



"Re-creating Trippy

AI Generated

Terrain Contours"

**A John Nelson inspired
Tutorial**

<https://www.youtube.com/watch?v=RTLBgd8MmrY>



John Nelson Maps

I make maps at Esri, a software company for map nerds. But then I'll make videos showing how to make maps. Sometimes videos walking through a...



“A while ago I saw a sizzling AI-generated topo image and it was glorious and beautiful and sinuous and tactile and inspiring and intimidating. The more I looked at it, though, the more I suspected I could tease out some tricks to replicate the aesthetic, but using ArcGIS Pro and real honest to goodness data. A topo map of a real place?! Let's do this.” - John Nelson

A topographic map with contour lines and a color gradient from green to yellow to orange, indicating elevation. The map is partially obscured by a semi-transparent grey rectangle on the left side.

But first...data!

you won't believe that all we need is a DEM!

**follow this link to download
tutorial DEM or feel free to use
your own:)**

Opening ArcGIS Pro

Open a New ArcGIS Pro Project and save it to a folder on your computer (the same folder where your DEM is)

Add your DEM to the Project (Add Data)

Note: make sure your project projection is the same as your data!

Now the fun begins



Put on your cartographic wizard hats and get ready for an adventure!

Now the fun begins

**Click on your DEM layer in the Contents pane
and toggle to Imagery>Raster
Functions>Statistics**

We are going to Smooth the DEM!

Using the following inputs:

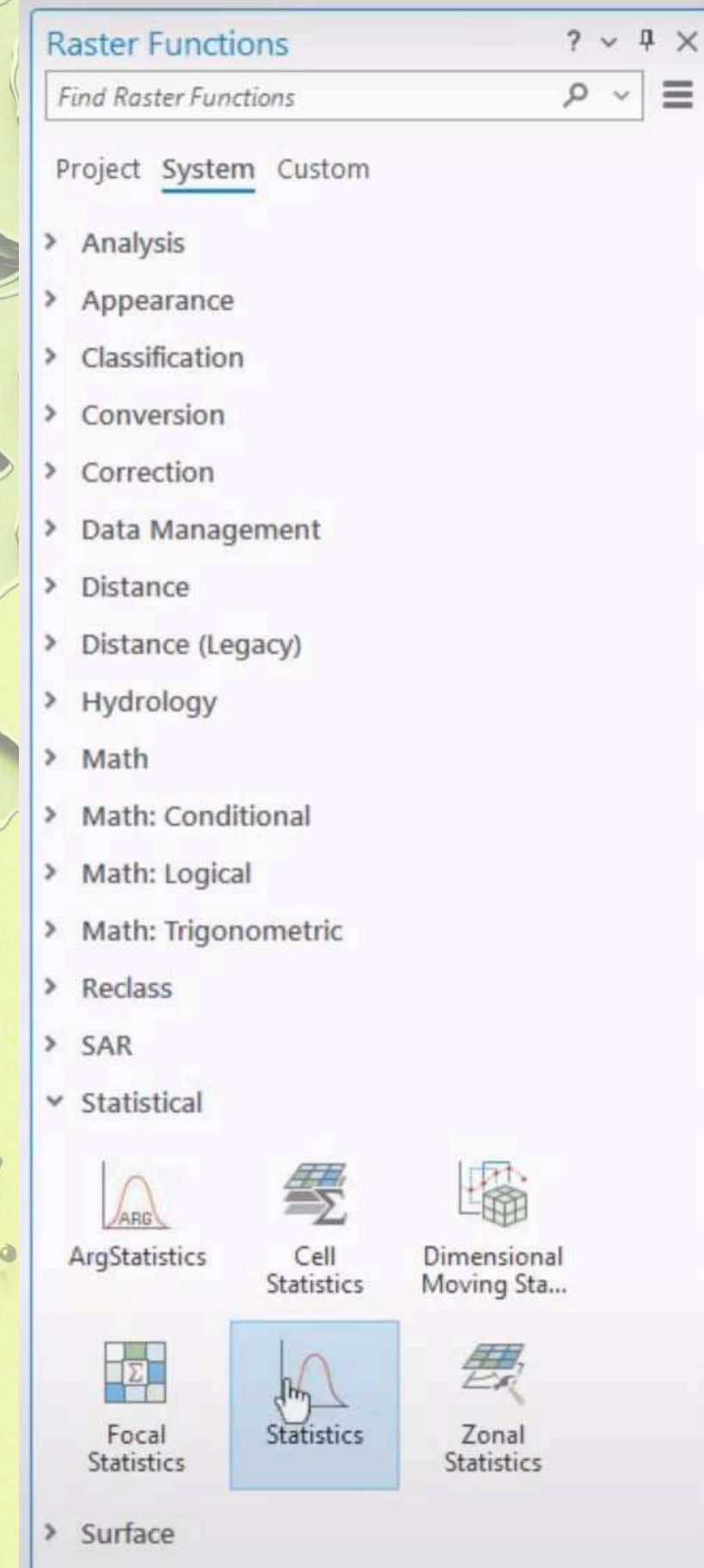
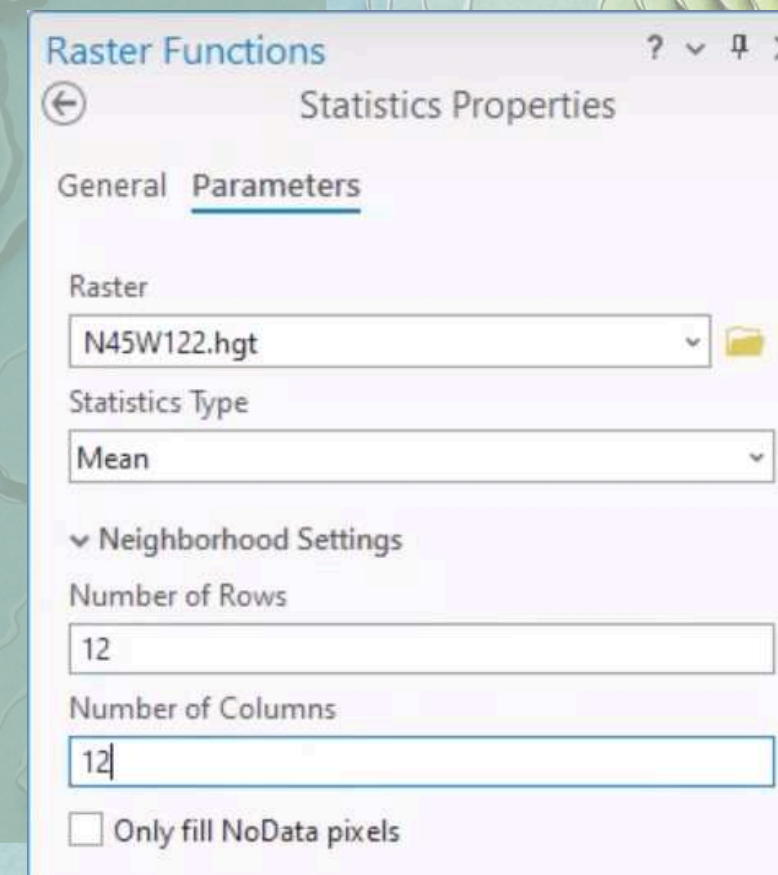
Raster: DEM

Statistic Type: Mean

Rows: 12

Columns: 12

(run this twice)



You can remove the old DEMs

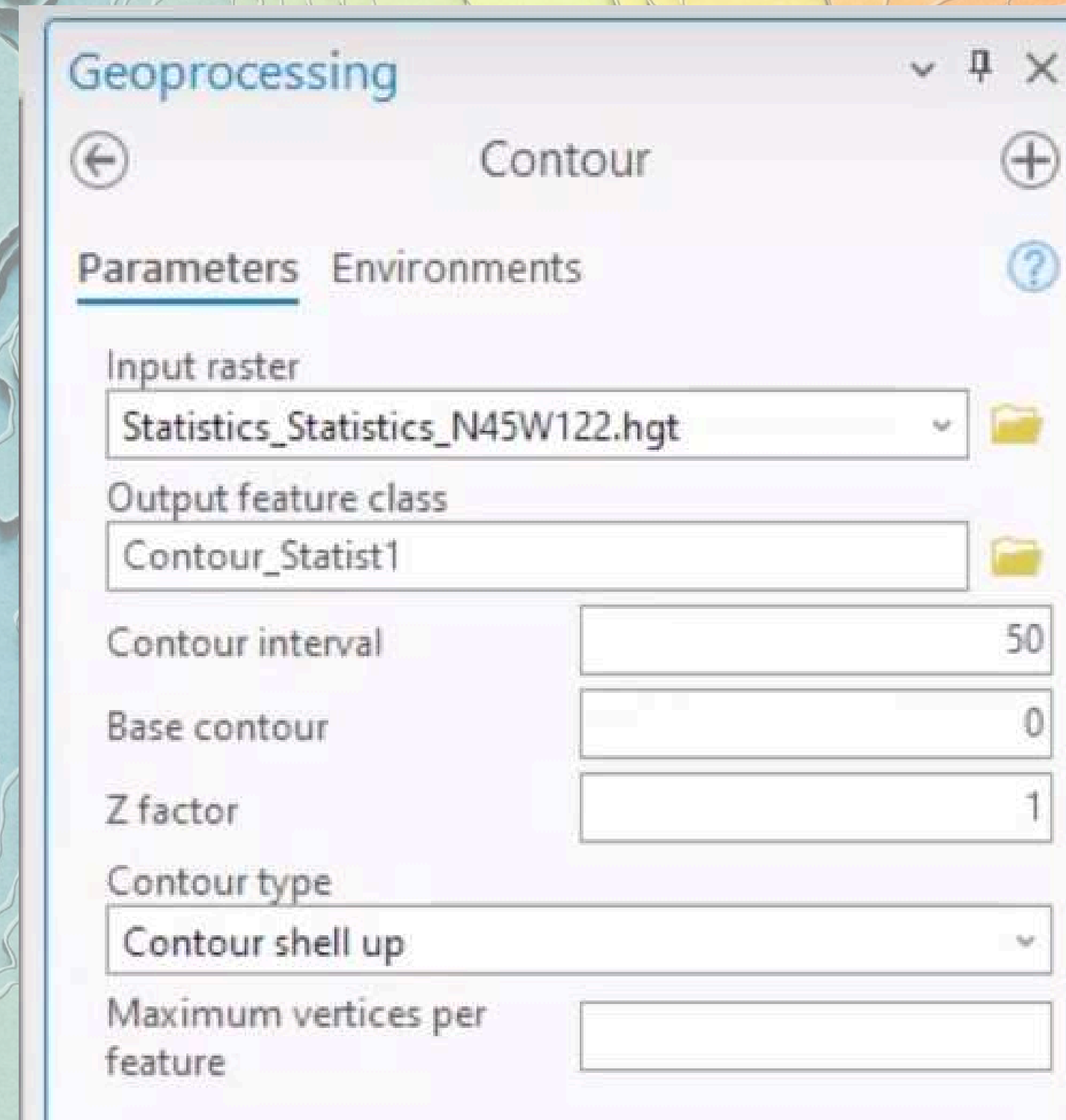
**Next, open the Contour tool in the
Geoprocessing Toolbox**

Using the following inputs:

Raster: smoothed DEM

Contour Interval: 50

Contour Type: Contour shell up



The screenshot shows the 'Geoprocessing' window with the 'Contour' tool selected. The 'Parameters' tab is active, displaying the following settings:

- Input raster:** Statistics_Statistics_N45W122.hgt
- Output feature class:** Contour_Statist1
- Contour interval:** 50
- Base contour:** 0
- Z factor:** 1
- Contour type:** Contour shell up
- Maximum vertices per feature:** (empty field)

