

# How to Generate a Watershed Analysis using a Custom Watershed Polygon



**Antecedent Precipitation Tool**  
Version 1.0

Written by Jason Deters  
U.S. Army Corps of Engineers

ARC\_Dev - Custom Watershed Example - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share Appearance

Cut Copy Paste Copy Path Clipboard Explore Bookmarks Go To XY Basemap Add Data Add Preset Select Select By Attributes Select By Location Attributes Pause Lock Infographics Measure Locate Convert To Annotation More Sync View Unplaced Download Map Remove Layer Selection Inquiry Labeling Offline

Contents

Map Custom Watershed Example

Search

Drawing Order

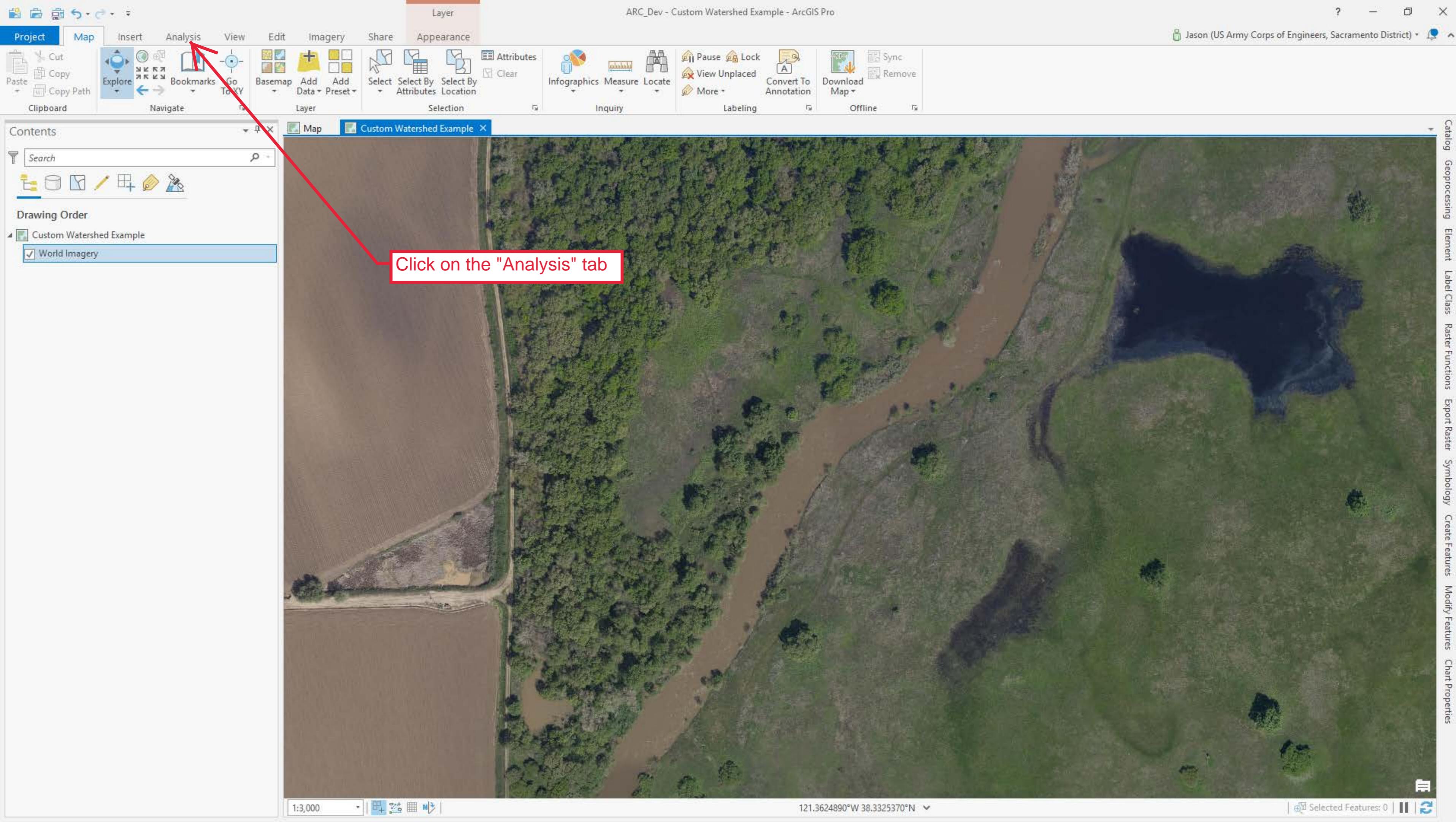
Custom Watershed Example

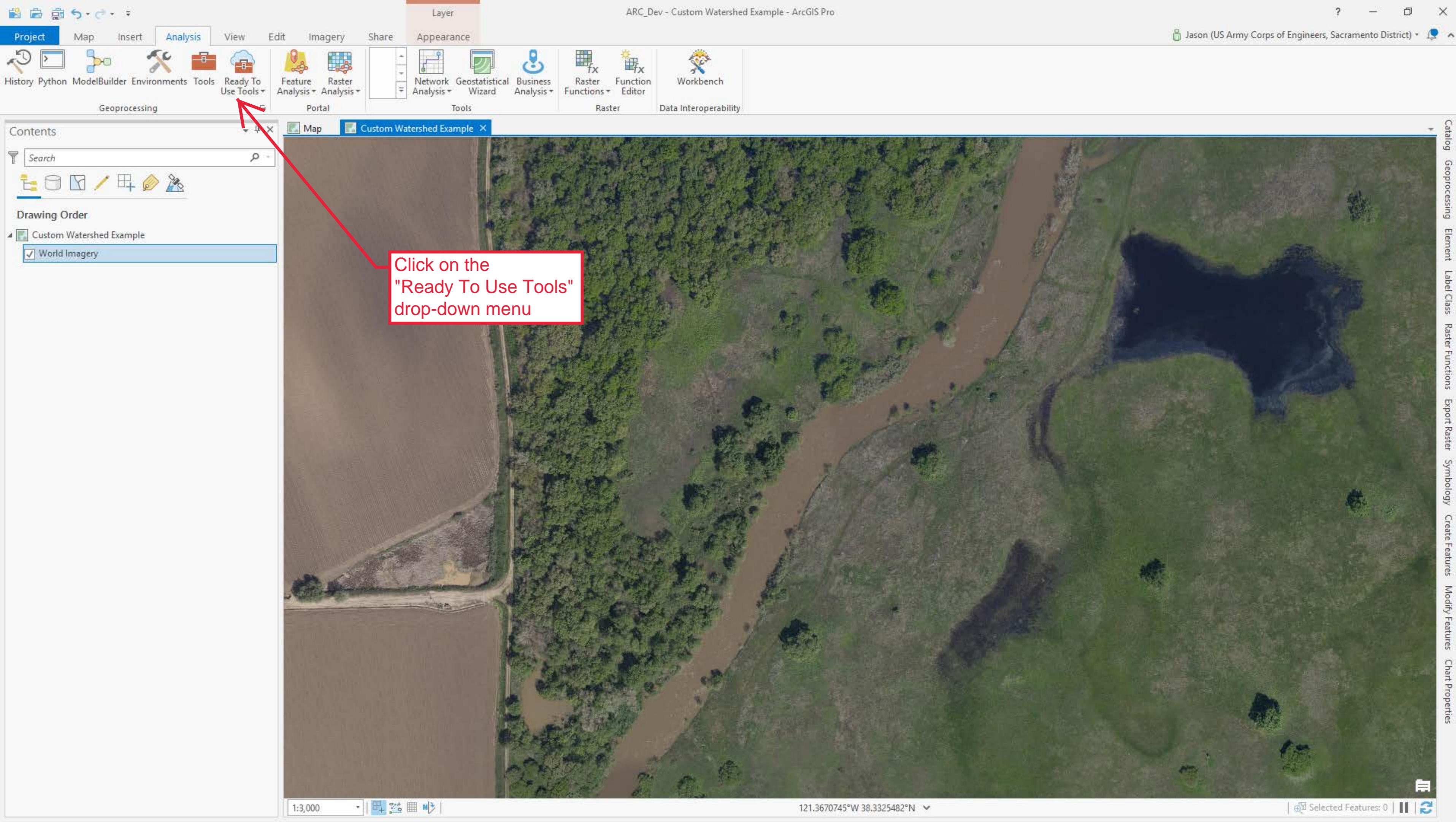
World Imagery

There are countless ways to generate a custom watershed polygon/shapefile that can be uploaded into the APT, but for the sake of simplicity, this walkthrough will be limited to the generation of a shapefile using ArcGIS Pro's Watershed tool.

1:3,000 121.3624890°W 38.3325370°N Selected Features: 0

Layer Catalog Geoprocessing Element Label Class Raster Functions Export Raster Symbology Create Features Modify Features Chart Properties





ARC\_Dev - Custom Watershed Example - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share Appearance

History Python ModelBuilder Environments Tools Geoprocessing

Ready To Use Tools Feature Analysis Raster Analysis Network Analysis Geostatistical Wizard Business Analysis Raster Functions Function Editor Workbench Data Interoperability

Elevation

- Profile
- Summarize Elevation
- Viewshed

Hydrology

- Trace Downstream
- Watershed

Network Analysis

- Find Closest Facilities
- Find Routes
- Generate Service Areas
- Solve Location Allocation
- Solve Vehicle Routing Problem

Contents

Search

Drawing Order

- Custom Watershed Example
- World Imagery

Click on the "Watershed" tool

The screenshot shows the ArcGIS Pro application window. The ribbon menu at the top includes Project, Map, Insert, Analysis, View, Edit, Imagery, Share, Appearance, History, Python, ModelBuilder, Environments, Tools, and Geoprocessing. The Analysis tab is selected. The 'Ready To Use Tools' panel is open, displaying various geoprocessing tools categorized under Elevation, Hydrology, and Network Analysis. The 'Watershed' tool is highlighted with a red arrow pointing to it from a callout box containing its description: 'Determines the contributing area above each input point. A watershed is the upslope area that contributes flow.' The main map view shows a satellite image of a river network and surrounding land. The 'Drawing Order' panel on the left shows 'Custom Watershed Example' and 'World Imagery' listed. A red callout box with the text 'Click on the "Watershed" tool' is positioned over the Watershed icon in the tool list.

