

Making Beautiful Maps for Education

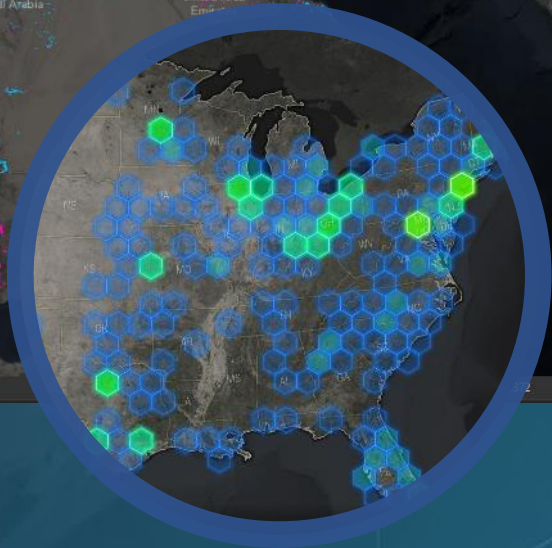
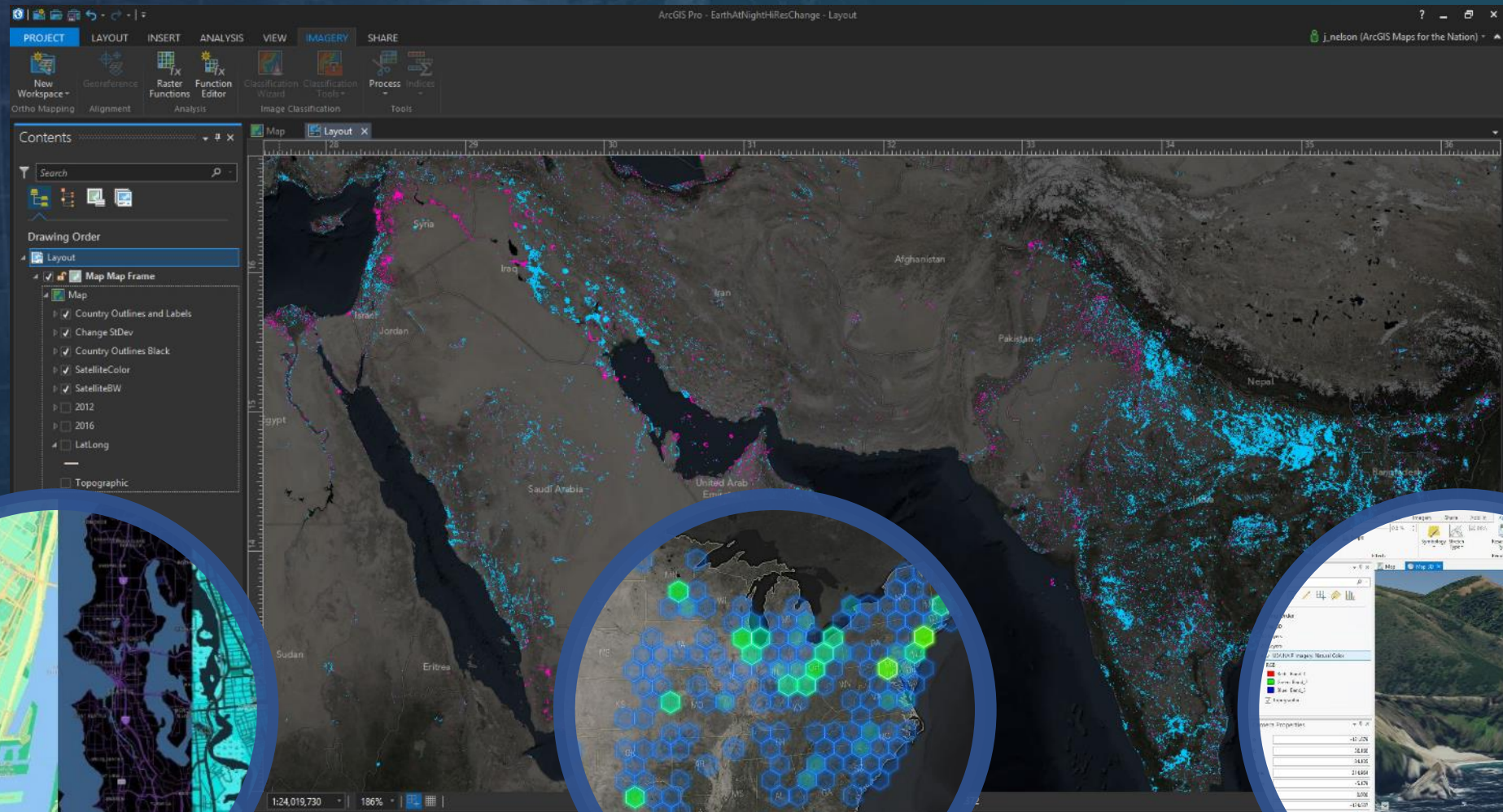
using ArcGIS Pro and ArcGIS Online