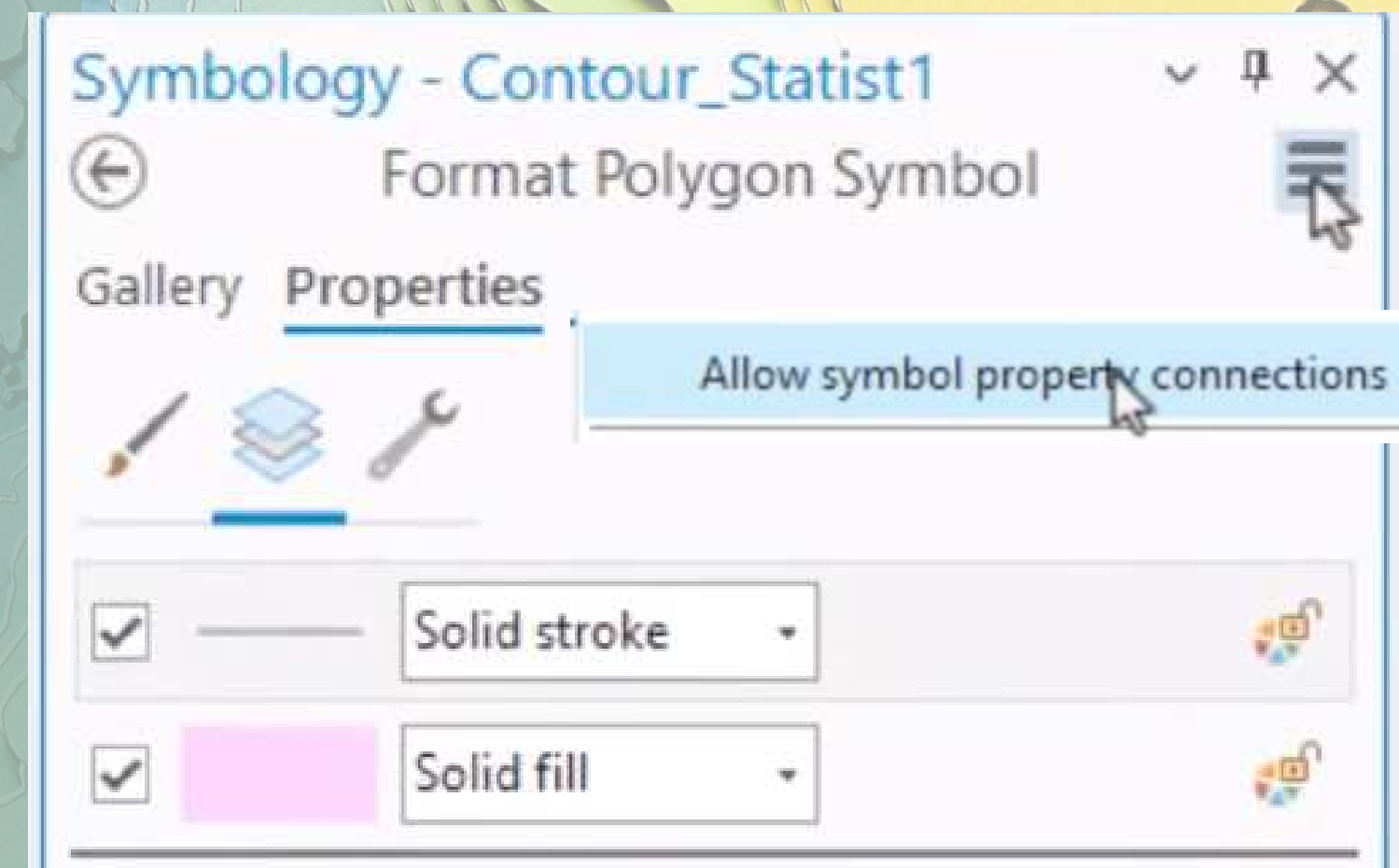
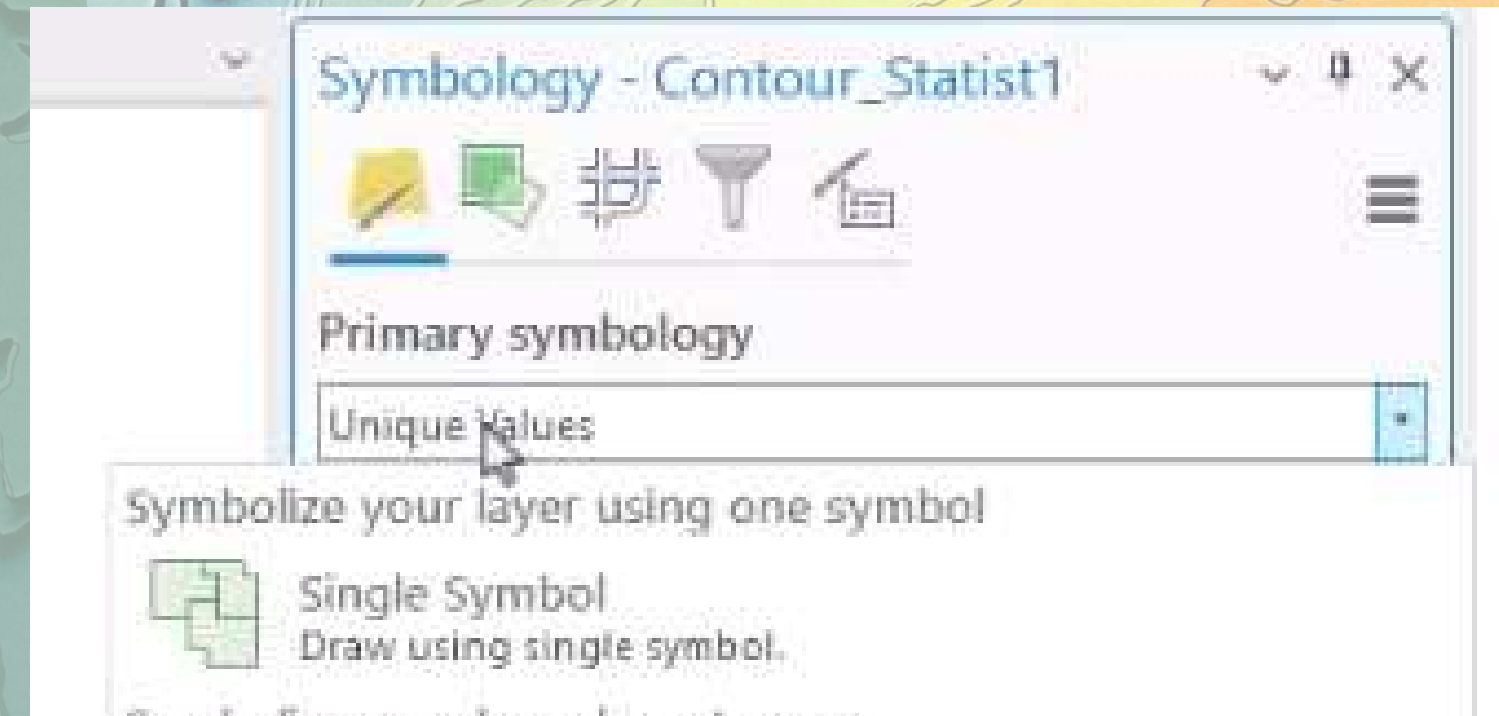
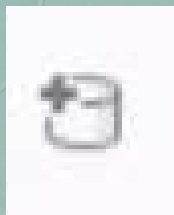
Navigation icons (back, forward, home, search, etc.) are visible at the top of the tool window.

Let's play with some symbology....

Open the symbology window for your Contour layer and change the Primary Symbology to
Unique Values

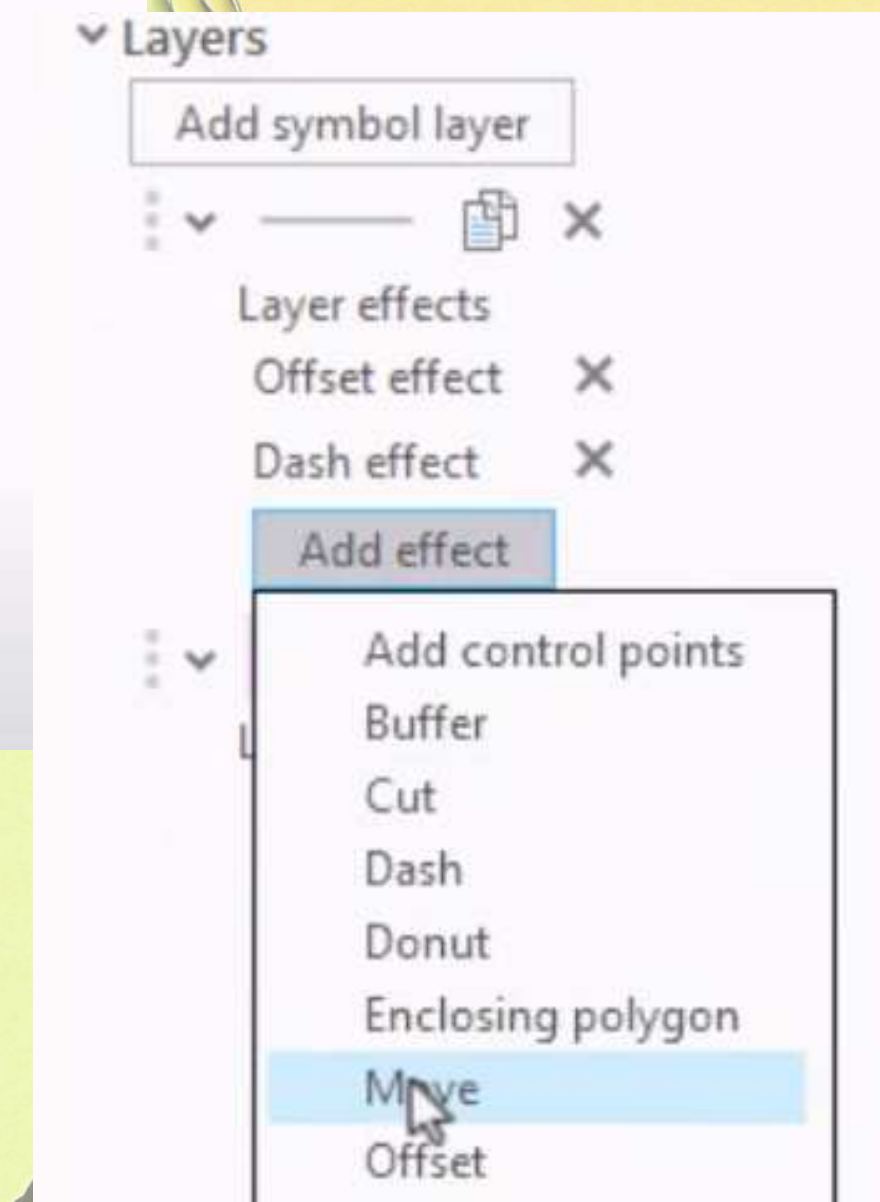
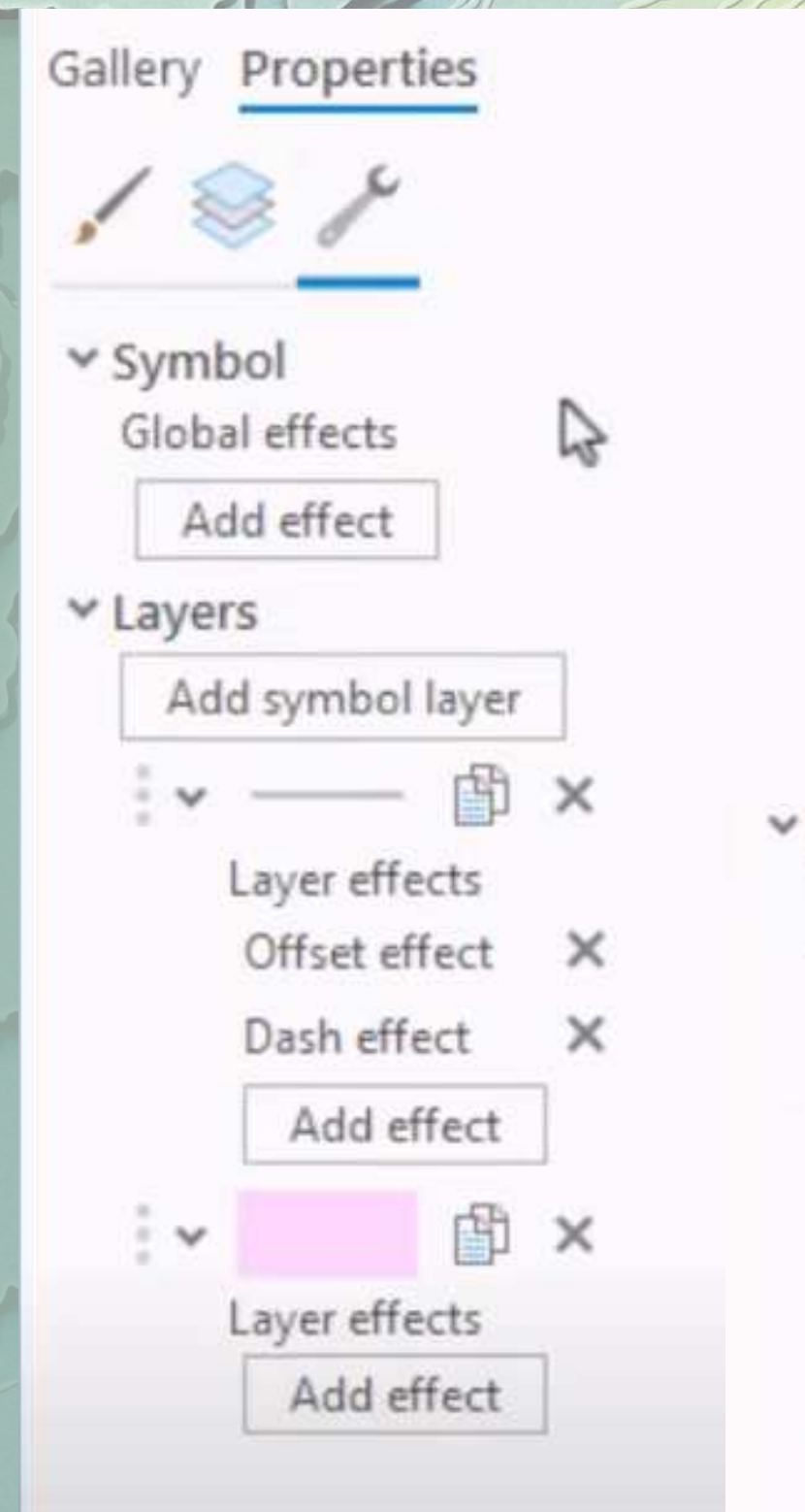
Then, open the properties window and click the three lines in the top right corner and click
Allow symbol property connections