ARC\_Dev - Custom Watershed Example - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share Appearance

History Python ModelBuilder Environments Tools Ready To Use Tools Feature Analysis Raster Analysis Network Analysis Geostatistical Wizard Business Analysis Raster Functions Function Editor Workbench

Geoprocessing Portal Tools Raster Data Interoperability

Contents

Map Custom Watershed Example

Search

Drawing Order

Custom Watershed Example

World Imagery

Geoprocessing

Watershed

Parameters Environments

\* Input Points  

Point Identification Field

Snap Distance

Snap Distance Units Meters

Data Source Resolution

Generalize Watershed Polygons

Return Snapped Points

Click on the "Create Points" button, which looks like a pencil, to add a temporary point feature class to the map.



1:3,000 121.3608916°W 38.3309538°N Run

Feature Layer      ARC\_Dev - Custom Watershed Example - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share Appearance Labeling Data

History Python ModelBuilder Environments Tools Ready To Use Tools Feature Analysis Raster Analysis Network Analysis Geostatistical Wizard Business Analysis Raster Functions Function Editor Workbench

Geoprocessing Portal Tools Raster Data Interoperability

Contents

Map Custom Watershed Example

Search

Drawing Order

- Custom Watershed Example
- Watershed\_Input\_Points\_Points**
- World Imagery

Geoprocessing

Watershed

Parameters Environments

Input Points  
Watershed\_Input\_Points\_Points  
 Watershed\_Input\_Points\_Points

Point Identification Field

Snap Distance

Snap Distance Units  
Meters

Data Source Resolution

Generalize Watershed Polygons

Return Snapped Points

Click on the "Watershed\_Input\_points\_points" feature template, if it is not already active, to enable the "Point" tool.

1:3,000 | Run | 121.3624391°W 38.3312000°N

Feature Layer      ARC\_Dev - Custom Watershed Example - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share Appearance Labeling Data

History Python ModelBuilder Environments Tools Ready To Use Tools Feature Analysis Raster Analysis Network Analysis Geostatistical Wizard Business Analysis Raster Functions Function Editor Workbench

Geoprocessing      Portal Tools Raster Data Interoperability

Contents

Map Custom Watershed Example

Search

Drawing Order

- Custom Watershed Example
- Watershed\_Input\_Points\_Points
  - Watershed\_Input\_Points\_Points
- World Imagery

With the "Point" tool active, click within the flow path of a riverine feature for which we want the watershed.

Geoprocessing

Watershed

Parameters Environments

Input Points  
Watershed\_Input\_Points\_Points

Watershed\_Input\_Points\_Points

Point Identification Field

Snap Distance

Snap Distance Units  
Meters

Data Source Resolution

Generalize Watershed Polygons

Return Snapped Points

Run

1:3,000 | Selected Features: 0 | C... G... El... La... R... Ex... Sy... Cr... M... C...

121.3617402°W 38.3311720°N

Feature Layer      ARC\_Dev - Custom Watershed Example - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share Appearance Labeling Data

History Python ModelBuilder Environments Tools Ready To Use Tools Feature Analysis Raster Analysis Network Analysis Geostatistical Wizard Business Analysis Raster Functions Function Editor Workbench

Geoprocessing Portal Tools Raster Data Interoperability

Contents Map Custom Watershed Example

Search Drawing Order

Custom Watershed Example

Watershed\_Input\_Points\_Points

World Imagery

It is important to record the Latitude and Longitude of the point you created.  
We will use this for our inputs in the APT.

Map

Custom Watershed Example

Watershed

Parameters Environments

Input Points Watershed\_Input\_Points\_Points

Watershed\_Input\_Points\_Points:Point

Point Identification Field

Snap Distance

Snap Distance Units Meters

Data Source Resolution

Generalize Watershed Polygons

Return Snapped Points

Run

1:3,000

Selected Features: 0

121.3622893°W 38.3315580°N

C... G... El... La... R... Ex... Sy... Cr... M... C...

Click on the "Data Source Resolution" drop-down menu

The screenshot shows the ArcGIS Pro application window. The title bar reads 'Feature Layer' and 'ARC\_Dev - Custom Watershed Example - ArcGIS Pro'. The ribbon menu includes 'Project', 'Map', 'Insert', 'Analysis', 'View', 'Edit', 'Imagery', 'Share', 'Appearance', 'Labeling', 'Data', 'Geoprocessing', 'Portal', 'Tools', 'Raster', and 'Data Interoperability'. The 'Analysis' tab is selected. The 'Contents' pane shows a map titled 'Custom Watershed Example' with a legend for 'Search', 'Drawing Order', 'Custom Watershed Example', and 'Watershed\_Input\_Points\_Points'. The 'Map' pane displays an aerial view of a landscape with a river and fields. A point feature labeled 'Watershed\_Input\_Points\_Points:Point' is selected. The 'Geoprocessing' pane on the right shows a 'Watershed' tool with 'Parameters' selected. It lists 'Input Points' as 'Watershed\_Input\_Points\_Points' and has options for 'Point Identification Field', 'Snap Distance', 'Snap Distance Units (Meters)', 'Data Source Resolution' (with checkboxes for 'Generalize Watershed Polygons' and 'Return Snapped Points'), and a 'Run' button. A red box highlights a note in the 'Contents' pane: 'It is important to record the Latitude and Longitude of the point you created. We will use this for our inputs in the APT.' A red box also highlights the 'Data Source Resolution' dropdown in the 'Geoprocessing' pane. A red arrow points from the note in the 'Contents' pane to the 'Data Source Resolution' dropdown in the 'Geoprocessing' pane.

Feature Layer      ARC\_Dev - Custom Watershed Example - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share Appearance Labeling Data

History Python ModelBuilder Environments Tools Ready To Use Tools Feature Analysis Raster Analysis Network Analysis Geostatistical Wizard Business Analysis Raster Functions Function Editor Workbench

Geoprocessing Portal Tools Raster Data Interoperability

Contents

Map Custom Watershed Example

Search

Drawing Order

- Custom Watershed Example
- Watershed\_Input\_Points\_Points
  - World Imagery

Custom Watershed Example

Watershed

Parameters Environments

Input Points Watershed\_Input\_Points\_Points

Watershed\_Input\_Points\_Points

Point Identification Field

Snap Distance

Snap Distance Units Meters

Data Source Resolution

- FINEST
- 10m
- 30m
- 90m

Select "Finest" to request that the calculation be performed with the highest resolution elevation data available.

Run

1:3,000 | Selected Features: 0 | C... G... El... La... R... Ex... Sy... Cr... M... C...

121.3595295°W 38.3298909°N

Feature Layer      ARC\_Dev - Custom Watershed Example - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share Appearance Labeling Data

History Python ModelBuilder Environments Tools Ready To Use Tools Feature Analysis Raster Analysis Network Analysis Geostatistical Wizard Business Analysis Raster Functions Function Editor Workbench

Geoprocessing      Portal Tools Raster Data Interoperability

Contents

Map Custom Watershed Example

Search

Drawing Order

- Custom Watershed Example
- Watershed\_Input\_Points\_Points
  - Watershed\_Input\_Points\_Points
- World Imagery

Custom Watershed Example

Watershed

Parameters Environments

Input Points Watershed\_Input\_Points\_Points

Watershed\_Input\_Points\_Points

Point Identification Field

Snap Distance

Snap Distance Units Meters

Data Source Resolution FINEST

Generalize Watershed Polygons

Return Snapped Points

Click the "Run" button to send our point off to ESRI's server and await a response.

Run

1:3,000 | Selected Features: 0 | C... G... El... La... R... Ex... Sy... Cr... M... C...

121.3595295°W 38.3298909°N

The screenshot displays the ArcGIS Pro application interface. The main workspace shows a map titled 'Custom Watershed Example' with satellite imagery of a river and surrounding terrain. In the 'Contents' pane, the 'Drawing Order' section lists 'Custom Watershed Example' and 'Watershed\_Input\_Points\_Points' (which is checked). The 'Geoprocessing' pane on the right shows a 'Watershed' tool with its parameters set to use 'Watershed\_Input\_Points\_Points' as the input point layer. A red callout box with the text 'Click the "Run" button to send our point off to ESRI's server and await a response.' points to the 'Run' button in the 'Geoprocessing' pane. A red arrow also points from the bottom right towards the 'Run' button. The bottom status bar shows a scale of 1:3,000 and coordinates of 121.3595295°W 38.3298909°N.

Feature Layer      ARC\_Dev - Custom Watershed Example - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share

Cut Copy Paste Copy Path Explore Bookmarks Go To XY Basemap Add Data Preset Select At Layer

Convert To Annotation Download Map Offline

Contents

Map Custom Watershed

Search

Drawing Order

Custom Watershed Example

Output Snapped Points

Watershed\_Input\_Points\_Points

Output Watershed

World Imagery

Output Snapped Points

Watershed\_Input\_Points\_Points

Output Watershed

1

To examine the scale of the watershed ESRI's server generated, right-click on the "Output Watershed" layer in the Table of Contents

ESRI's server will create the custom watershed to include the point we created and all portions of the watershed located upstream of that point.

Geoprocessing

Watershed

Parameters Environments

Input Points Watershed\_Input\_Points\_Points

Watershed\_Input\_Points\_Points

Point Identification Field

Snap Distance

Snap Distance Units Meters

Data Source Resolution FINEST

Generalize Watershed Polygons

Return Snapped Points

Run

Watershed completed.

View Details Open History

Selected Features: 0

1:3,000 121.3650207°W 38.3316978°N

C... G... El... La... R... Ex... Sy... Cr... M... C...

1:3,000 121.3650207°W 38.3316978°N

Selected Features: 0

C... G... El... La... R... Ex... Sy... Cr... M... C...