livingatlas.arcgis.com

Dan Pisut

dpisut@esri.com





Download the free 21-day trial software
<https://www.esri.com/en-us/arcgis/products/arcgis-pro/trial>

Creating a good map

1. What is the message?
2. How will it be seen? e.g., SOS, web map, print, etc.
3. Pick a good basemap
4. Pick a symbology that doesn't distort #1
5. Use good color choice
6. Label what needs to be labeled



Making a Map is Easy

The background features a dark blue globe on the left side, partially obscured by a grid of hexagonal shapes. The right side of the background is a solid dark blue color with a pattern of faint, light blue hexagons.

Download the PPT

<https://tinyurl.com/y9qmk4vb>

Download the Files

<https://tinyurl.com/ybr83t85>

Project | Map | Insert | Analysis | View | Edit | Imagery | Share

Clipboard: Cut, Copy, Paste, Copy Path

Navigate: Explore, Bookmarks, Go To XY

Layer: Basemap, Add Data, Add Preset

Selection: Select, Select By Attributes, Select By Location, Clear

Inquiry: Infographics, Measure, Locate

Labeling: Pause, View Unplaced, More, Convert To Annotation

Offline: Download Map, Sync, Remove

Contents

Search

Map

Drawing Order

- Map
- World Dark Gray Reference
- World Dark Gray Canvas Base

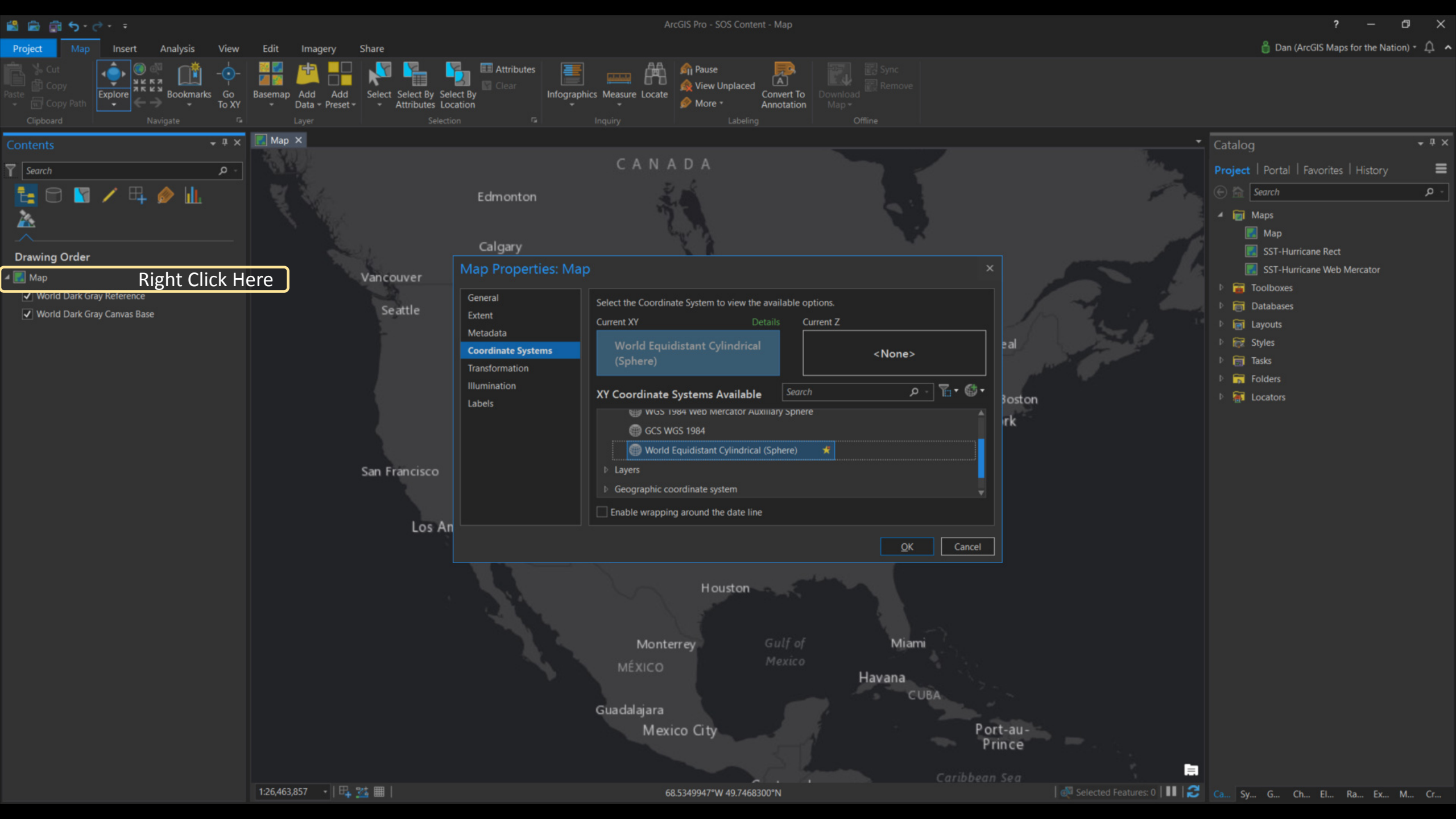


Catalog

Project | Portal | Favorites | History

Search

- Maps
 - Map
 - SST-Hurricane Rect
 - SST-Hurricane Web Mercator
- Toolboxes
- Databases
- Layouts
- Styles
- Tasks
- Folders
- Locators



Project | Map | Insert | Analysis | View | Edit | Imagery | Share

Clipboard | Navigate | Layer | Selection | Inquiry | Labeling | Offline

Contents | Search | Drawing Order

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Catalog | Project | Portal | Favorites | History

Search

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 - SST-Hurricane Rect
 - SST-Hurricane Web Mercator
- Toolboxes
- Databases
- Layouts
- Styles
- Tasks
- Folders
- Locators

Map Properties: Map

Select the Coordinate System to view the available options.

Current XY: World Equidistant Cylindrical (Sphere) | Details | Current Z: <None>

XY Coordinate Systems Available | Search

- WGS 1984 Web Mercator Auxiliary Sphere
- GCS WGS 1984
- World Equidistant Cylindrical (Sphere)** *