You should see data connection icons next your layer symbology now->



Next, click on the Wrench

Click **Add Effect** and add **Move** to BOTH the Outline and Fill



Back on the Overview page, we can now see a drop down for **Move**



Change **Offset X** and **Offset Y** to 0 for both the Outline and Fill

▼ Move effect

Offset X

0 pt

Offset Y

0 pt

Then, toggle back to the Outline component and click the **Connection icon** next to the Offset Y



Set the Attribute Mapping to **Contour Minimum** and press OK

Set Attribute Mapping

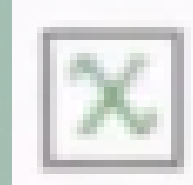
Contour minimum

pt

OK

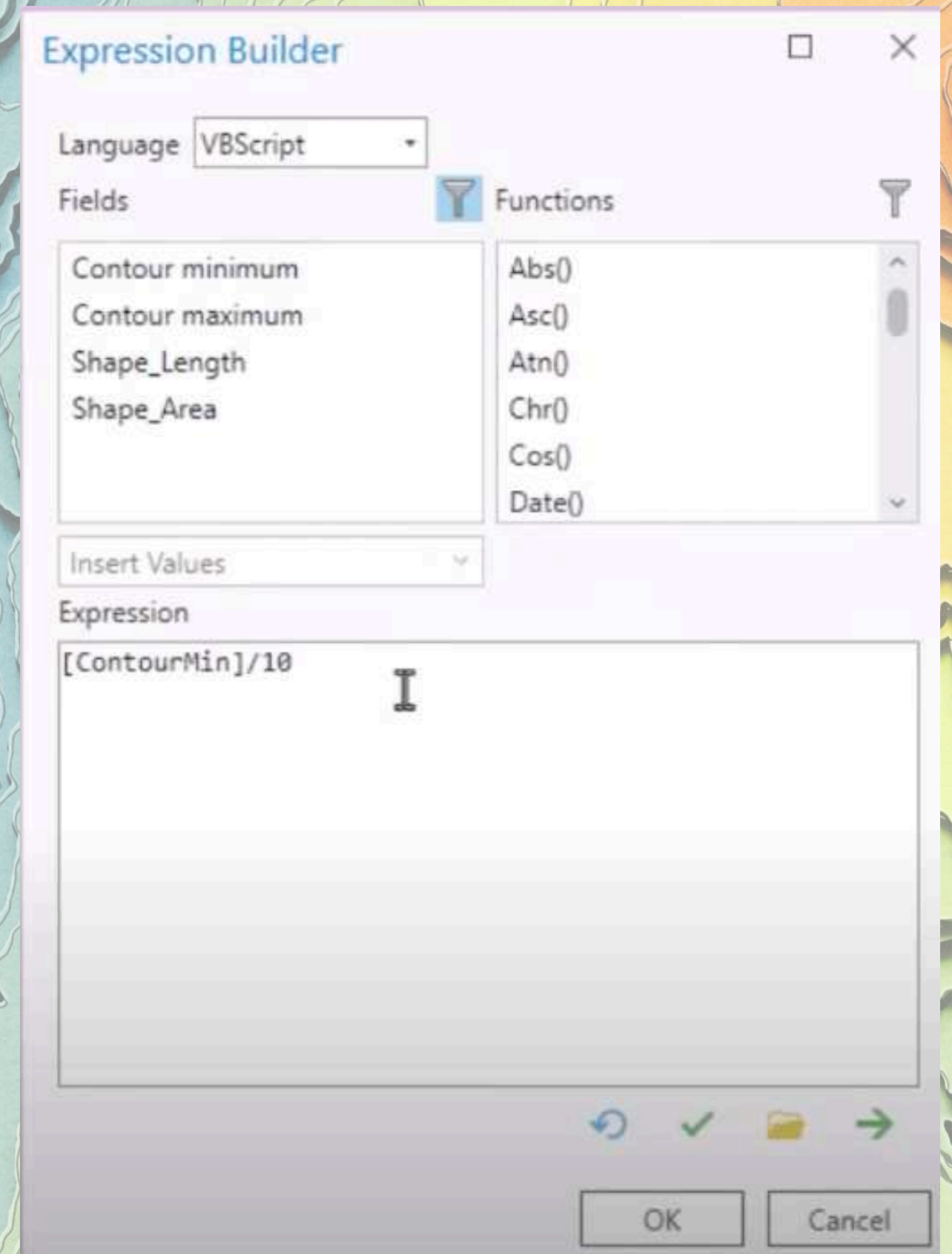
Cancel

Now all of your layers have exploded apart!
But they are a little far apart...



Next, click the **Expression Builder icon** and
divide by 10 (to make the spacing closer
together)

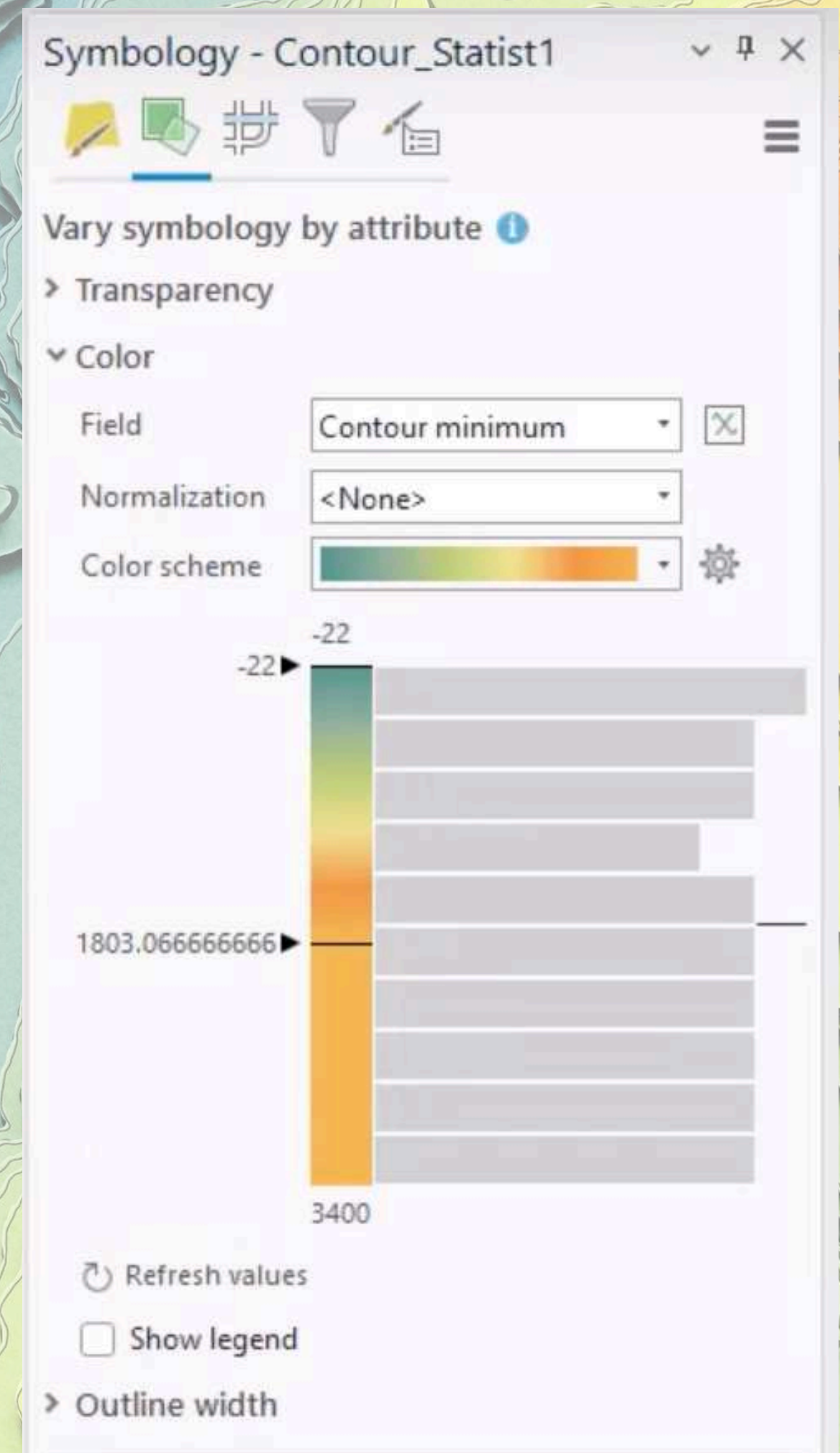
Repeat the steps for the Move effect for the
fill component as well



Now, let's choose some colours!