ARC\_Dev - Custom Watershed Example - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share Appearance Labeling Data

Cut Copy Paste Copy Path Clipboard Navigate Layer Selection Inquiry Labeling Offline

Explore Bookmarks Go To XY Basemap Add Data Add Preset Select By Attributes Select By Location Infographics Measure Locate Convert To Annotation More View Unplaced Download Map Clear Sync Remove

Contents Search Drawing Order Custom Watershed Example Output Snapped Points Watershed\_Input\_Points Points Output Watershed 1 Copy Remove Group Attribute Table Add Error Layers Design Create Chart New Report Joins and Relates Zoom To Layer Zoom To Make Visible Selection Label Labeling Properties... Convert Labels To Annotation... Symbology Disable Pop-ups Configure Pop-ups Data Sharing View Metadata Edit Metadata Properties

Map Custom Watershed Example

Geoprocessing Watershed Parameters Environments Input Points Watershed\_Input\_Points\_Points Watershed\_Input\_Points\_Points Point Identification Field Snap Distance Snap Distance Units Meters Data Source Resolution FINEST Generalize Watershed Polygons Return Snapped Points

Run Watershed completed. View Details Open History

1:3,000 121.3679802°W 38.3312167°N Selected Features: 0 C... G... El... La... R... Ex... Sy... Cr... M... C...

Click "Zoom To Layer"

The watershed polygon that is generated should approximate the portion of the watershed located upstream of our point of interest. It is recommended that users check a watershed map to be sure the polygon generated is a good approximation of the watershed upstream of the point of interest.

Once you have confirmed that the polygon that was generated is an appropriate approximation of the upstream watershed, the next step is to export this feature into a format the APT can read (currently the APT only uses shapefiles).

Right-click on the "Output Watershed" layer once more.

Output Watershed

Watershed completed.

ARC\_Dev - Custom Watershed Example - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share Appearance Labeling Data

Cut Copy Paste W. Copy Path Clipboard Explore Bookmarks Go To XY Basemap Add Data Add Preset Select Select By Attributes Select By Location Attributes Pause Lock Infographics Measure Locate Sync Clear View Unplaced Convert To Annotation Download Map More More Labeling Offline

Contents Search Drawing Order Custom Watershed Example Output Snapped Points Watershed\_Input\_Points\_Points Output Watershed 1 Copy Remove Group Attribute Table Add Error Layers Design Create Chart New Report Joins and Relates Zoom To Layer Zoom To Make Visible Selection Label Labeling Properties... Convert Labels To Annotation... Symbology Disable Pop-ups Configure Pop-ups Data Export Features Export Table Rematch Addresses... Sharing View Metadata Edit Metadata Properties

Map Custom Watershed Example

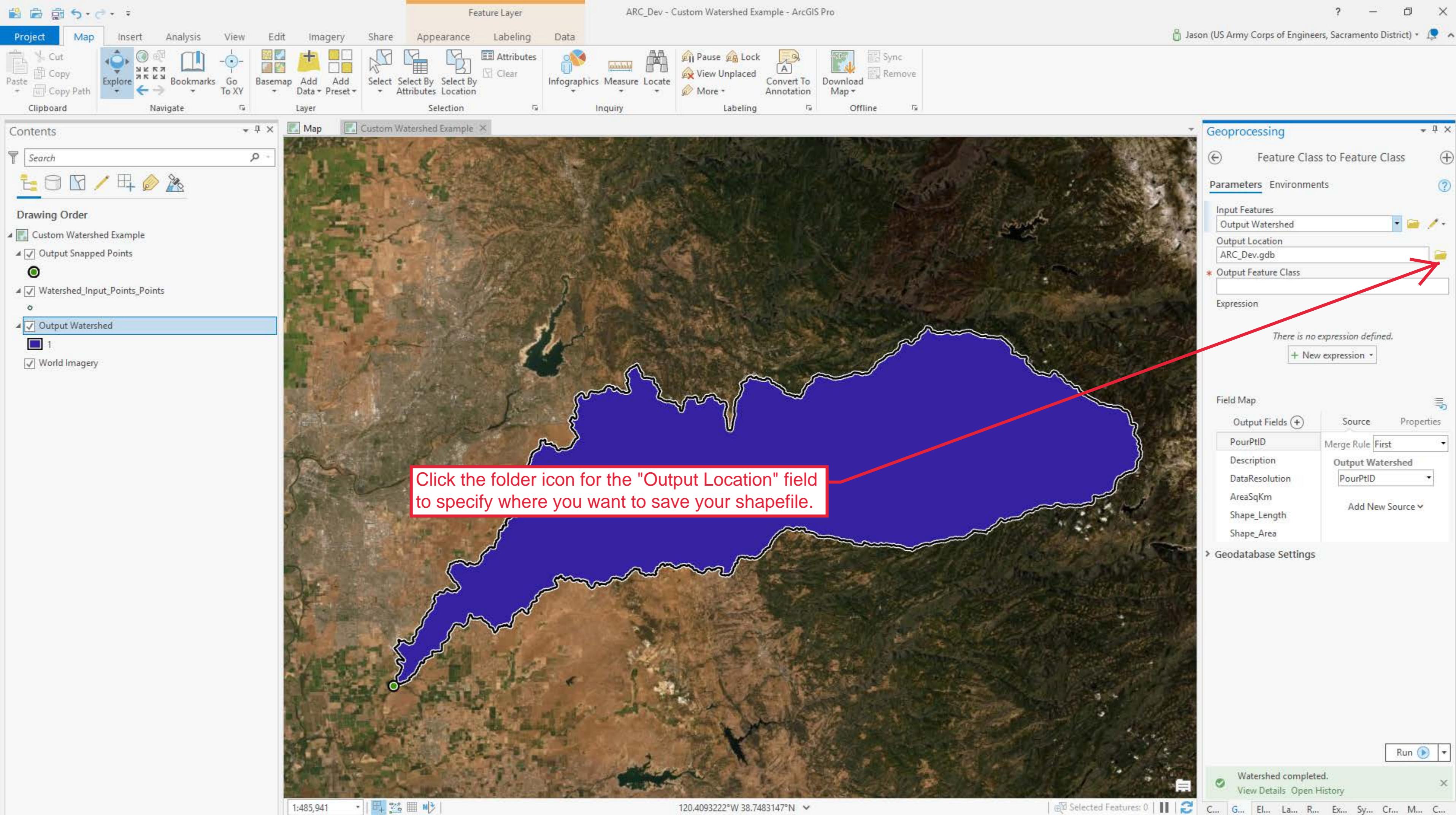
Geoprocessing Watershed Parameters Environments Input Points Watershed\_Input\_Points\_Points Watershed\_Input\_Points\_Points Point Identification Field Snap Distance Snap Distance Units Meters Data Source Resolution FINEST Generalize Watershed Polygons Return Snapped Points Run

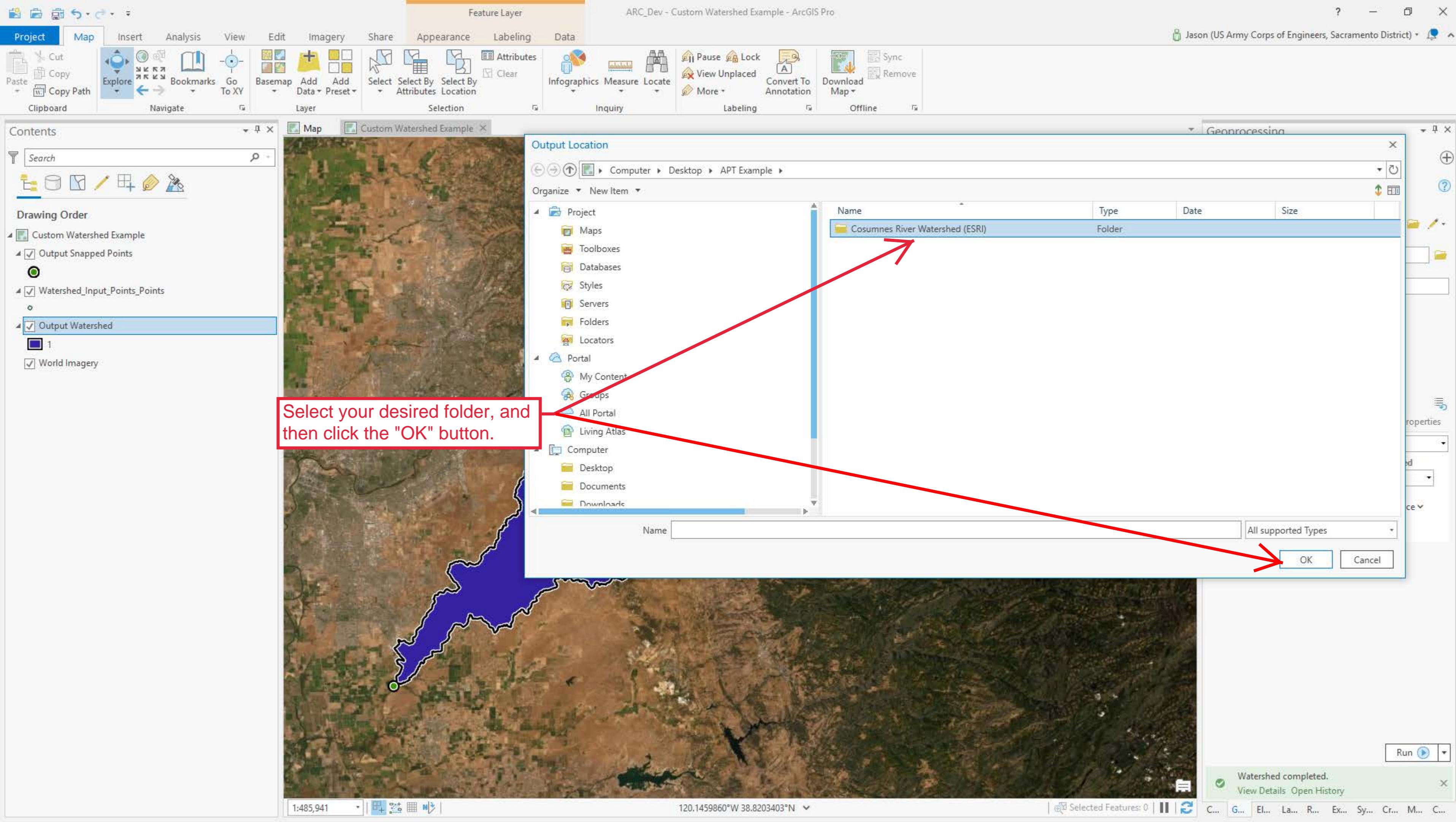
Watershed completed. View Details Open History

1:485,941 121.5157963°W 38.6924448°N Selected Features: 0 C... G... El... La... R... Ex... Sy... Cr... M... C...

