

Opening and Exploring Attribute Tables

ISTC Topic:

2.1

In this Chapter you will learn

- How to open attribute tables, sort data and view summary statistics for numerical attributes
- How to add a new field and edit its contents
- How to use the field calculator to compute new values and the geometry calculator to compute areas, distances and center points.

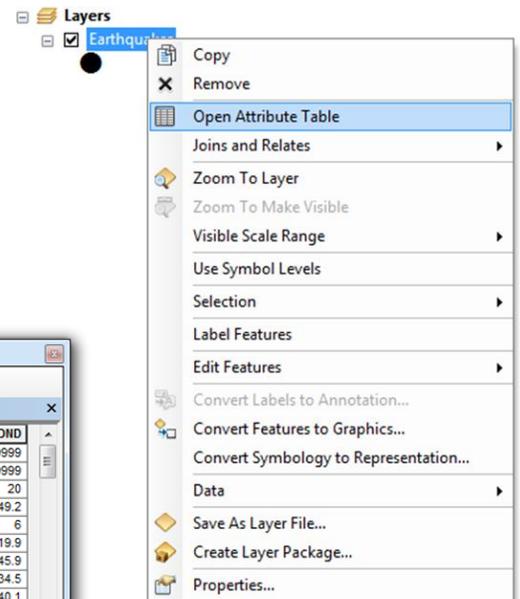
1. Opening and Exploring Attribute Tables

Exercise 1: Open an attribute table, sort data and view summary statistics

1. Start ArcMap and open a new map document. Add the Earthquakes shapefile.
2. Right-click on “Earthquakes” in the table of contents and click “Open Attribute Table” as shown on the right.
3. You can see information about the depth, magnitude and time of historical earthquakes in Idaho
4. The magnitude is found in a field named “MAG”. When the magnitude was unknown a value of “-999” was recorded. Sort the data in the attribute table so that the strongest earthquakes appear near the top. To do this, right-click on the word “MAG” in the table and select Sort Descending as shown below.



FID	Shape *	DEPTH	MAG	LOCATION	YEAR	MONTH	DAY	HOUR	MINUTE	SECOND
0	Point	-9999	-99		1905	11	11	21	29	-9999
1	Point	-9999	5		1928	9	5	5	36	-9999
2	Point	-9999	5		1937	11	19	0	50	20
3	Point	24	4.7		1973	4	14	6	45	49.2
4	Point	5	6.1		1975	3	28	2	31	6
5	Point	7	4.9		1975	3	29	13	1	19.9
6	Point	7	3		1975	4	2	21	6	45.9
7	Point	4	3		1975	4	7	13	42	34.5
8	Point	4	4		1978	11	30	6	53	40.1
9	Point	5	4		1988	11	19	20	0	53.1
10	Point	-9999	-99		1924	11	25	7	10	-9999
11	Point	49	-99		1960	8	7	16	27	16.2



5. What was the strongest earthquake and where did this Earthquake occur? You can find the answer by looking at the sorted data in the attribute table.
6. Sort the YEAR field in ascending order. What is the oldest earthquake in this table?
7. Take a closer look at the attribute table and identify the different areas shown in the image below. In this tutorial we will work with most of the tools labeled in this figure.

1. Tools that can be used on this table. E.g. add field and delete Field

2. Tools for working with selections

3. Tools for moving around a table

4. Number of records in this table

FID	Shape *	DEPTH	MAG	MMI	LOCATION	YEAR	MONTH	DAY	HOUR	MINUTE	SECOND
0	Point	-9999	-999	7	Near Shoshone, Idaho	1905	11	11	21	29	-9999
1	Point	-9999	5.2		In western Idaho	1928	9	5	5	36	-9999
2	Point	-9999	5.4	4	In eastern Idaho	1937	11	19	0	50	20
3	Point	24	4.75	4	In eastern Idaho	1973	4	14	6	45	49.2
4	Point	5	6.14	8	In eastern Idaho	1975	3	28	2	31	6
5	Point	7	4.95	5	In eastern Idaho	1975	3	29	13	1	19.9
6	Point				In eastern Idaho	1975	4	2	21	6	45.9
7	Point				In eastern Idaho	1975	4	7	13	42	34.5
8	Point				In eastern Idaho	1978	11	30	6	53	40.1
9	Point				In eastern Idaho	1988	11	19	20	0	53.1
10	Point	-9999	-999	6	Near Wardboro, Idaho						
11	Point	49	-999	6	Near Soda Springs, Idaho						

8. While it makes sense that unknown fields such as magnitude and depth are marked with a unique value such as “-999”, it would be nice not to see those in the table. You can filter the data to exclude some values from the map and the table. Filtering data does not delete data; it simply makes the data invisible.
9. Right-click on the Earthquakes layer in the table of contents and select Properties. Go to the query tab and set up a query as shown below.