We can vary symbology by attribute by changing the colour field to **Colour Minimum**

And pick a colour scheme you like

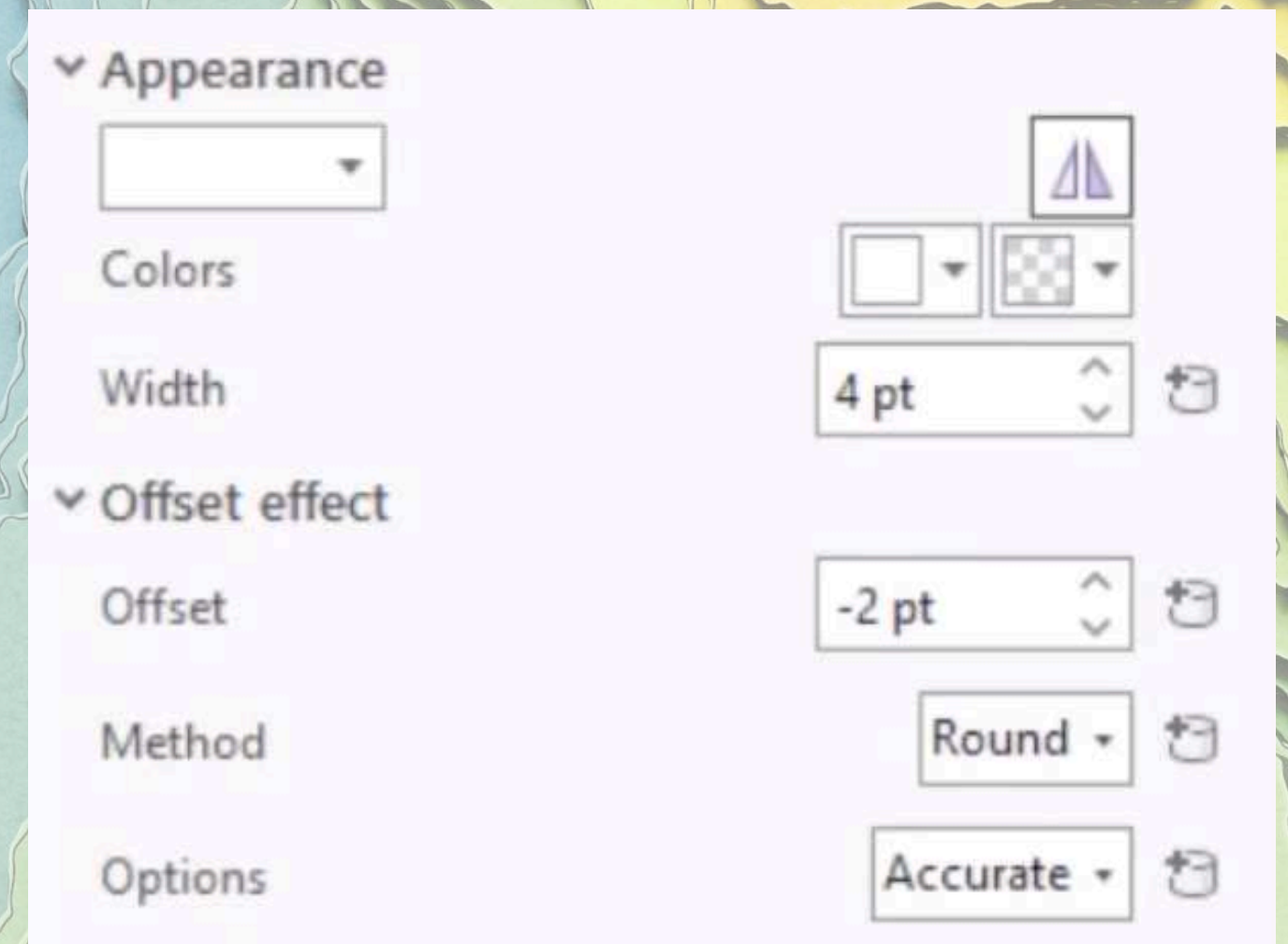
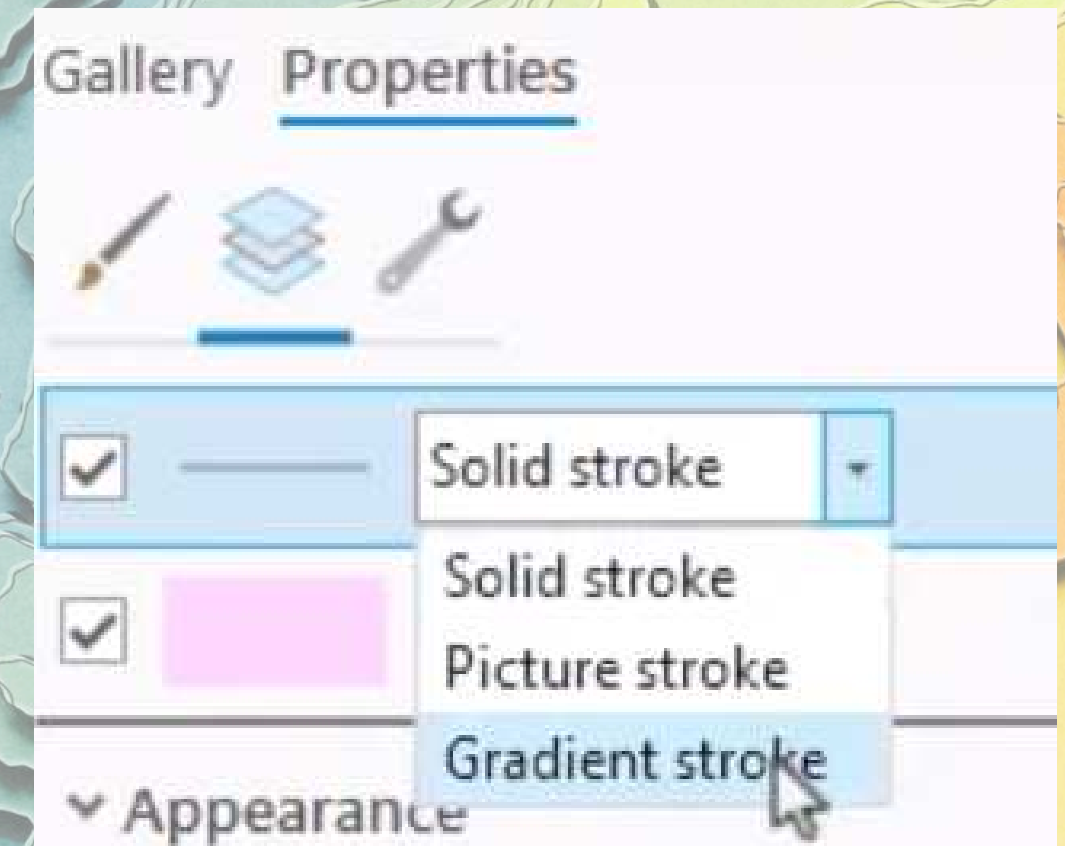
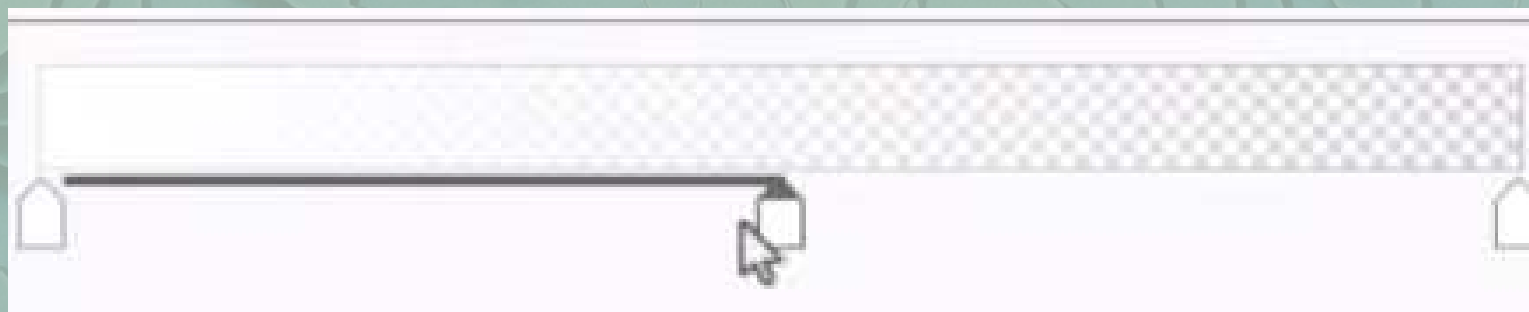


Looks pretty cool so far... but we aren't done yet!

Toggle back to the layer properties and change the stroke to **Gradient stroke**

Increase the Width (**4pt**), decrease the Offset (**-2pt**), and change the Options to **Accurate**

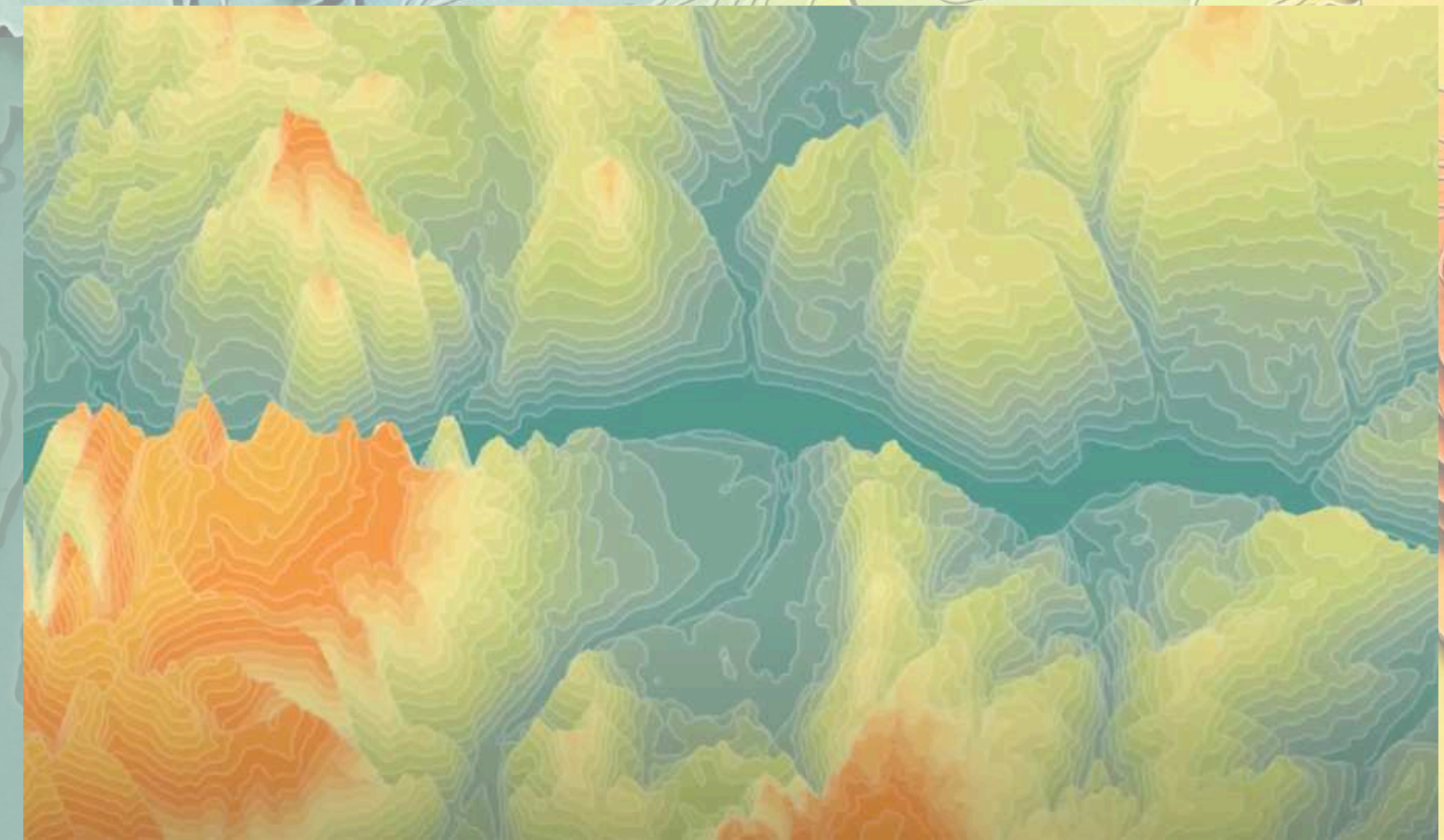
Change the gradient to **White to Transparent White**



Now we have our COLOUR BASE!

Re-name this layer **Colour base and duplicate the layer. Name the new layer **Lightning Overlay**...**

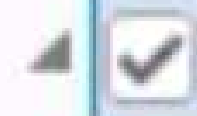
You guessed it! We are going to add more special effects!