Hover over the "Data" sub-menu, and then select "Export Features."

The screenshot shows the ArcGIS Pro interface with a satellite map of a watershed area. A large blue polygon represents the watershed boundary. A red arrow points from the 'Data' sub-menu in the ribbon to the 'Export Features' option in the context menu that appears when right-clicking on the watershed polygon. A red callout box contains the text: "Hover over the 'Data' sub-menu, and then select 'Export Features.'".





Select your desired folder, and then click the "OK" button.

Watershed completed.  
View Details Open History

Feature Layer      ARC\_Dev - Custom Watershed Example - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share Appearance Labeling Data

Cut Copy Paste Copy Path Explore Bookmarks Go To XY Basemap Add Data Add Preset Select Select By Attributes Select By Location Attributes Pause Lock Infographics Measure Locate View Unplaced Convert To Annotation Download Map Sync Clear More More

Clipboard Navigate Layer Selection Inquiry Labeling Offline

Contents

Map Custom Watershed Example

Search

Drawing Order

- Custom Watershed Example
- Output Snapped Points
- Watershed\_Input\_Points Points
- Output Watershed**
- World Imagery

Give your new shapefile any name, as long as it doesn't include spaces and ends in ".shp"

Geoprocessing

Feature Class to Feature Class

Parameters Environments

Input Features Output Watershed

Output Location Cosumnes River Watershed (ESRI)

\* Output Feature Class

Expression There is no expression defined.

+ New expression

Field Map

Output Fields +

| PourPtID   | Merge Rule First |
|------------|------------------|
| Descriptio | Output Watershed |
| DataResolu | PourPtID         |
| AreaSqKm   | Add New Source   |
| Shape_Leng |                  |
| Shape_Area |                  |

Run

Watershed completed.

View Details Open History

Selected Features: 0

1:485,941 120.1448310°W 38.7447115°N

C... G... El... La... R... Ex... Sy... Cr... M... C...

ARC\_Dev - Custom Watershed Example - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share Appearance Labeling Data

Cut Copy Paste Copy Path Explore Bookmarks Go To XY Basemap Add Data Add Preset Select By Attributes Select By Location Infographics Measure Locate Convert To Annotation More View Unplaced Download Map Sync Clear

Clipboard Navigate Layer Selection Inquiry Labeling Offline

Contents

Map Custom Watershed Example

Search

Drawing Order

- Custom Watershed Example
- Output Snapped Points
- Watershed\_Input\_Points Points
- Output Watershed
- World Imagery

Feature Layer

Custom Watershed Example

Click "Run" to execute the export process.

Geoprocessing

Feature Class to Feature Class

Parameters Environments

Input Features Output Watershed

Output Location Cosumnes River Watershed (ESRI)

\* Output Feature Class Cosumnes\_River\_Watershed.shp

Expression There is no expression defined. + New expression

Field Map

Output Fields +

|            |                  |
|------------|------------------|
| PourPtID   | Merge Rule First |
| Descriptio | Output Watershed |
| DataResolu | PourPtID         |
| AreaSqKm   | Add New Source   |
| Shape_Leng |                  |
| Shape_Area |                  |

Run

Watershed completed.

View Details Open History

1:485,941 120.1448310°W 38.7447115°N Selected Features: 0

ARC\_Dev - Custom Watershed Example - ArcGIS Pro

Project Map Insert Analysis View Edit Imagery Share Appearance Labeling Data

Cut Copy Paste Copy Path Clipboard Explore Bookmarks Go To XY Basemap Add Data Add Preset Select By Attributes Select By Location Infographics Measure Locate Convert To Annotation More View Unplaced Download Map Sync Clear

Selected Features: 0 | Run | Feature Class to Feature Class completed. View Details Open History

Contents Search Drawing Order Custom Watershed Example Output Snapped Points Watershed\_Input\_Points Points Cosumnes\_River\_Watershed Output Watershed 1 World Imagery

Map Custom Watershed Example

With the file exported, we can minimize ArcGIS Pro

Geoprocessing Feature Class to Feature Class

Parameters Environments

Input Features Output Watershed

Output Location Coseumnes River Watershed (ESRI)

Output Feature Class Coseumnes\_River\_Watershed.shp

Expression There is no expression defined. + New expression

Field Map Output Fields PourPtID Descriptio DataResolu AreaSqKm Shape\_Leng Shape\_Area

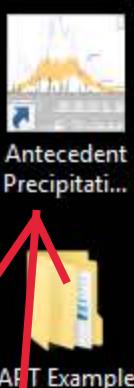
Merge Rule First Output Watershed PourPtID Add New Source

Run

Jason (US Army Corps of Engineers Sacramento District)

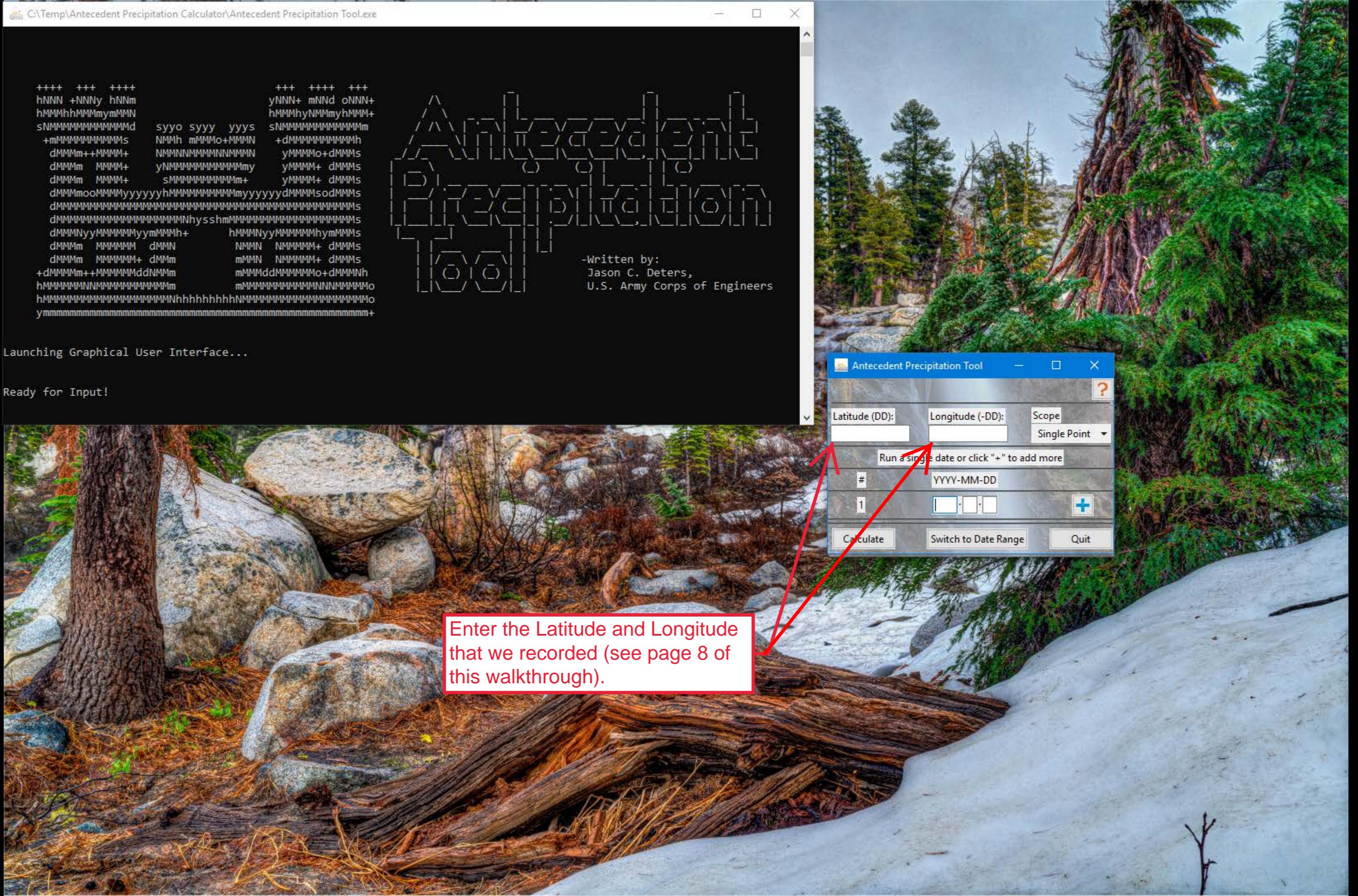
1:485,941 120.1448310°W 38.7447115°N Selected Features: 0 | Run | Feature Class to Feature Class completed. View Details Open History

Selected Features: 0 | Run | Feature Class to Feature Class completed. View Details Open History