1. Click on the Definition Query tab

2. Click on Query Builder

3. Build the query

4. Click OK

5. Click OK

10. Note that all the earthquakes with a magnitude of -999 have been removed from your attribute table.

11. Right-click on MAG in your table and select Statistics as shown below.

The screenshot shows a table window with columns: FID, Shape, DEPTH, MAG, MMI, LOCATION, YEAR, MONTH, DAY, HOUR, MINUTE, SECOND. A context menu is open over the MAG column, with 'Statistics' highlighted. The 'Statistics of Earthquakes' dialog box shows the following statistics for the MAG field:

Field	Statistics
MAG	Count: 49
	Minimum: 3.1
	Maximum: 6.96
	Sum: 235.96
	Mean: 4.81551
	Standard Deviation: 0.663245

The histogram shows a distribution of earthquake magnitudes, with a peak between 4.5 and 5.0.

12. Display the statistics for the MONTH field using the same method as in the previous step. What is the most common month for earthquakes to occur?

13. Use the figure below to select all the earthquakes that occurred in 1983.

The figure illustrates the process of selecting records from a table based on a specific attribute (YEAR = 1983). The steps are as follows:

1. Click drop-down button and click "Select by Attributes"
2. Use those buttons...
3. ...to set up this query
4. Click "Apply" then "Close"
5. Selected records are highlighted
6. Use those two buttons to toggle between viewing all records and only those that are selected
7. Note that there were 8 earthquakes in 1983

The 'Select by Attributes' dialog box shows the following query setup:

```
Method: Create a new selection
"YEAR"
"MONTH"
"DAY"
"HOUR"
"MINUTE"
1983
And
1985
Or
1986
1988
1991
Is
SELECT * FROM Earthquakes WHERE:
"YEAR" = 1983
```

The final screenshot shows the table with 8 records highlighted, corresponding to earthquakes that occurred in 1983.

14. Click on the Zoom to Selected button as shown on the right. Did the earthquakes in 1983 occur in a cluster or were they dispersed all over Idaho?

15. Click on the Switch Selection button. What does that do? How many records are now selected?

16. Use the Clear Selection button to clear your selection.

The screenshot shows a software window titled 'Table' with a menu bar and a toolbar. The main area contains a table of earthquake records. Three buttons are highlighted with black boxes: 'Switch Selection' at the top, 'Zoom to Selected' in the toolbar, and 'Clear Selection' over the table header. The table has columns for 'LOCATION', 'YEAR', 'MONTH', 'DAY', 'HOUR', 'MINUTE', and 'SECOND'. The status bar at the bottom indicates '(8 out of 49 Selected)'.

	LOCATION	YEAR	MONTH	DAY	HOUR	MINUTE	SECOND
1991		12	28	7	0	21.1	
1917		12	12	10	50	-9999	
1937		11	19	0	50	20	
8 Point	4 4.7 5	In eastern Idaho	1978	11	30	6	53 40.1
9 Point	5 4.3	In eastern Idaho	1988	11	19	20	0 53.1
22 Point	9 4.4 6	Near Cascade, Idaho	1977	11	27	9	25 55.6
28 Point	10 4.3	In western Idaho	1993	11	10	14	54 24.9
49 Point	11 4.18 3	In eastern Idaho	1983	11	6	21	4 48.7
56 Point	10 4.8 5	In eastern Idaho	1992	11	10	10	46 18.1
57 Point	10 4.7 5	In eastern Idaho	1992	11	10	10	54 50.8
12 Point	7 4.1 6	In southeast Idaho	1978	10	24	20	30 59.3
13 Point	7 4.7 6	Near Soda Springs, Idaho	1982	10	14	4	10 24.3
18 Point	12 4.7 5	In western Idaho	1978	10	29	13	46 45.6
40 Point	10 5.5	In western Idaho	1983	10	29	23	29 11.8
41 Point	11 4.73	In western Idaho	1983	10	29	23	39 5.4