Layers | Geographic coordinate system

Enable wrapping around the date line

OK | Cancel

Right Click Here

Project | Map | Insert | Analysis | View | Edit | Imagery | Share

Clipboard: Cut, Copy, Copy Path

Navigate: Explore, Bookmarks, Go To XY

Layer: Basemap, Add Data, Add Preset

Selection: Select, Select By Attributes, Select By Location

Inquiry: Infographics, Measure, Locate

Labeling: Pause, View Unplaced, More

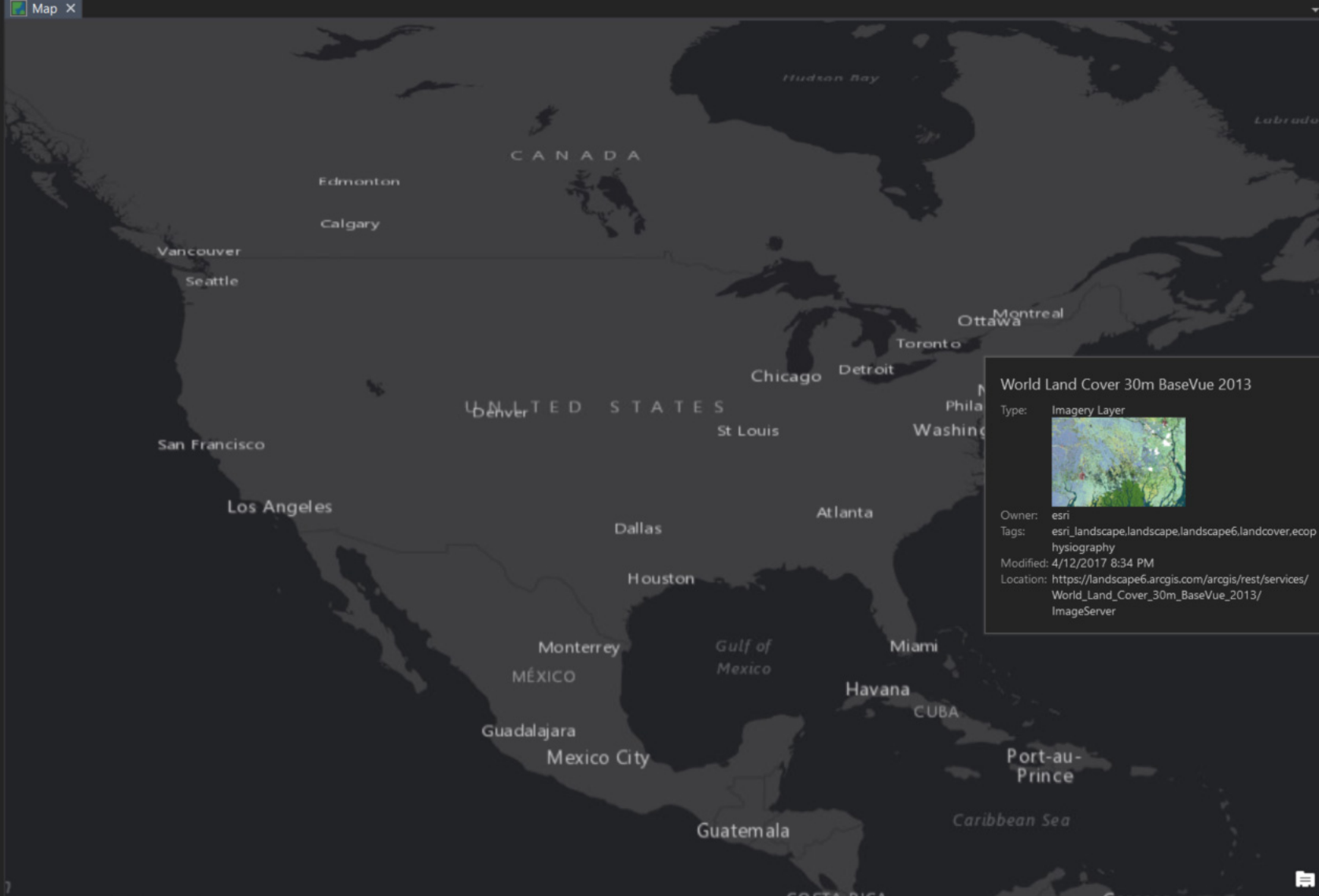
Offline: Convert To Annotation, Download Map, Sync, Remove

Contents

Map X

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- Map
 - World Dark Gray Reference
 - World Dark Gray Canvas Base



World Land Cover 30m BaseVue 2013

Type: Imagery Layer



Owner: esri
 Tags: esri_landscape.landscape.landscape6.landcover.ecophysiography
 Modified: 4/12/2017 8:34 PM
 Location: https://landscape6.arcgis.com/arcgis/rest/services/World_Land_Cover_30m_BaseVue_2013/ImageServer

Open Living Atlas

Project | Portal | Favorites | History

Living Atlas > All

World land cover

Search Results

- USA NLCD Land Cover 2011
- USA NLCD Land Cover 2006
- World Land Cover
- Intact Forest Landscapes (2000)