APT Example

Launch  
the  
APT

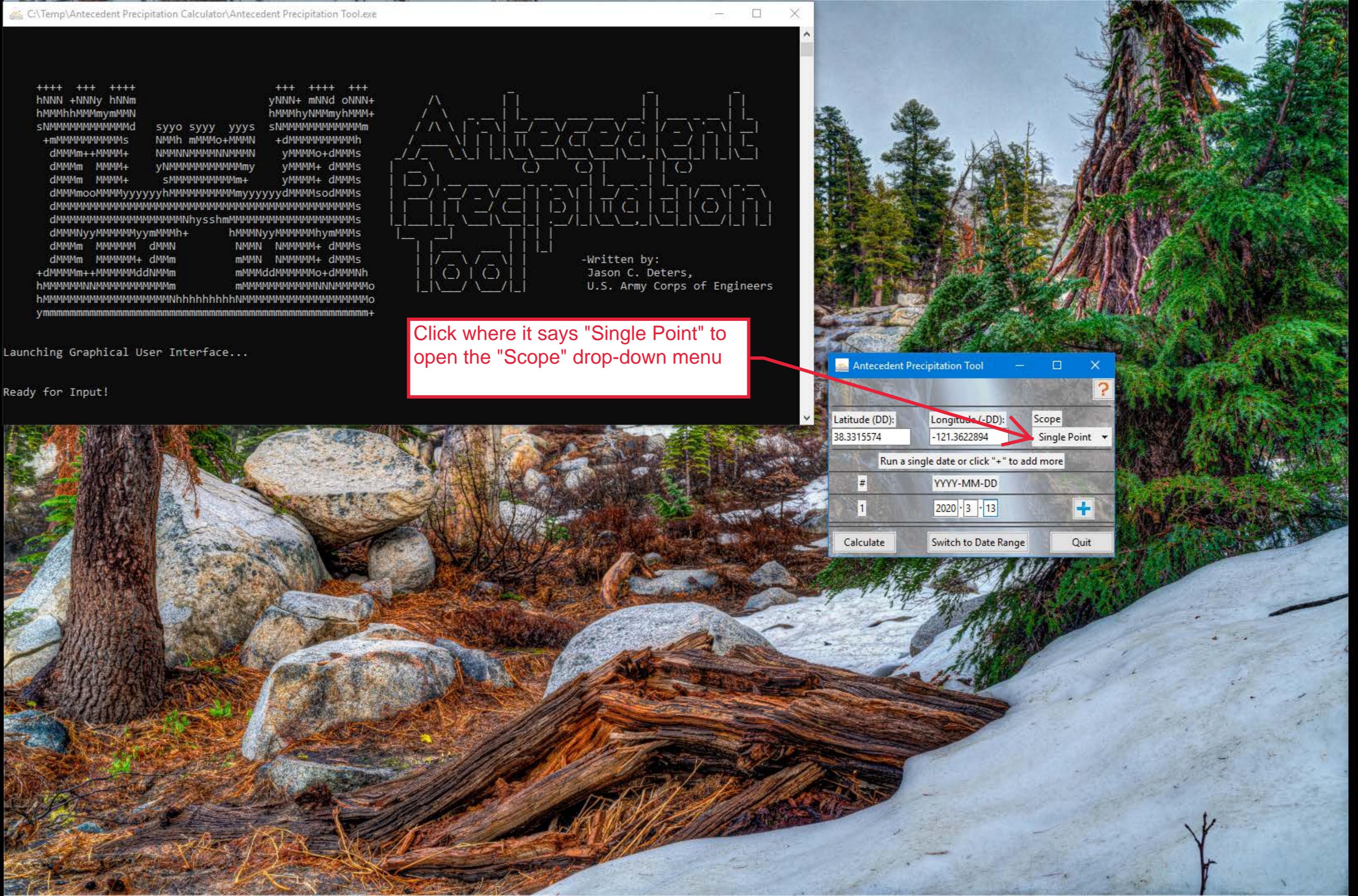


Antecedent  
Precipitati...



APT Example





Antecedent  
Precipitati...



APT Example

Antecedent  
Precipitati...

APT Example

```
++++ +++ +++
hNNN +NNNy hNNm      +++ ++++
yNNN+ mNNd oNNN+
hMMMyhNMMMyhMM+
sNMMMMMMMMMMMMMd    syo syyy yyys
+mMMMMMMMMMMMs      NMMh mMMMo+MMMN
dMMMm+++MMMM+      NMMNNMMMNMMMN
dMMm MMM+          yNMMMMMMMMMMMy
dMMm MMM+          yMMMM+ dMMMs
dMMmooMMMyyyyyyhMMMMMMMMMyyyyyydMMMsodMMMs
dMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMMM
dMMMMMMMMMMMMMMMMMMhysshMhMMMMMMMMMMMMMMMM
dMMNyMMMMMyymMMh+   hMMNyMMMMMyhmMMs
dMMm MMM dMMN       NMMN NMMMM+ dMMMs
dMMm MMM+ dMMm      mMMN NMMMM+ dMMMs
+dMMMMm+++MMMMMdNNm mMMddMMMMMo+dMMNh
hMMMMMMNNMMMMMMMMMMm mMMMMMMMMMMNNMMMMMo
hMMMMMMMMMMMMMMMMMMhyyyyyhhhNMMMMMMMMMMMMMM
ymmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmmm+
```

-Written by:  
Jason C. Deters,  
U.S. Army Corps of Engineers

Launching Graphical User Interface...

Ready for Input!



Antecedent Precipitation Tool

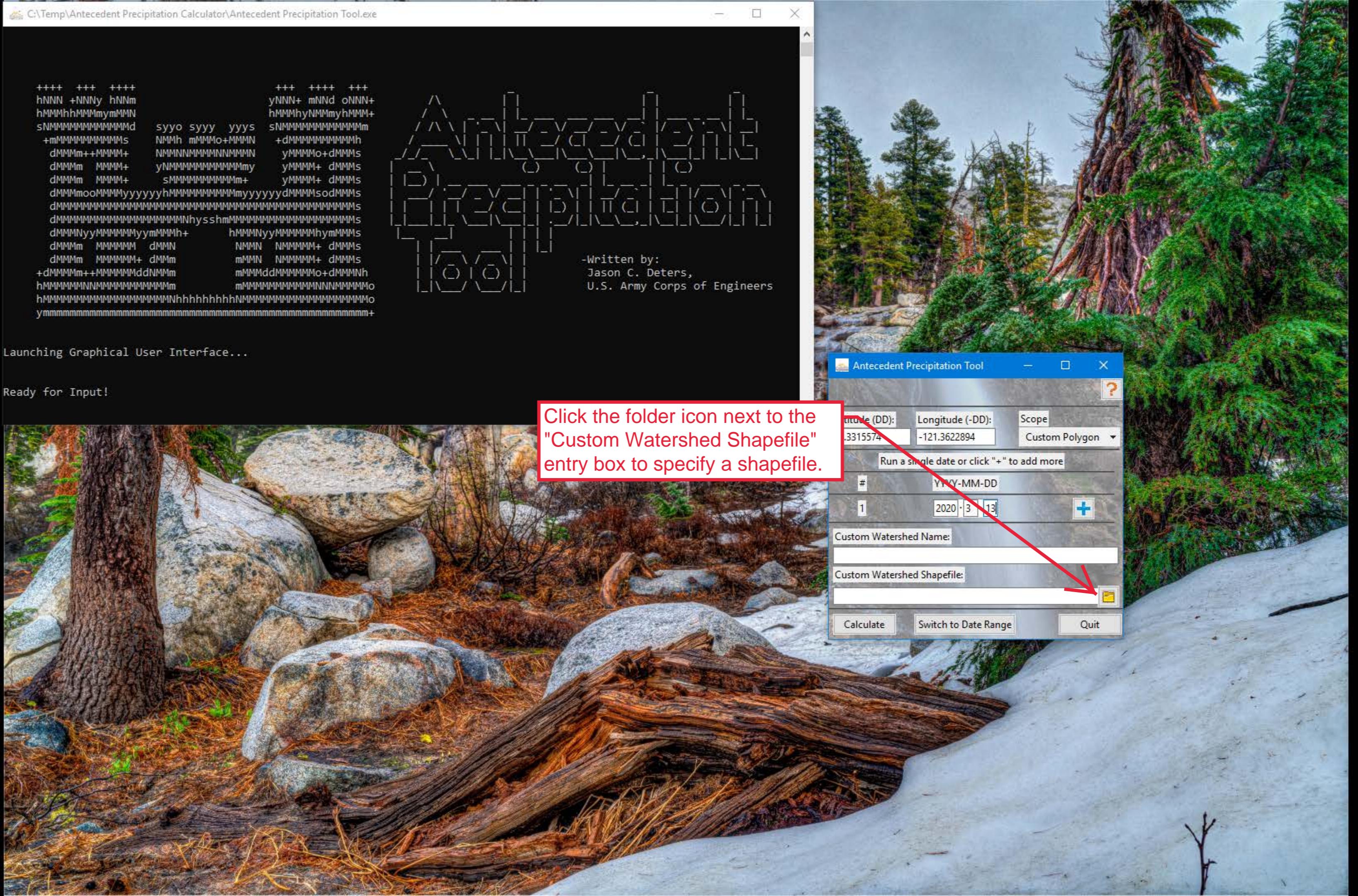
(DD): 38.3315574 Longitude (-DD): 121.3622894 Scope: Single Point