Drawing Order



Map



Lightning Ove



Color base

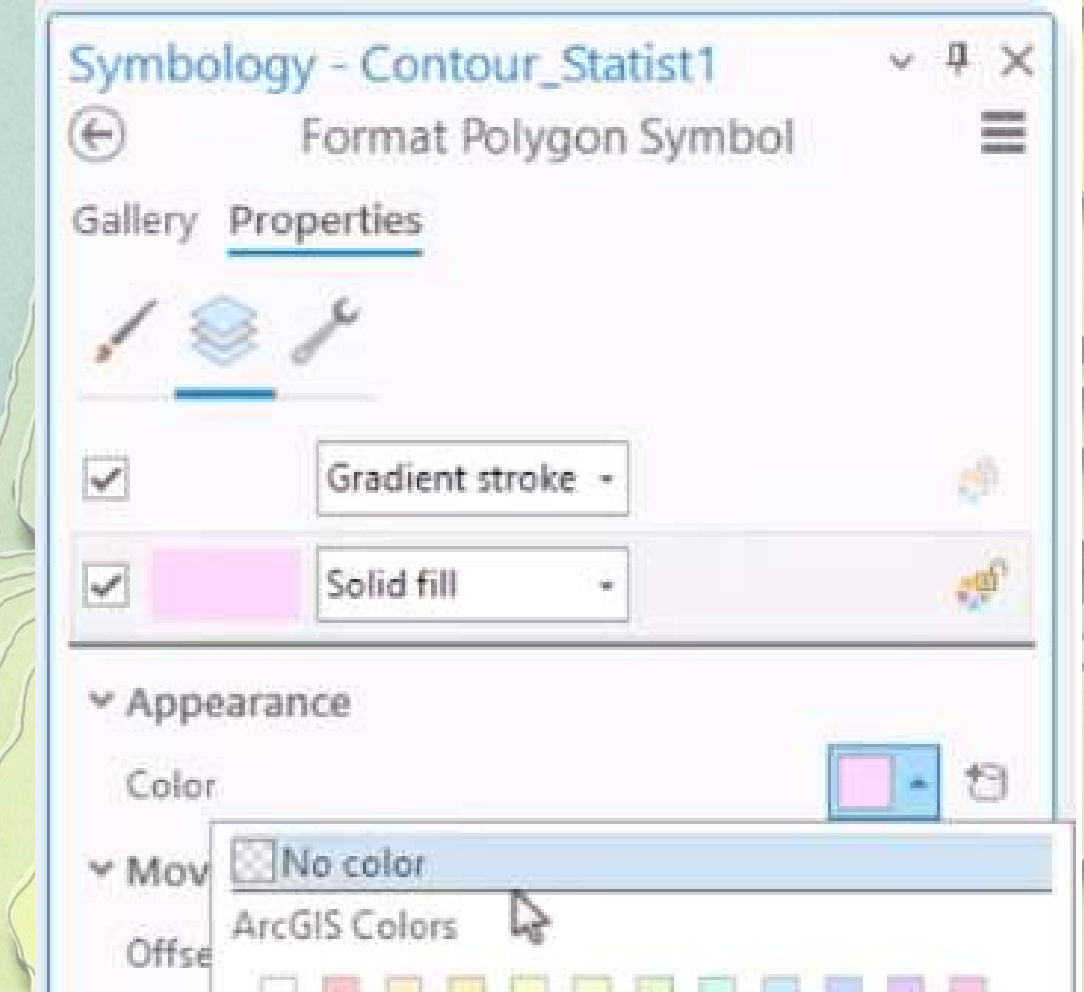
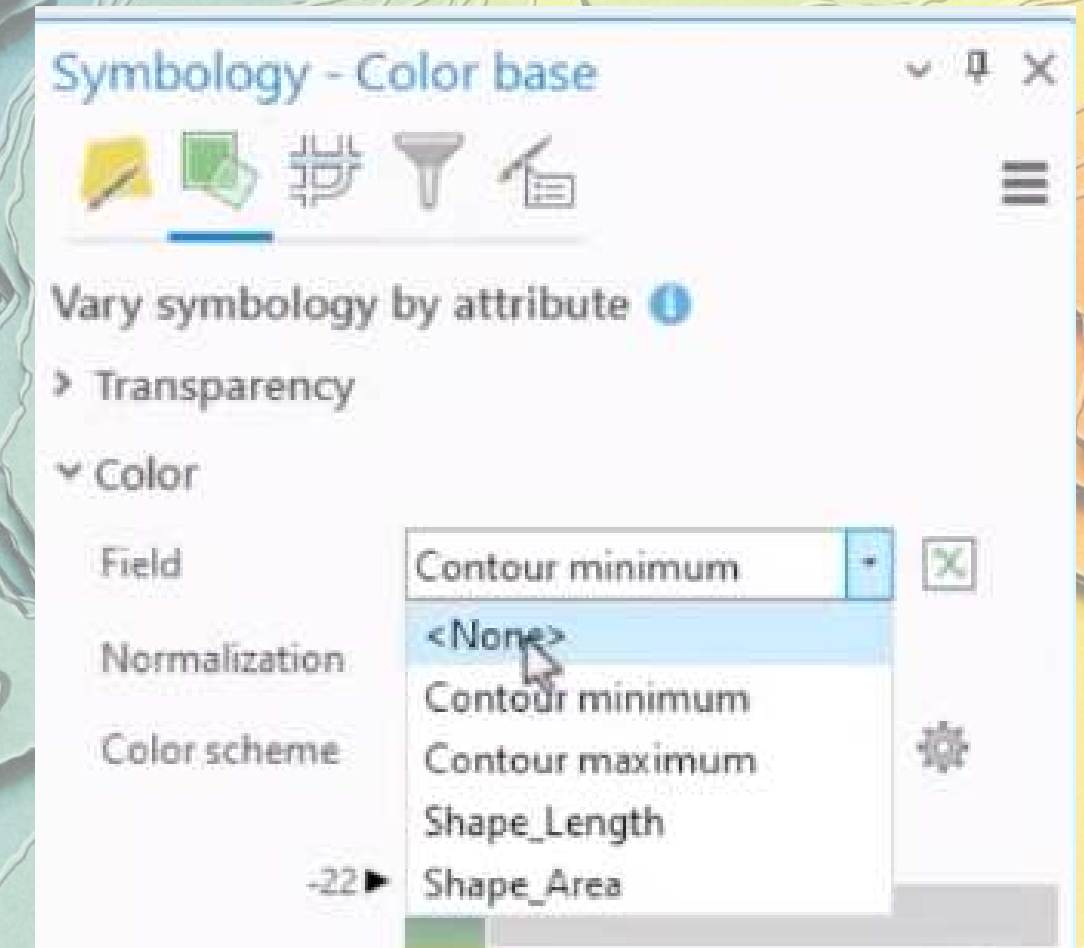
TRUST the Process



**These next steps might seem super random...
but trust John Nelson's catrography skills**

On the Lightning Overlay layer toggle to the symbology pane and change the colour field back to **None**

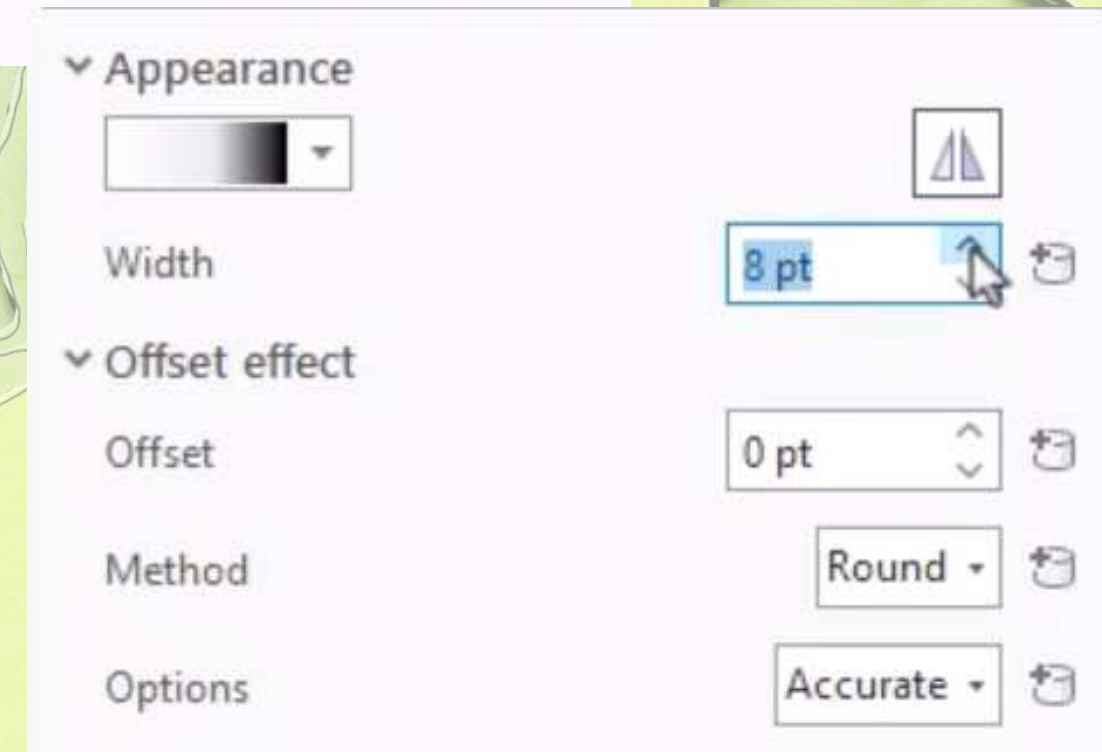
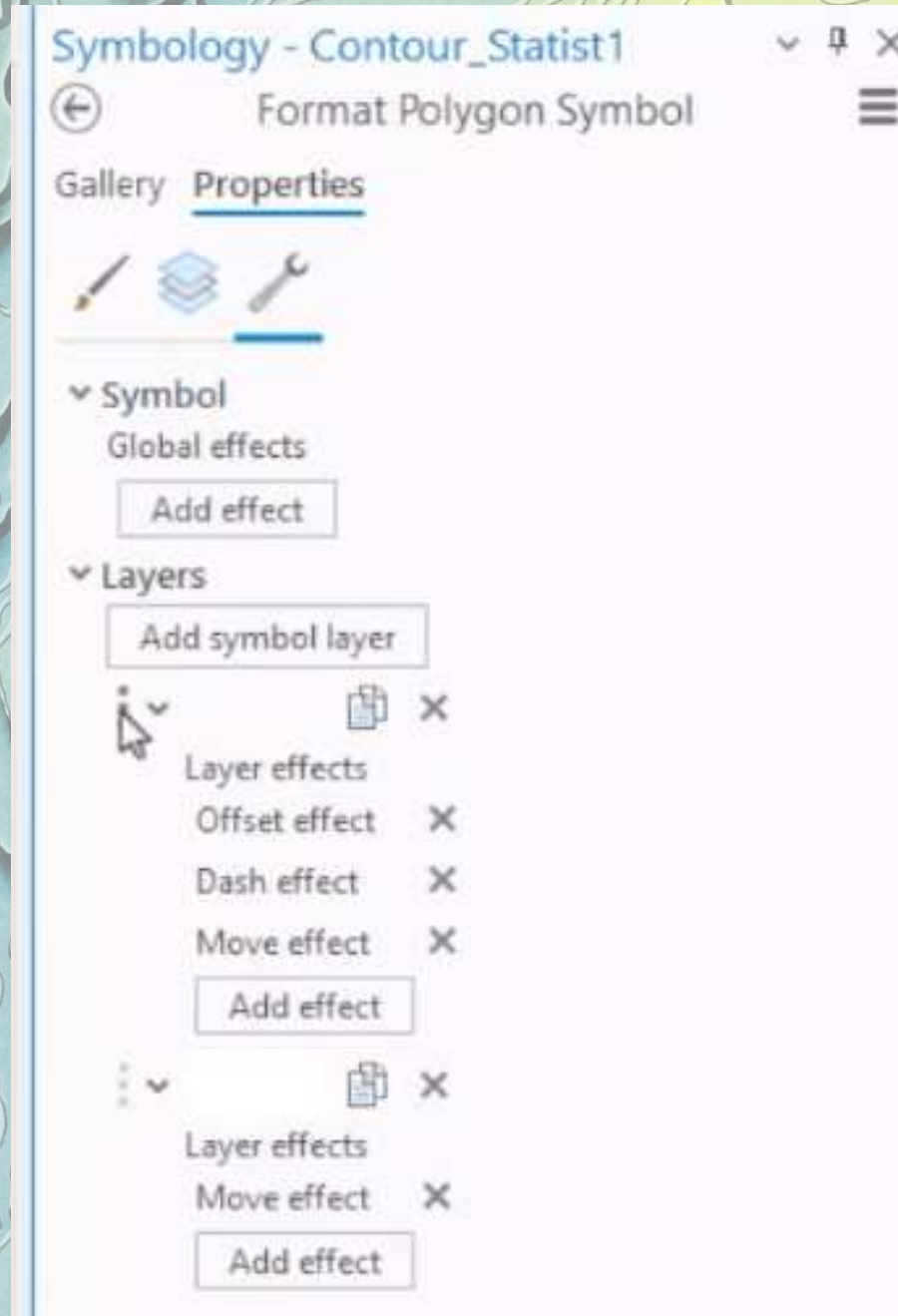
Under the Properties tab, change the fill to **White**



