Creating Earthquake Boundaries Shapefiles

Elizabeth Fernandez

Geographic Information Network of Alaska

Workflow solid boundaries: ASCII to excel table, XY Table to Point, Point to Line, Feature to Polygon, Merge features

I began by importing the ASCII file into excel to create a table of XY values. After opening ArcGIS Pro, I used the XY Table to Point tool to make each set of coordinates into a point shapefile.

I then used the Point to Line tool to create a line shapefile. Following that, I created a polyon shapefile using the Feature to Polygon tool.

I made a single shapefile from all of the individual boundary polygon shapefiles by using the Merge tool and adding a field to the final merged shapefile's attribute table to label each polygon by year.

Lastly, I used the project tool to converted the shapefile into the WGS1984 datum.

Getting started

- 1. Open ArcGIS Pro
- 2. Insert map
 - a. Click on Insert Tab
 - b. Click New Map



- 3. Change Map Projection
 - a. Right click on Map on the Contents pane on the left side of the screen
 - b. Open Properties



c. Ensure that Coordinate Systems is set to NAD 1927 Alaska Albers (Meters)

General	Select the Coordinate System to view the available options.
Extent	Current XY Details Current Z
Clip Layers Metadata	NAD 1927 Alaska Albers (Meters) <pre></pre>
Coordinate Systems	
Transformation	XY Coordinate Systems Available Search 🔎 - 🍸 👘 🔻
abels	▶ Polar ^
Color Management	▷ State Plane
	State Systems
	🍘 NAD 1927 Alaska Albers (Meters) 🛛 🤺
	(I) NAD 1927 Alaska Albers (US Feet)
	(ii) NAD 1927 California (Teale) Albers (Meters) ~
	Enable wrapping around the date line

4. Create Excel Table

- a. Open Excel
- b. Click on the **Data** tab
- c. Click on the From Text/CSV tool
- d. Import the data and label each respective column X & Y

A	lutoSave 🧿	off) 🛛 🗠) ~ (2	~ -	1938.xlsx	-	D Sea	arch
Fi	le Hon	me Insert m Text/CSV m Web	Page Rec	Layout F ent Sources sting Connec	Formulas		Review Ieries & Cor	View mectio
Da	ta 🗸 🛗 Fro	m Table/Range	е		A A	All 👻 [🗟 Ed	it Links	
		Get & Trans	form Data			Queries	& Connectio	ns
A1		- : ×	~	f _x x				
	А	в	C	D	F	F	G	l i
1	x	Y	C	0	-		0	
2	199.2111	55,2304						
3	199.0637	55.1231						
4	198.9256	54.989						
5	198.9256	54.8348						
6	199.0084	54.6873						
7	199.2295	54.6739						
8	199.4781	54.7007						
9	199.782	54.7275						
10	200.2425	54.7208						
11	200.6385	54.7409						
17		tapelomax_	1938	(+)				
Rea	dy							

e. Save the file

5. Use XY Table to Point tool

- a. Click the Analysis tab
- b. Click **Tools** to open the Geoprocessing tab
- c. In the search bar, type "XY Table to Point"

- d. Click on the tool
- e. Input the excel table as the Input table and ensure that Coordinate System is set to "GCS WGS 1984"
- f. Click Run

Geoproces	ssing	⊸ џ ×
	XY Table To Point	\oplus
Parameters	Environments	?
Input Table		
tapeloma	< <u>1938</u> \$	
Output Fea	ture Class	
tapelomax	<_1938_points	
X Field		
Х		-
Y Field		
Y		•
Z Field		
		•
Coordinate	System	
GCS_WGS_	1984	-
		🕟 Run 💌

6. Run the **Points to Line** tool

- a. Input Features will be Points layer
- a. Output Feature Class will be the path and what you want to name the file
- b. Line Field and Sort Field can remain blank
- c. Check Close Line
- d. Check that the projection is in WGS_1984
- e. Click **Run**