Run a single date or click "+" to add

# YYYY-MM-DD: 2020-3-13

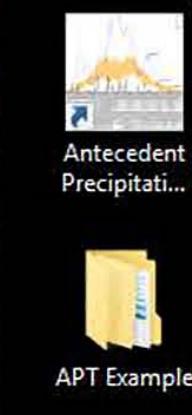
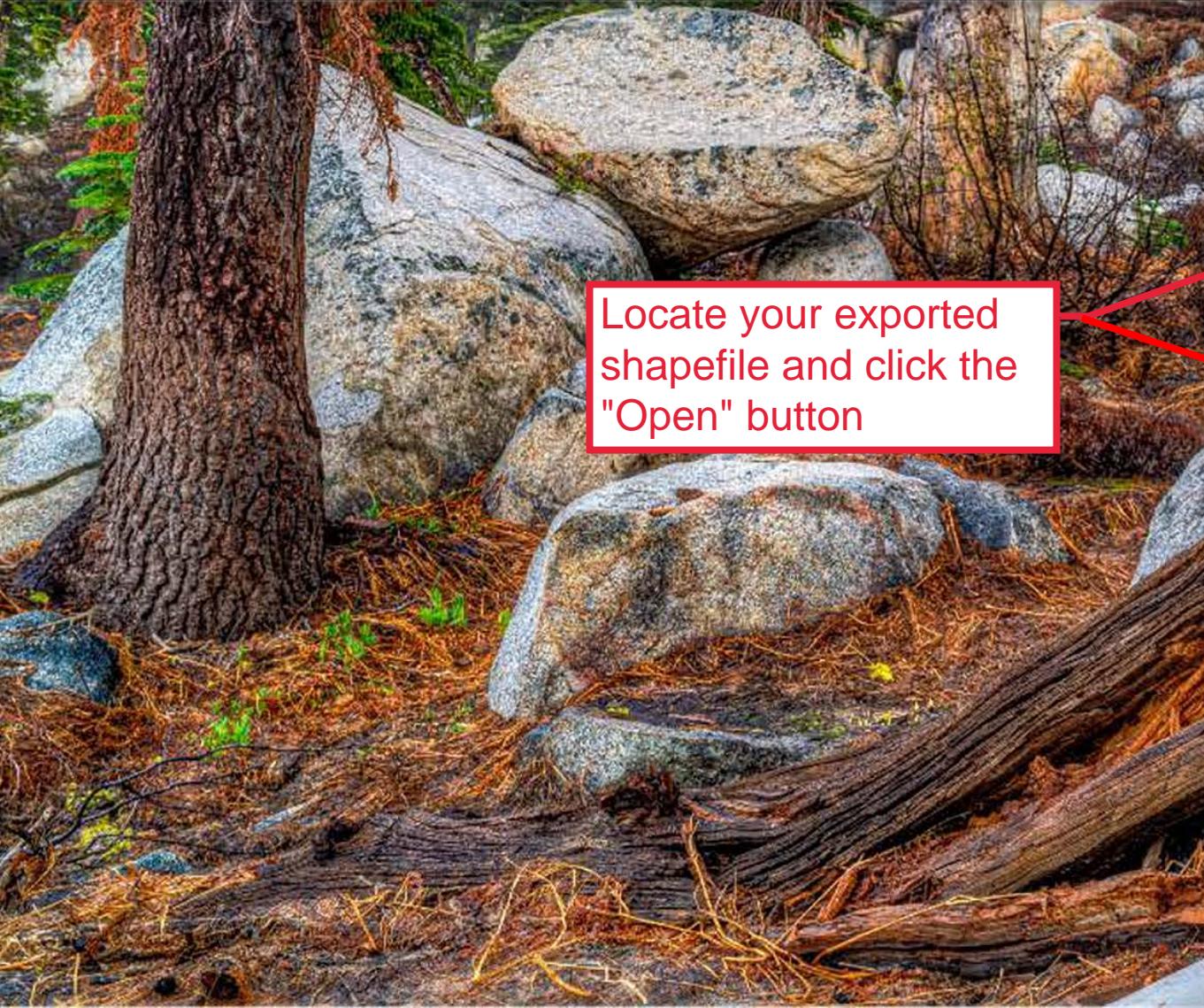
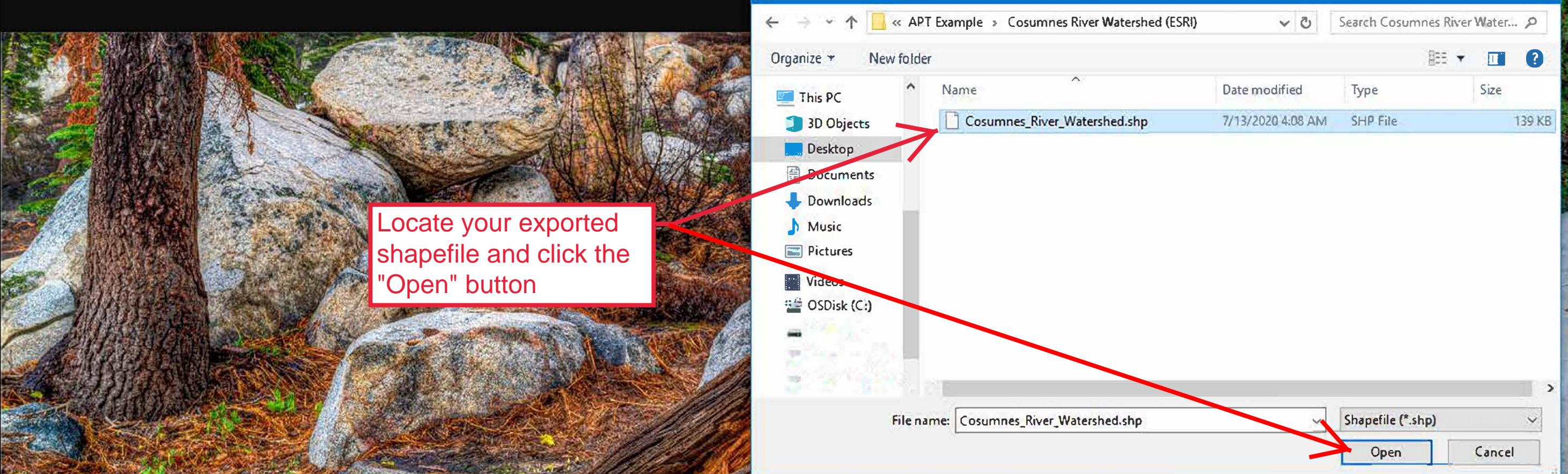
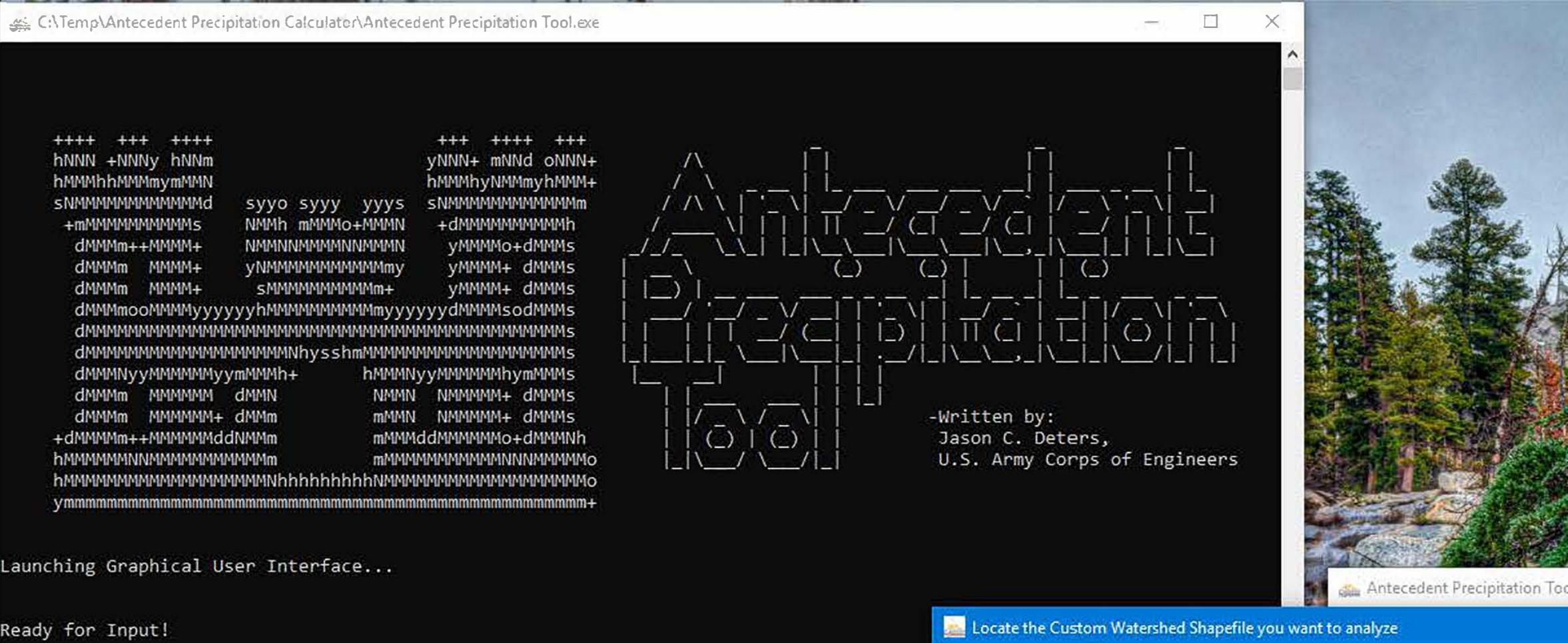
Calculate Switch to Date Range Quit