Click on the Wrench

Move the Outline below the Fill (click and drag the three dots)

Back on the overview pane, Change the gradient stroke to **Transparent Black to Black, set the **offset back to 0**, and increase the **width to 8pt****



Click the data connection icon again for Offset Y
and **subtract 6** from your equation

Offset Y

0 pt

Expression Builder

Language VBScript

Fields

Contour minimum
Contour maximum
Shape_Length
Shape_Area

Functions

Abs()
Asc()
Atn()
Chr()
Cos()
Date()

Insert Values

Expression

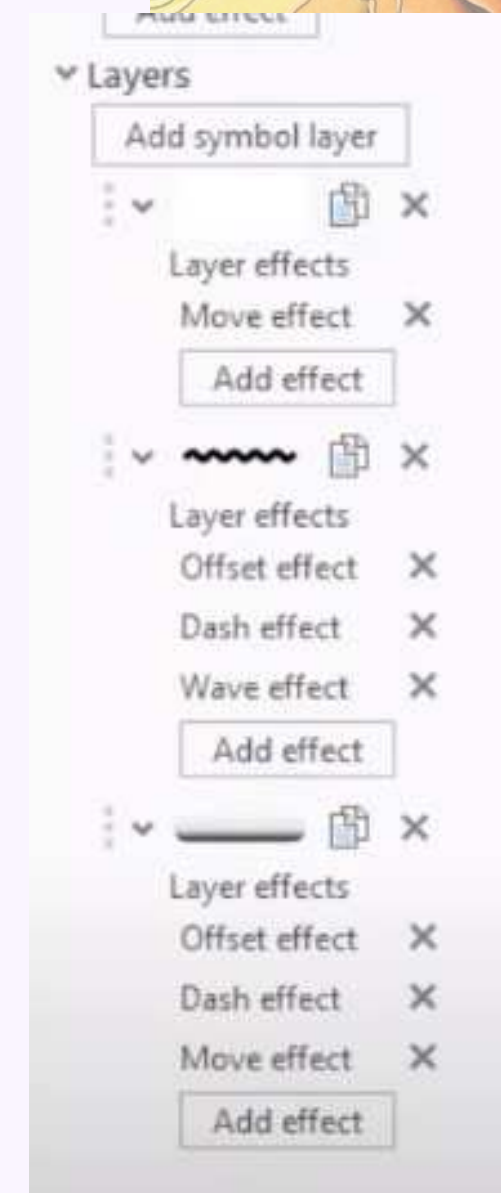
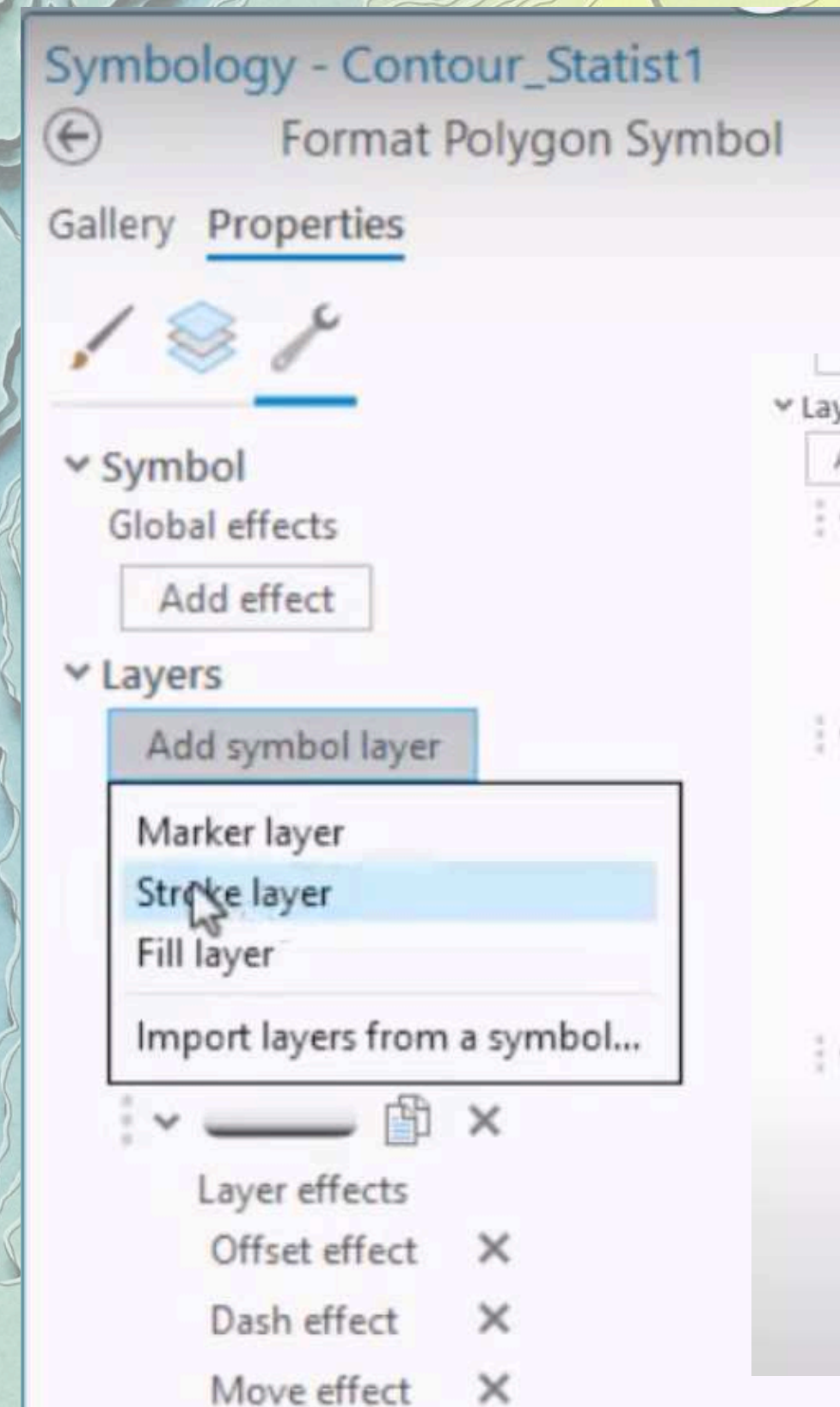
`([ContourMin]/10)-6`

Under properties, click on the wrench again and
add a stroke layer and drag it to the middle
(between the gradient stroke and fill layers)

Add a **Wave effect** and **Move effect** by clicking
Add effect

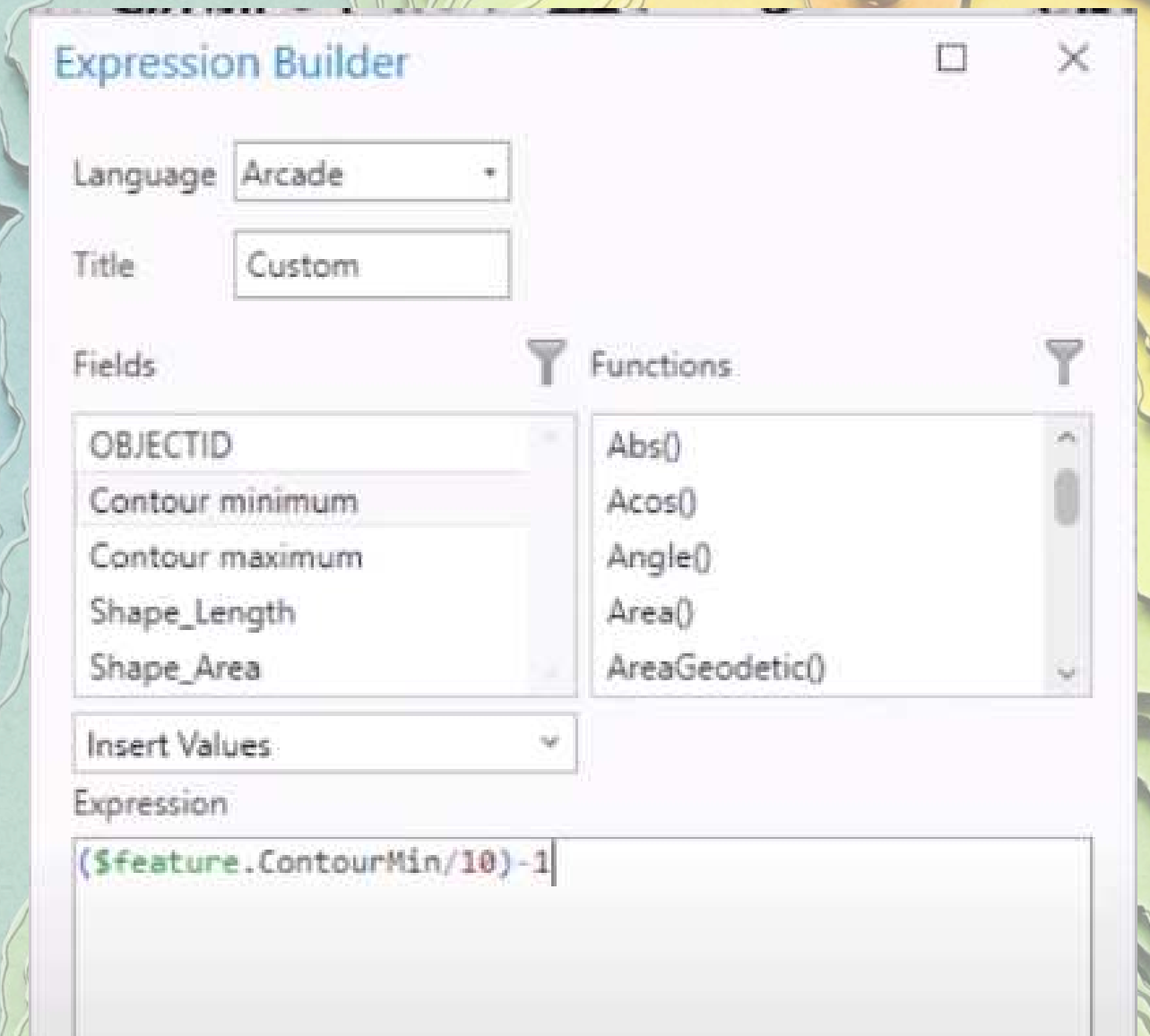
Increase the wavy line width to **2pt**

Change the Waveform to **Random**, set the
Amplitude to **1pt** and the period to **8pt**



Under the Move effect, click the data connection icon for Offset Y

In the Expression Builder, click **Contour Minimum, divide by 10, and subtract 1**