Geoprocessing • # x Points To Line • Parameters Environments ⑦ Input Features tapelomax_1938_points.shp • • Output Feature Class tapelomax_1938_line.shp Line Field • Sort Field • Close Line • Run •			
Points To Line Parameters Environments Input Features tapelomax_1938_points.shp tapelomax_1938_line.shp Line Field Sort Field To Close Line Image: Close Line	Geoproces	sing	* † ×
Parameters Environments Input Features Implements tapelomax_1938_points.shp Implements Output Feature Class Implements tapelomax_1938_line.shp Implements Line Field Implements Sort Field Implements Implements Implements Output Feature Class Implements Sort Field Implements Implements Implements		Points To Line	\oplus
Input Features tapelomax_1938_points.shp Output Feature Class tapelomax_1938_line.shp Line Sort Field ✓ Close Line Image: Sort Field Image: Sort Field <td>Parameters</td> <td>Environments</td> <td>?</td>	Parameters	Environments	?
tapelomax_1938_points.shp	Input Featu	res	
Output Feature Class tapelomax_1938_line.shp Line Field Sort Field Close Line Close Line	tapelomax	_1938_points.shp	-
tapelomax_1938_line.shp Line Field Sort Field ✓ Close Line Close Line Close Line Close Line Close Line	Output Feat	ture Class	
Line Field	tapelomax	_1938_line.shp	
Sort Field ▼ Close Line	Line Field		
Sort Field Close Line Run *			•
▼ √ Close Line	Sort Field		
♥ Close Line			•
Run *	✓ Close Li	ne	
► Run ▼			
€ Run ▼			
€ Run ▼			
€ Run ▼			
► Run ▼			
► Run ▼			
€ Run ▼			
€ Run ▼			
► Run •			
► Run ▼			
► Run ▼			
€ Run ▼			
💽 Run 🔹			
🕟 Run 💌			
💽 Run 💌			
💽 Run 🔻			
🕟 Run 💌			
🕟 Run 🔹			
💽 Run 👻			
💽 Run 💌			
💽 Run 💌			
🕑 Run 👻		ſ	
			🕟 Run 🔹
		L	

- 7. Run the Feature to Polygon tool
 - a. Input Features will be the Line layer
 - a. Output Feature Class will be the path and what you want to name the file
 - b. Leave Preserve Attributes checked
 - c. Leave Label Features blank
 - d. Under the Environments tab of the tool, check that the projection is in Alaska Albers, or the same projection as the Current Map
 - e. Click Run

Geoprocessing	→ ↓ ×
E Feature To Polygon	\oplus
Parameters Environments	?
Input Features	
tapelomax_1938_line.shp	
Output Feature Class	
tapelomax_1938	
✓ Preserve attributes	
Label Features	
	Run 🔹

- 8. Use Merge tool to make a single Shapefile of all boundaries
 - a. Input datasets should include all of the individual boundary shapefiles
 - b. Output Dataset will be the path and what you want to name the file
 - c. Leave all other boxes at default settings
 - d. Click on the Environments tab to ensure that Coordinate System is set to "GCS_WGS_1984"
 - e. Click Run

Geoprocessing 🗸 🖣 🗙				
	E Merge			
Parar	Parameters Environments (?)			
Inpu	Input Datasets			
	tapelomax_1938.	shp		
	tapelomax_1946.	shp		
	tapelomax_1948.	shp		
	tapelomax_1957.s	i 📄		
	tapelomax_1964.s	🗃 📗		
	tapelomax_1965.s	🗃 📗		
	tapelomax_1986.s	🗃 📗		
	tapelomax_1996.s	🗃 📗		
	tapelomax_2003.s	귵 📗		
	tapelomax_2020.s	귵 📗		
Out	put Dataset			
EQ	boundaries_Merge	•		
Fiel	d Map		,	
0	output Fields 🕂	Source Prope	rties 📕	
	ld (10)	Merge Rule First	•	
		C:\Users\fernan		
		Id 👻	~	
			Run 🝷	

- f. If desired, after making the shapefile of all polygons, open the attribute table and add a new field labeled "Year" to add the year of the EQ boundary to each polygon
- 9. Use **Project** tool to convert Shapefile into WGS1984 datum
 - a. Search for "project" tool in the geoprocessing search bar
 - b. Select the tool
 - c. Input dataset will be the shapefile that should need a change in datums
 - g. Output Dataset will be the path and what you want to name the file
 - d. Output Coordinate System will be WGS1984
 - e. Check Preserve Shape box
 - f. Click on Run

Geopro	ocessing	• џ ×			
	Project	\oplus			
Parame	ters Environments	?			
Input D	Jataset or Feature Class				
tapelo	max_eqboundaries_	-			
Inp NAI	Input Coordinate System: NAD_1927_Alaska_Albers_Meters				
Output	Dataset or Feature Class				
tapelo	max_eqboundaries				
Output	Coordinate System				
WGS_	1984_Web_Mercator_Auxiliary_Sphere	-			
Geogra	aphic Transformation \overline{igodot}				
NA	AD_1927_To_WGS_1984_79_CONUS	-			
		•			
✓ Pre	serve Shane				
Maxim	um Offset Deviation				
	Unknown	-			
		Run 🔻			
Ca La	a Cr M Ele Ex Ch	. Ge			