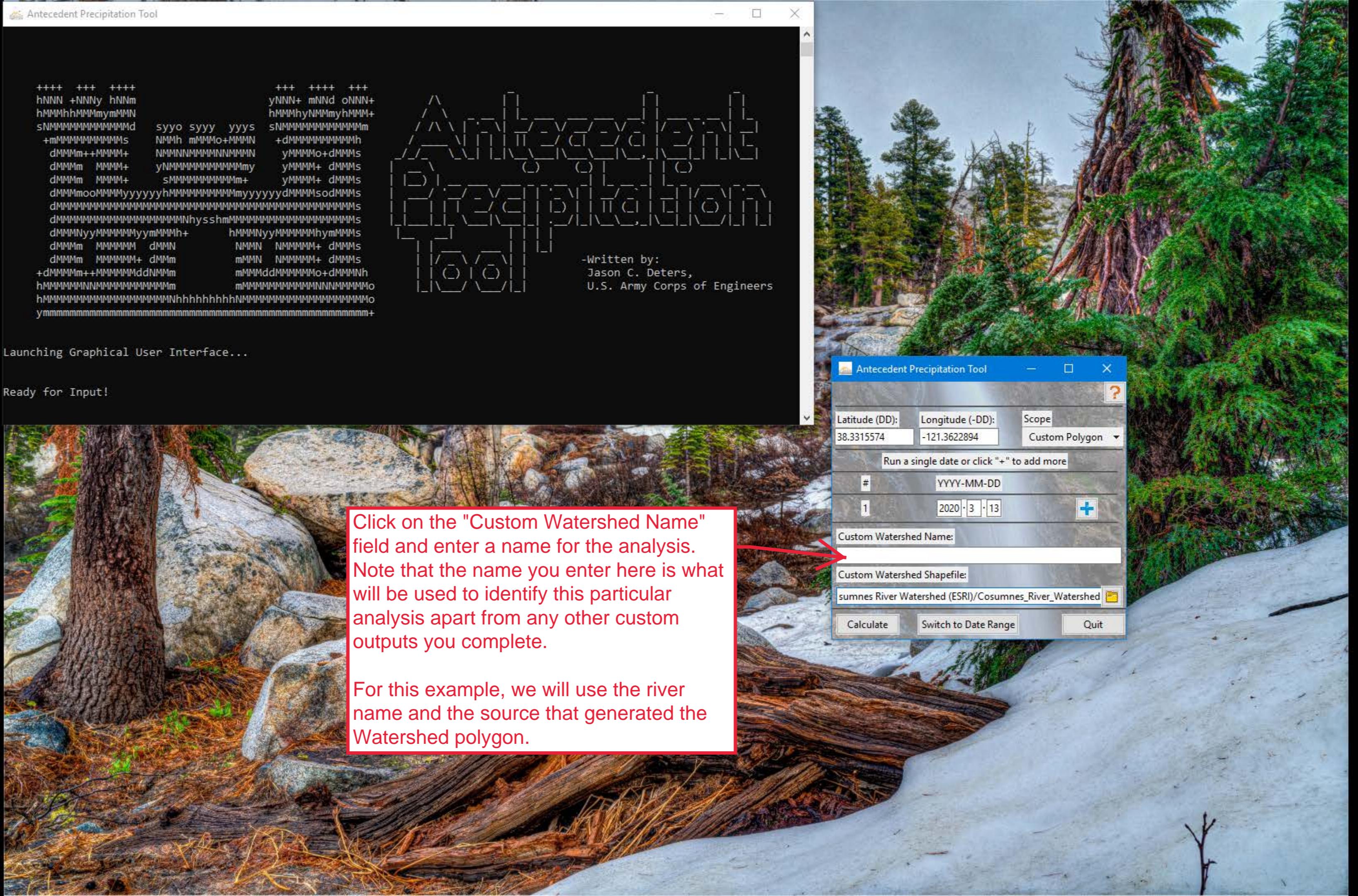
Custom Polygon



Click the folder icon next to the  
"Custom Watershed Shapefile"  
entry box to specify a shapefile.