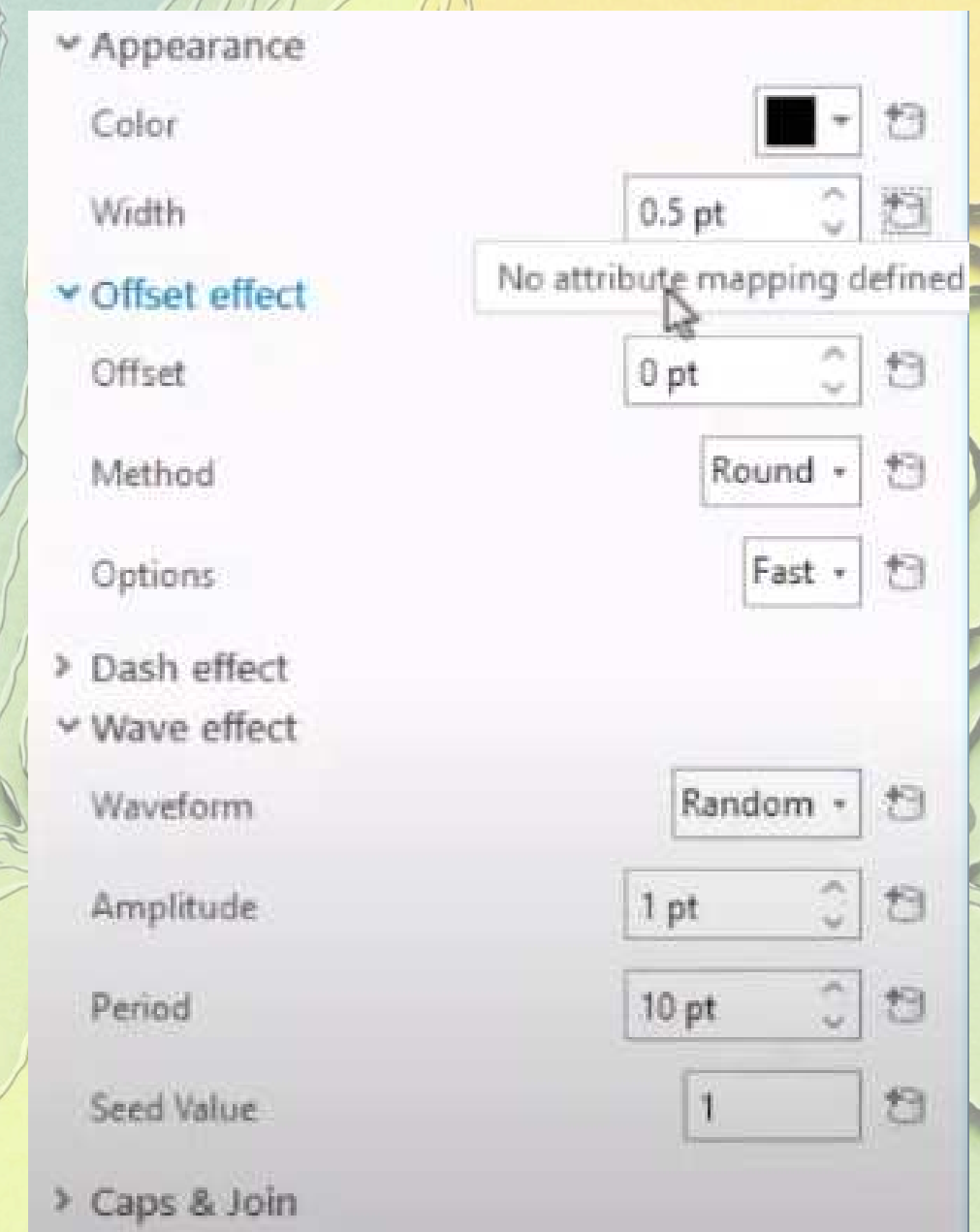
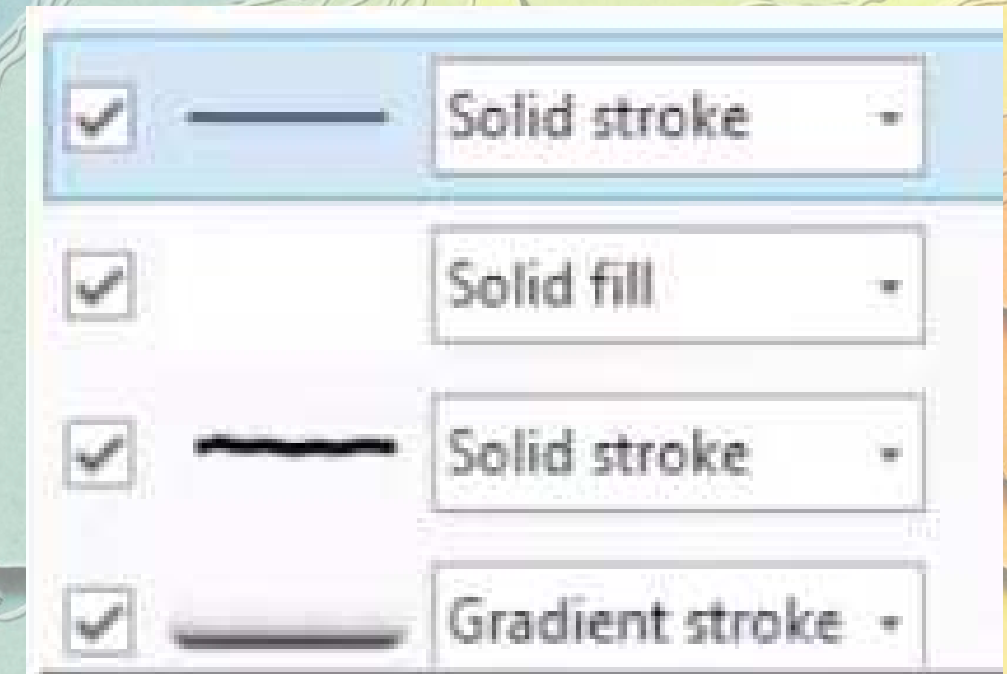


Add one more **Stroke Layer** (this one can sit on top of our other components)

Add a **Random Wave and Move** effect again

Decrease the line width to **0.5pt**, Increase the Period to **10pt**, and decrease the Amplitude to **1pt**

Click the data connection icon next to Offset Y and write the same expression as the last wave component, but this time do not subtract 1
(**contour minimum / 10**)



On the top panel, toggle to the **Feature Layer** pane and change the **Layer Blend to Multiply**

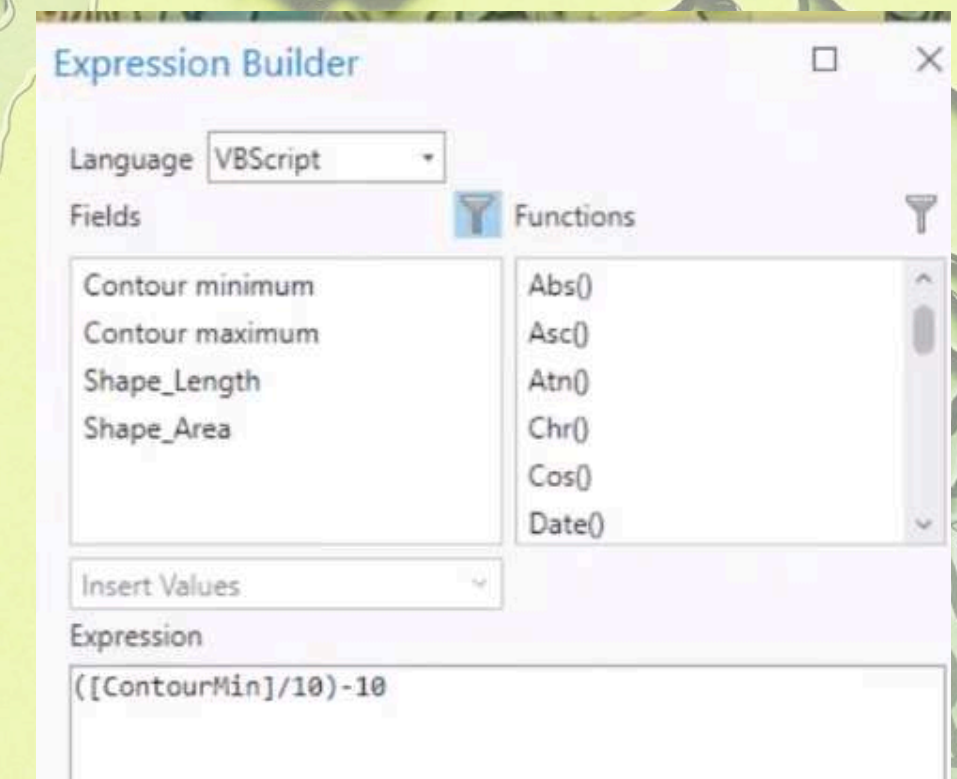
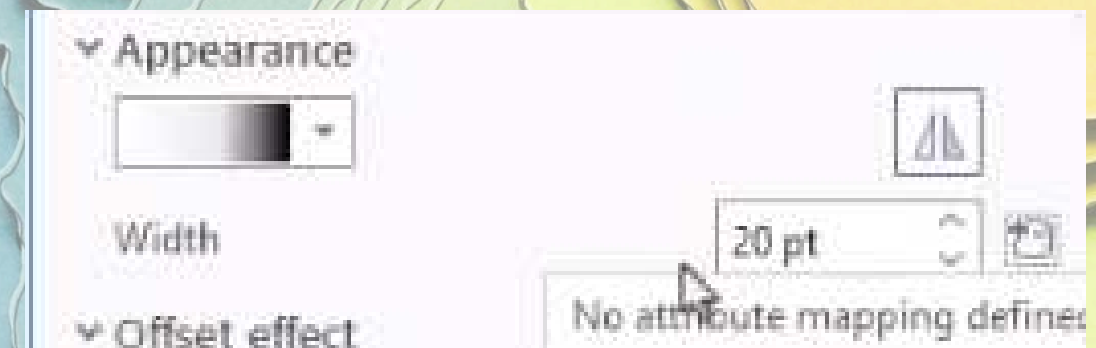
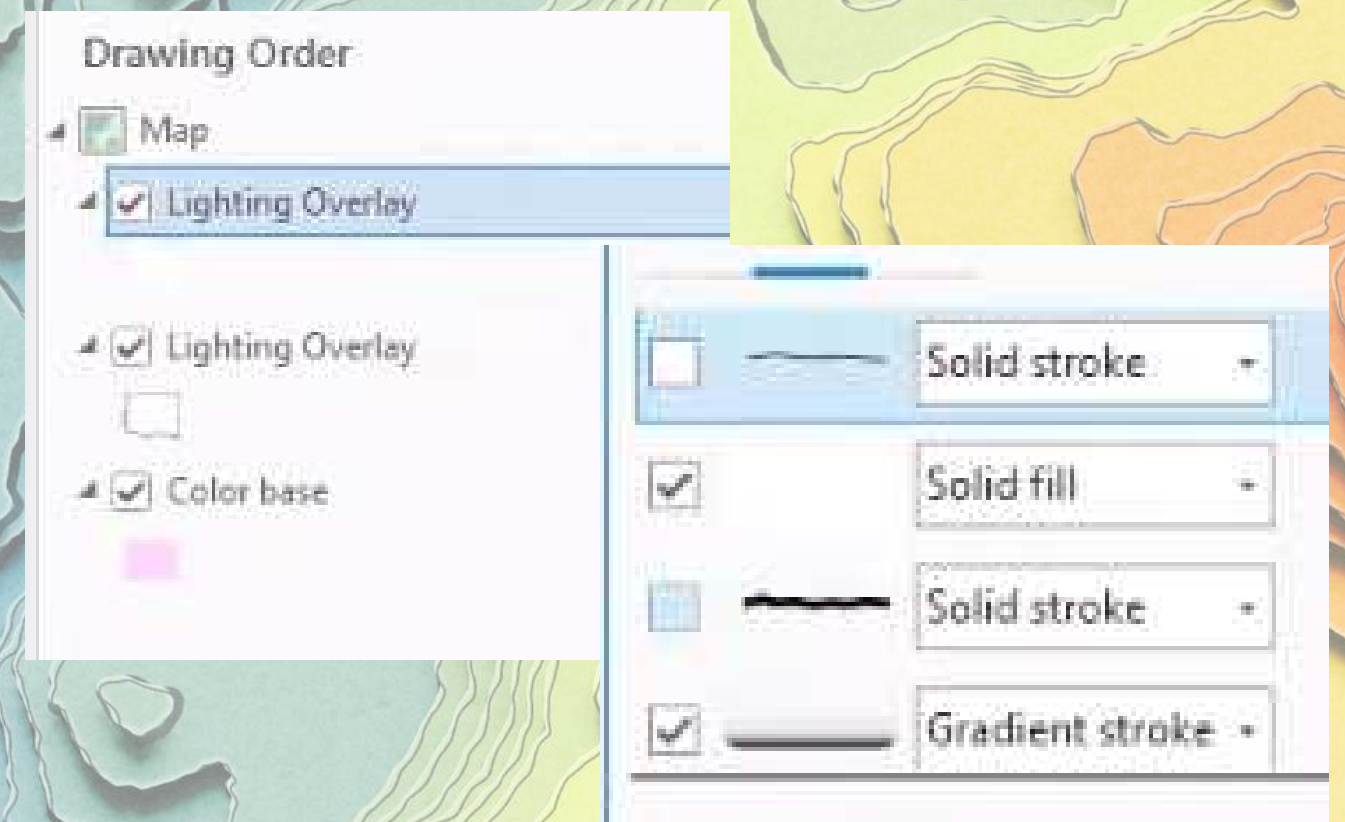
You can also play with the transparency of this layer - try 50% (see what looks cool!)



