FREQUENCY] / 78455 \* 100.0

HOUR	PERCENT	FREQUENCY
0	1.0%	764
1	0.9%	711
2	0.7%	535
3	0.6%	459

5) Create graph with Percent on y-axis, Hour on x-axis



## Ground Truthing Vegetation Polygons

Download and unzip Week5\_Tables.zip from [http://dverbyla.net/nrm338/blackboard\\_data/](http://dverbyla.net/nrm338/blackboard_data/)

The dbf table GroundTruth.contains the actual forest type from field sampling (Truth) and the polygon vegetation type estimated from aerial photography.

GroundTruth	
Truth	Polygon
Aspen	Aspen
Aspen	Aspen
Aspen	Aspen
Aspen	Birch
Aspen	Aspen
Aspen	Aspen
Aspen	Aspen
Balsam Poplar	Aspen
Balsam Poplar	Balsam Poplar
Balsam Poplar	Balsam Poplar
Balsam Poplar	Balsam Poplar

The table contains the polygon forest class and the actual ground truth forest class for a location inside each of the 263 polygons. Process the table to produce an “error matrix” with the number of correct classifications along the diagonal.

Polygon Class:	Truth	Truth	Truth	Truth	Truth	Truth	Total	Polygons	Accuracy
	Aspen	Balsam_Poplar	Birch	Black_Spruce	Mixed_Forest	White_Spruce			
Aspen	6	3	2	0	0	0	11		55%
Balsam Poplar	0	58	0	0	0	0	58		100%
Birch	1	1	6	0	1	0	9		67%
Black Spruce	0	0	0	48	0	5	53		91%
Mixed Forest	0	0	0	0	55	0	55		100%
White Spruce	0	0	0	4	6	67	77		87%
Total Truth Points	7	62	8	52	62	72			
Class Accuracy	86%	94%	75%	92%	89%	93%			

1) **Frequency** to output new table:

	Truth	Polygon	FREQUENCY
	Aspen	Aspen	6
	Aspen	Birch	1
	Balsam Poplar	Aspen	3
	Balsam Poplar	Balsam Poplar	58
	Balsam Poplar	Birch	1
	Birch	Aspen	2
	Birch	Birch	6
	Black Spruce	Black Spruce	48
	Black Spruce	White Spruce	4
	Mixed Forest	Birch	1
	Mixed Forest	Mixed Forest	55
	Mixed Forest	White Spruce	6
	White Spruce	Black Spruce	5
	White Spruce	White Spruce	67

2) Pivot Table to output error matrix table

Polygon	Aspen	Balsam Poplar	Birch	Black Spruce	Mixed Forest	White Spruce
Aspen	6	3	2	0	0	0
Balsam Poplar	0	58	0	0	0	0
Birch	1	1	6	0	1	0
Black Spruce	0	0	0	48	0	5
Mixed Forest	0	0	0	0	55	0
White Spruce	0	0	0	4	6	67

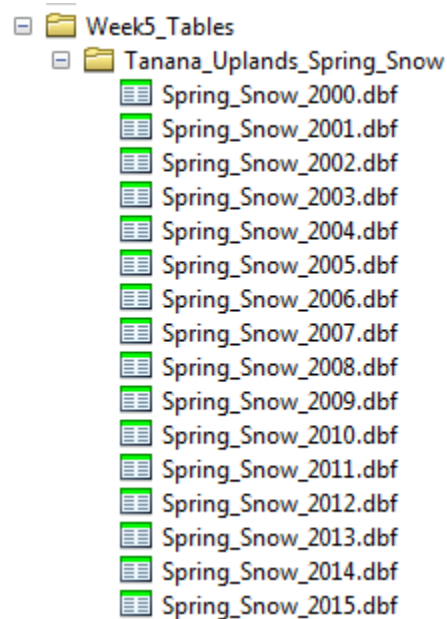
3) Table to Excel to rename columns and compute percents:

Polygon Class:	Truth Aspen	Truth Balsam Poplar	Truth Birch	Truth Black Spruce	Truth Mixed Forest	Truth White Spruce	Total Polygons	Accuracy
Aspen	6	3	2	0	0	0	11	55%
Balsam Poplar	0	58	0	0	0	0	58	100%
Birch	1	1	6	0	1	0	9	67%
Black Spruce	0	0	0	48	0	5	53	91%
Mixed Forest	0	0	0	0	55	0	55	100%
White Spruce	0	0	0	4	6	67	77	87%
Total Truth Points	7	62	8	52	62	72		
Class Accuracy	86%	94%	75%	92%	89%	93%		

## Snow Tables

Download and unzip Week5\_Tables.zip from [http://dverbyla.net/nrm338/blackboard\\_data/](http://dverbyla.net/nrm338/blackboard_data/)

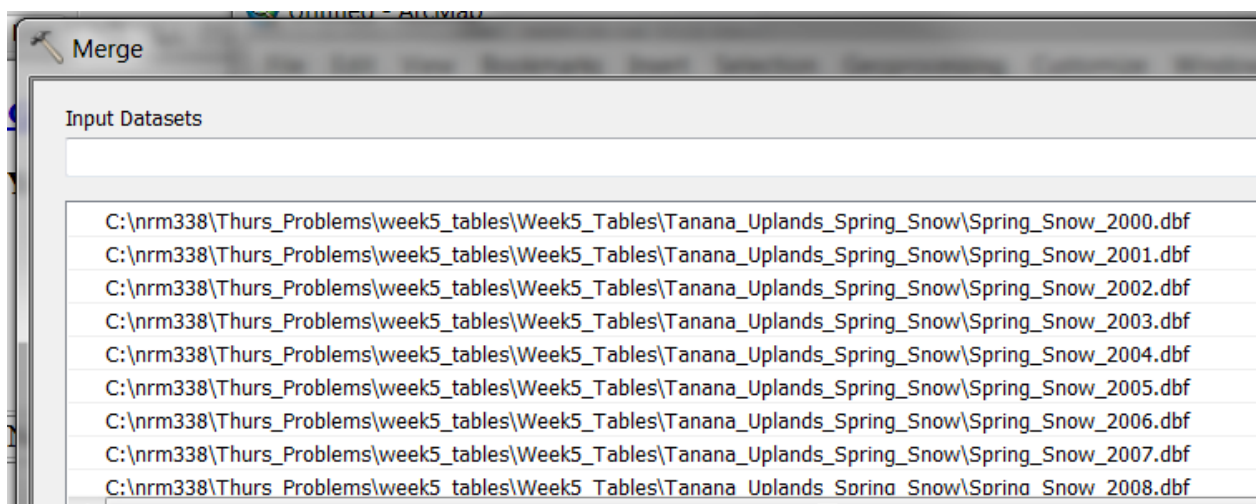
The folder contains tables of day of last spring snow for each elevation zone within the Tanana Uplands ecoregion.



ElevationZones		
OID	Value	Elev_Meter
0	1	150
1	2	250
2	3	350
3	4	450
4	5	550
5	6	650

For each elevation zone with minimum count of at least 1000, develop a chart of 2000-2015 mean and standard deviation of day of last spring snow by elevation zone.

### 1) Merge together the tables



### 2) Definition Query

Definition Query:

COUNT >= 1000

SpringSnow\_2000\_2015

	Value	COUNT	MEAN	Year
	2	2804	116.360556	2000
	3	7397	115.975395	2000
	4	13865	119.371006	2000
	5	21897	123.401653	2000
	6	32118	127.212155	2000
	7	39602	131.042523	2000
	8	36770	137.019391	2000
	9	30461	144.326286	2000
	10	22536	150.383697	2000
	11	14307	155.226323	2000
	12	8410	158.801427	2000
	13	4836	161.757031	2000
	14	2557	164.768088	2000
	15	1205	166.901245	2000
	2	2804	111.100571	2001
	3	7397	112.826416	2001
	4	13865	116.824306	2001
	5	21897	121.64059	2001
	6	32118	126.287471	2001
	7	39602	131.064163	2001

0 (0 out of 224 Selected)

3) Summary Statistics to get mean and standard deviation output table:

Field	Statistic Type
MEAN	MEAN
MEAN	STD

Value	FREQUENCY	MEAN_MEAN	STD_MEAN
2	16	111.3	6.0
3	16	112.5	6.0
4	16	114.6	6.4
5	16	117.6	6.9
6	16	120.4	7.3
7	16	123.3	7.7
8	16	127.0	8.1
9	16	130.9	8.4
10	16	134.3	8.6
11	16	137.3	9.0
12	16	140.2	9.8
13	16	143.6	11.5
14	16	147.2	15.4
15	16	151.5	22.5

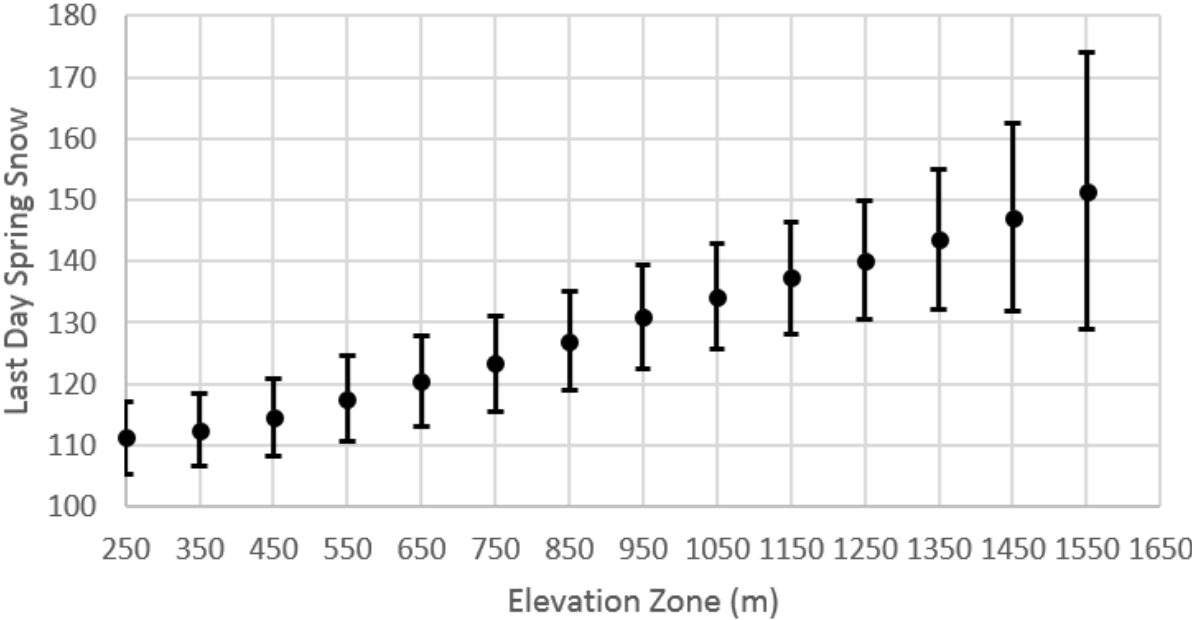
4) Join Field to join elevation zone to table:

Elev_Meter	Value	FREQUENCY	MEAN_MEAN	STD_MEAN
250	2	16	111.3	6.0
350	3	16	112.5	6.0
450	4	16	114.6	6.4
550	5	16	117.6	6.9
650	6	16	120.4	7.3
750	7	16	123.3	7.7
850	8	16	127.0	8.1
950	9	16	130.9	8.4
1050	10	16	134.3	8.6
1150	11	16	137.3	9.0
1250	12	16	140.2	9.8
1350	13	16	143.6	11.5
1450	14	16	147.2	15.4
1550	15	16	151.5	22.5

5) Table to Excel to create error bars from standard deviation:



Mean Last Day of Spring Snow (2000-2015)



## Percent Area

Develop a chart of 2000-2015 mean count expressed in percent by elevation zone.