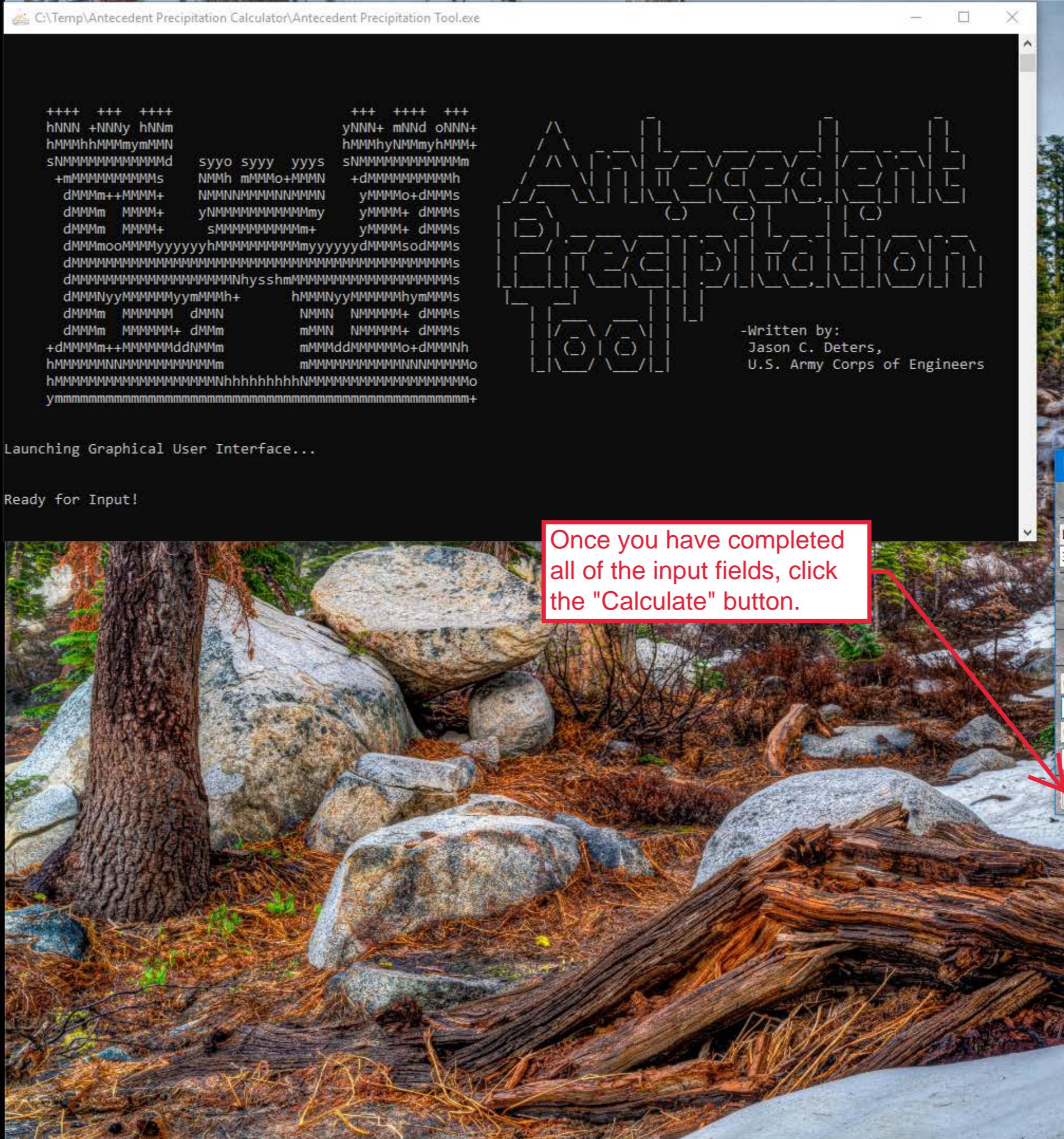




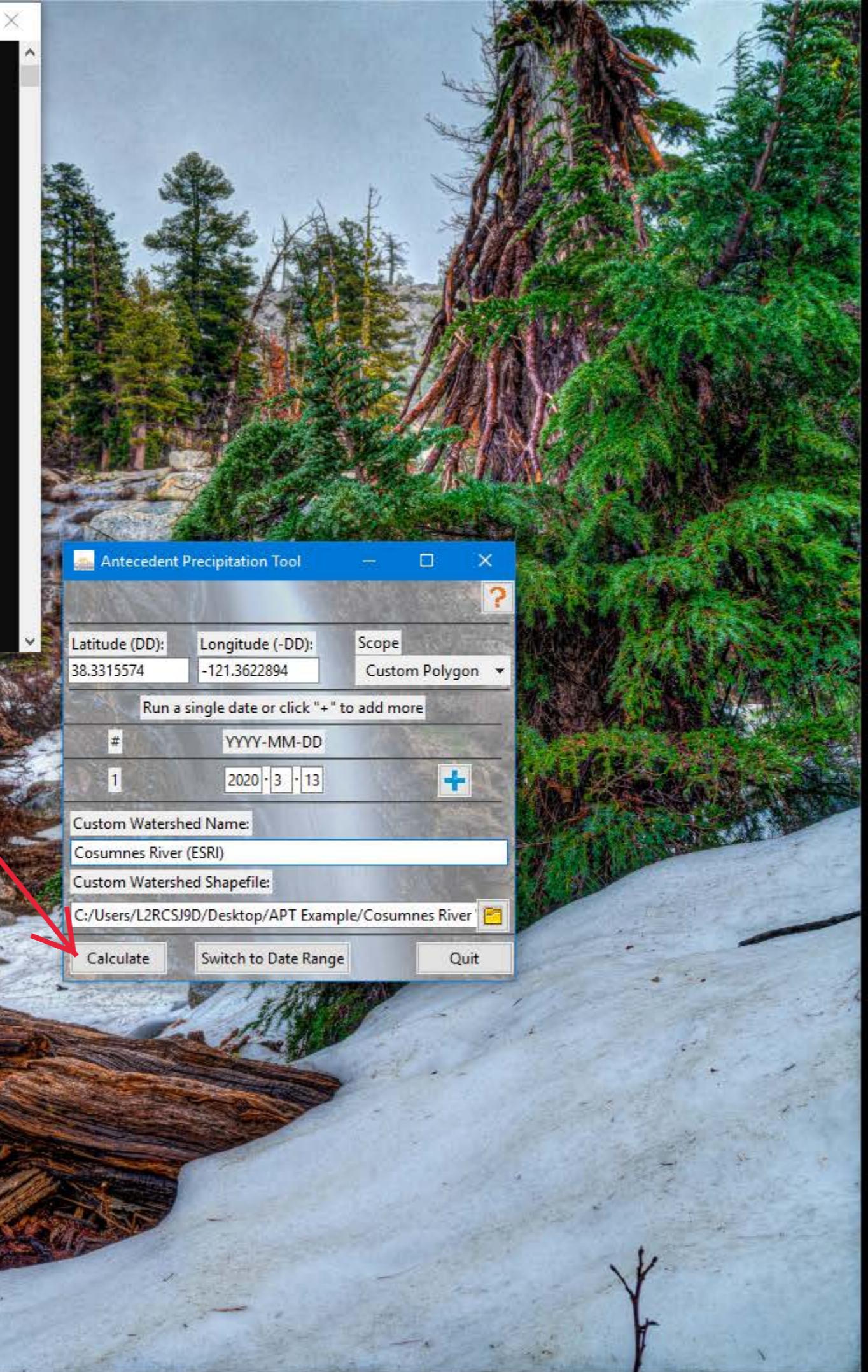


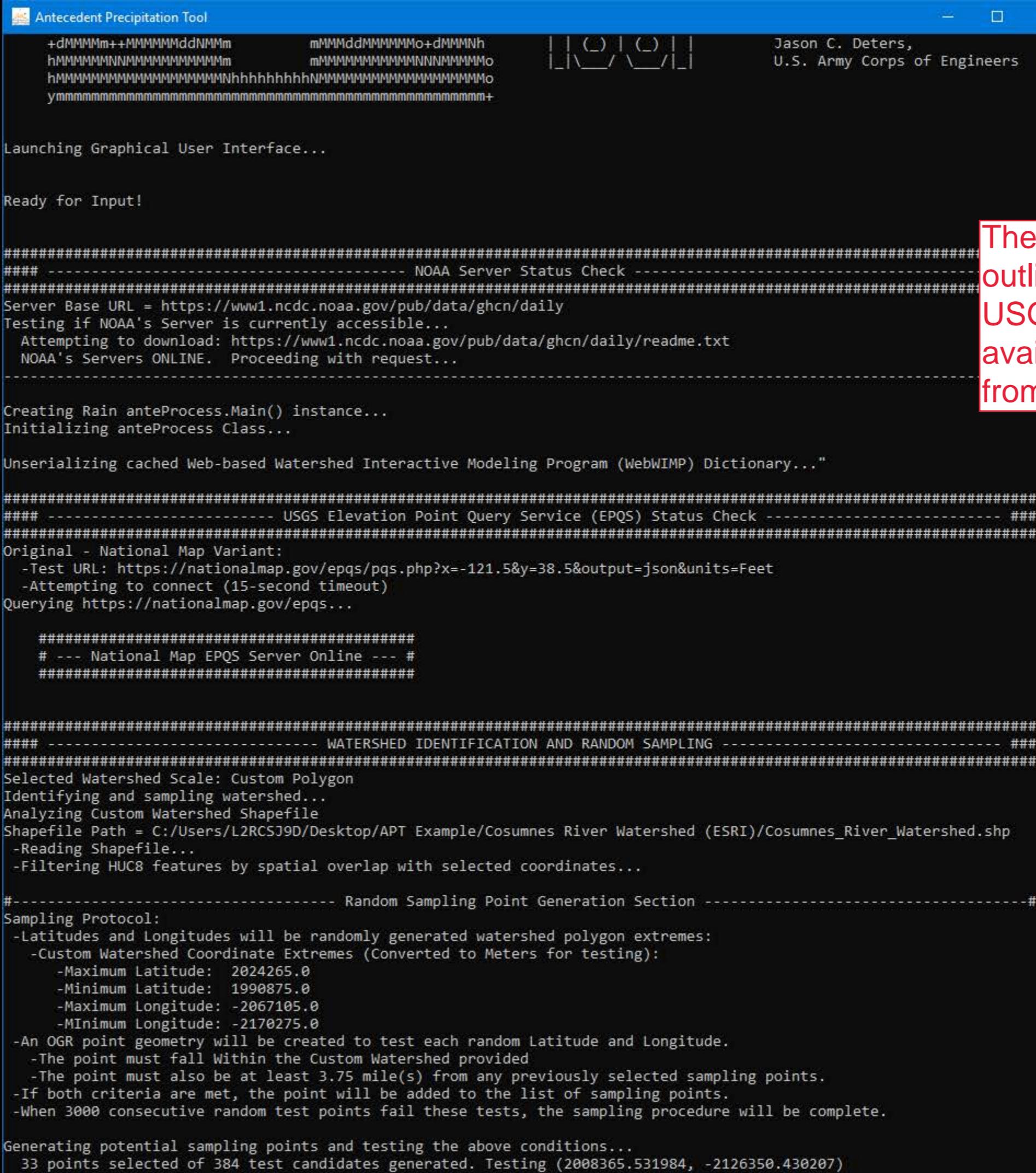
Click on the "Custom Watershed Name" field and enter a name for the analysis. Note that the name you enter here is what will be used to identify this particular analysis apart from any other custom outputs you complete.

For this example, we will use the river name and the source that generated the Watershed polygon.

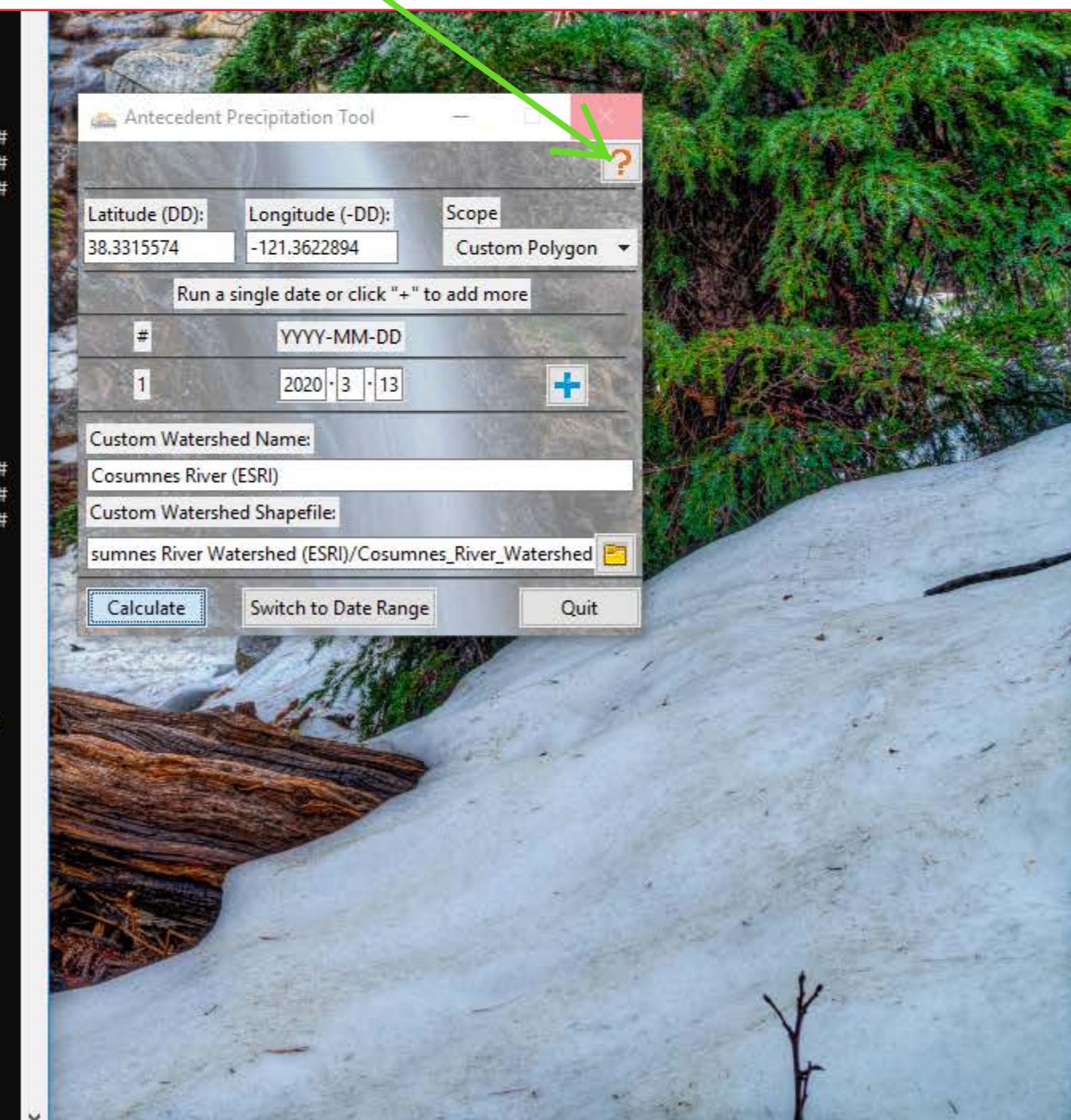


Once you have completed  
all of the input fields, click  
the "Calculate" button.





The rest of the procedure follows the same steps that are outlined in the "How to generate a watershed analysis using the USGS Watershed Boundary Dataset" document, which is available from the **Help Menu**. We will skip straight to the end from here.



File Edit View Window Help

Home Tools 2020-03-13 - Cos... x

1 / 41

102%

Information about this output can be found in the "How to read the output of a watershed analysis" document, available from the Help Page (The orange question mark button on the tool's main interface)

# Antecedent Precipitation Tool v.1.0 - Watershed Sampling Summary

Generated on 2020-07-13

## User Inputs

|                  |                        |
|------------------|------------------------|
| Coordinates      | 38.331557, -121.362289 |
| Date             | 2020-03-13             |
| Geographic Scope | Custom Polygon         |

## Intermediate Data

|                          |                        |
|--------------------------|------------------------|
| Custom Watershed Name    | Cosumnes River (ESRI)  |
| Watershed Size           | 726.44 mi <sup>2</sup> |
| # Random Sampling Points | 40                     |

## Preliminary Result

|  |                   |
|--|-------------------|
| Average Antecedent Precipitation Score | 6.35              |
| Preliminary Determination              | Drier than Normal |

100.0%

Drier than Normal

## Sampling Point Breakdown

| Antecedent Precipitation Score | Antecedent Precipitation Condition | WebWIMP H <sub>2</sub> O Balance | Drought Index (PDSI) | # of Points |
|--------------------------------|------------------------------------|----------------------------------|----------------------|-------------|
| 9                              | Drier than Normal                  | Wet Season                       | Moderate drought     | 2           |
| 7                              | Drier than Normal                  | Wet Season                       | Moderate drought     | 8           |
| 6                              | Drier than Normal                  | Wet Season                       | Moderate drought     | 30          |