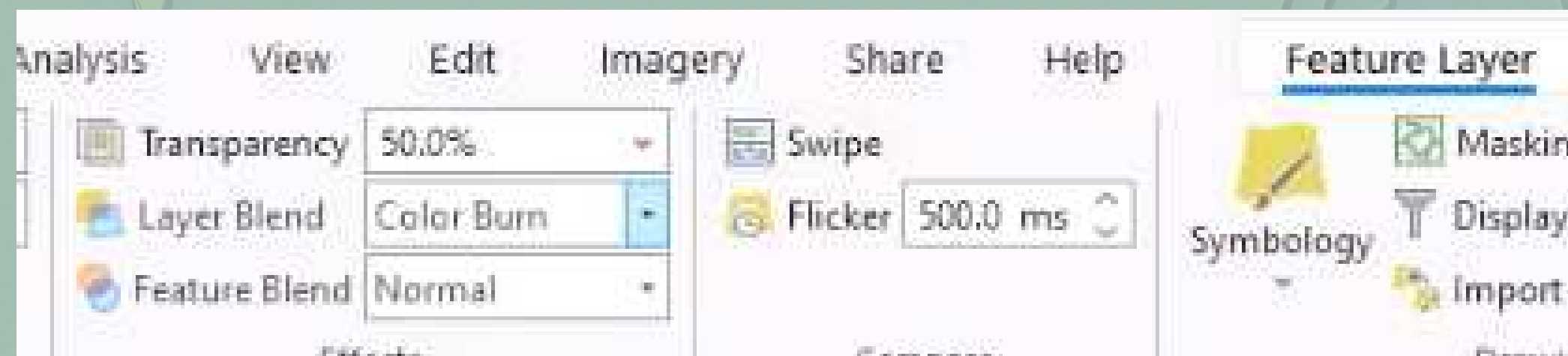
Duplicate the Lighting Overlay layer and
toggle off the two wave line components

Change the Gradient Stroke component width
to **20pt**

Click the data connection icon for Offset Y, and
change the expression to **subtract 10** (not 6)



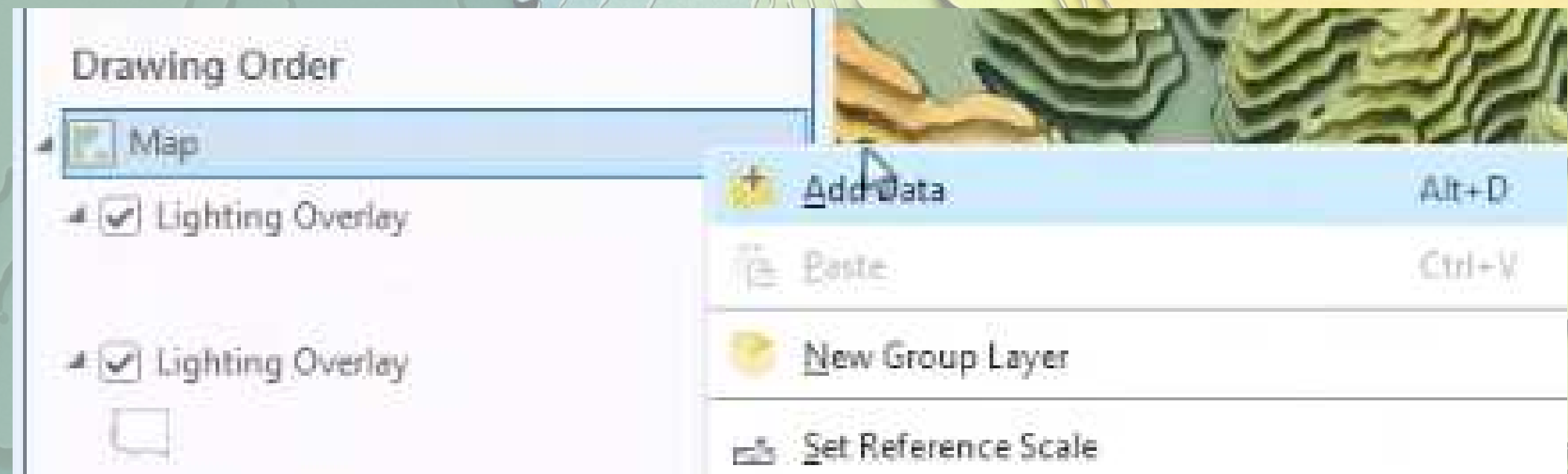
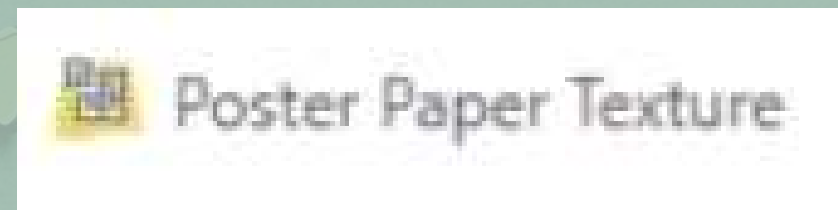
Change the Layer Blend mode to **Color Burn**



We can add a poster paper texture as well!

Right click the Map and click **Add Data**

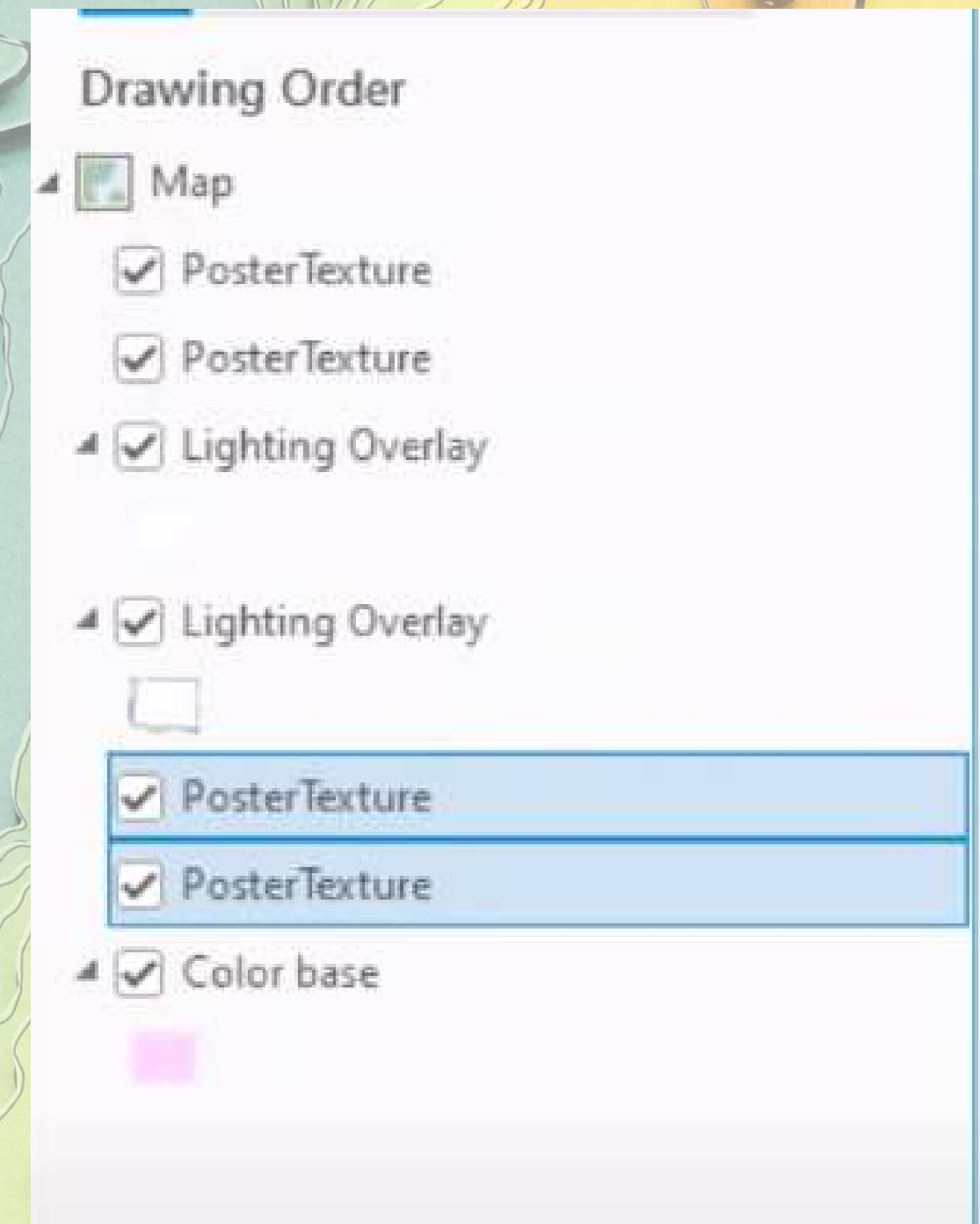
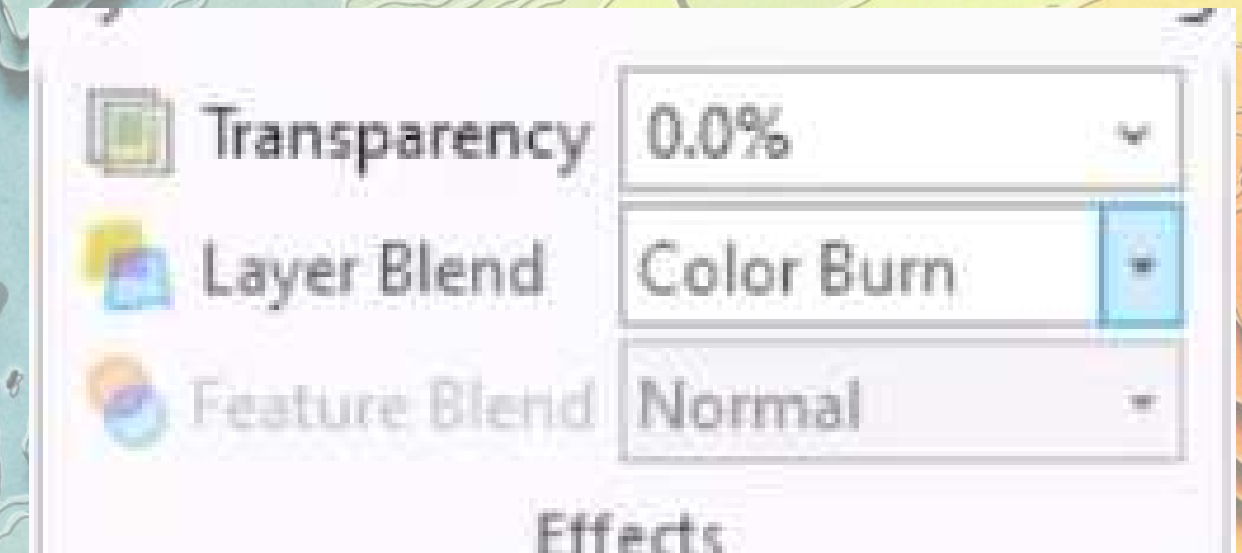
Search the Living Atlas for **poster paper**



Drag the poster texture above the other layers

Change the layer blend to **Colour Burn**

**To enhance the texture effect, you can create a
"**Poster Texture Sandwich**" and place two
copies of the poster layer above the Lighting
Overlay layers and two below**



And Voilà!



**After all that cartographic wizardry... we made
a pretty cool map(s)!**