- 1) Summary statistics to get mean count

SpringSnow_2000_2015				
	Value	COUNT	MEAN	Year
▶	2	2804	116.360556	2000
	3	7397	115.975395	2000
	4	13865	119.371006	2000
	5	21897	123.401653	2000
	6	32118	127.212155	2000
	7	39602	131.042523	2000
	8	36770	137.019391	2000
	9	30461	144.326286	2000
	10	22536	150.383697	2000
	11	14307	155.226323	2000
	12	8410	158.801427	2000
	13	4836	161.757031	2000
	14	2557	164.768088	2000
	15	1205	166.901245	2000
	2	2804	111.100571	2001
	3	7397	112.826416	2001
	4	13865	116.824306	2001

Value	MEAN_COUNT
2	2,804.0
3	7,398.1
4	13,868.4
5	21,899.6
6	32,118.0
7	39,602.0
8	36,770.0
9	30,461.0
10	22,536.0
11	14,307.0
12	8,410.0
13	4,836.0
14	2,557.0
15	1,205.0

- 2) Join Field to get elevation zone for each row

	Value	Elev_Meter	MEAN_COUNT
	2	250	2,804.0
	3	350	7,398.1
	4	450	13,868.4

3) Add Percent field and compute percent

MEAN_COUNT	PERCENT
2,804.0	1.2%
7,398.1	3.1%
13,868.4	5.8%
21,899.6	9.2%
32,118.0	13.5%
39,602.0	16.6%
36,770.0	15.4%
30,461.0	12.8%
22,536.0	9.4%

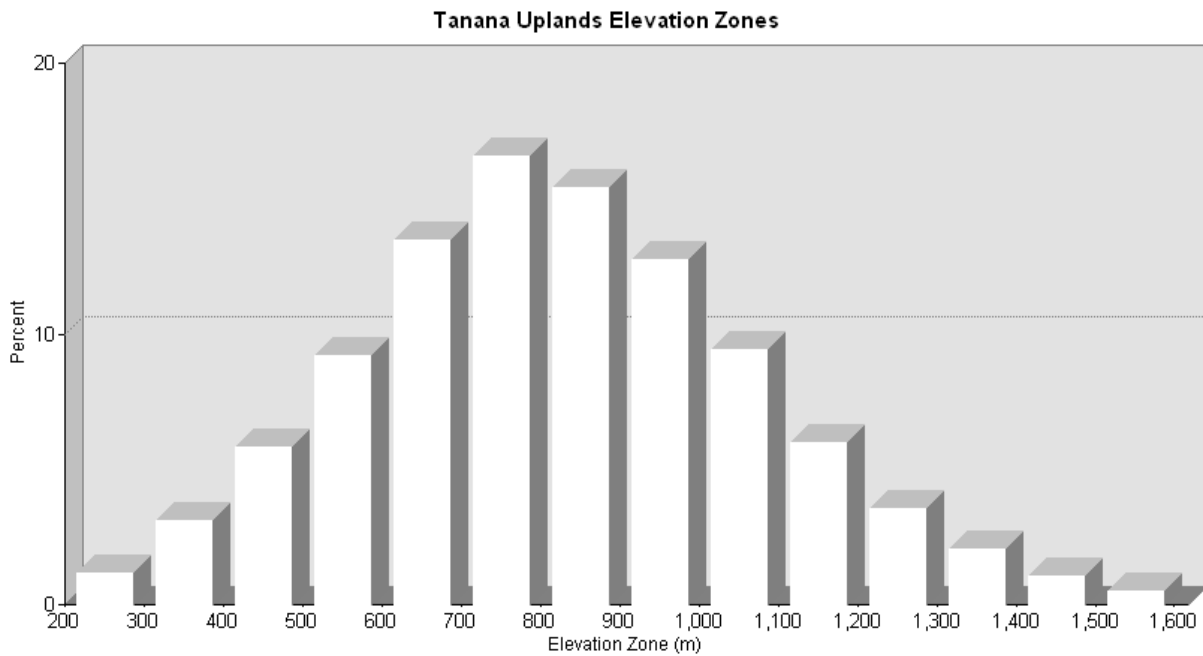
Statistics of SpringSnow\_2000\_

Field: PERCENT

Statistics:

Count: 14  
 Minimum: 0.504665  
 Maximum: 16.585684  
 Sum: 100

4) Create graph



**Percent Area By Elevation Zone**