- USA NLCD Land Cover Change 2006-2011
- USA NLCD Tree Canopy Cover 2011
- World Land Cover 30m BaseVue 2013**
- World Topographic Map
- World Land Cover ESA 2010
- World Forests
- USA NLCD Impervious Surface 2011
- USA NLCD Impervious Surface Change 2006-2011
- Intact Forest Landscapes (2013)
- World Land Cover ESA 2009
- World Land Cover 30m BaseVue 2013
- World Land Cover ESA 2010 Quality
- World Ocean Base
- National Geographic World Map
- World Ecophysiographic Land Units 2015
- Landsat Time Enabled Imagery - Canada
- USA Generalized Federal Lands
- Elevation Coverage Map
- Greenland Satellite Imagery
- USVI Landsat Time Enabled Imagery
- Puerto Rico: Landsat Time Enabled Imagery, 1974

Find more items...

Contents

Search

Map

- World Dark Gray Reference
- World Land Cover 30m BaseVue 2013
 - Deciduous Forest
 - Evergreen Forest
 - Shrub/Scrub
 - Grassland
 - Barren / Minimal Vegetation
 - Agriculture, General
 - Agriculture, Paddy
 - Wetland
 - Mangrove
 - Ice / Snow
 - Clouds
 - Woody Wetlands
 - Mixed Forest
 - Urban, High Density
 - Urban, Medium to Low Density
- World Dark Gray Canvas Base



Catalog

Project | Portal | Favorites | History

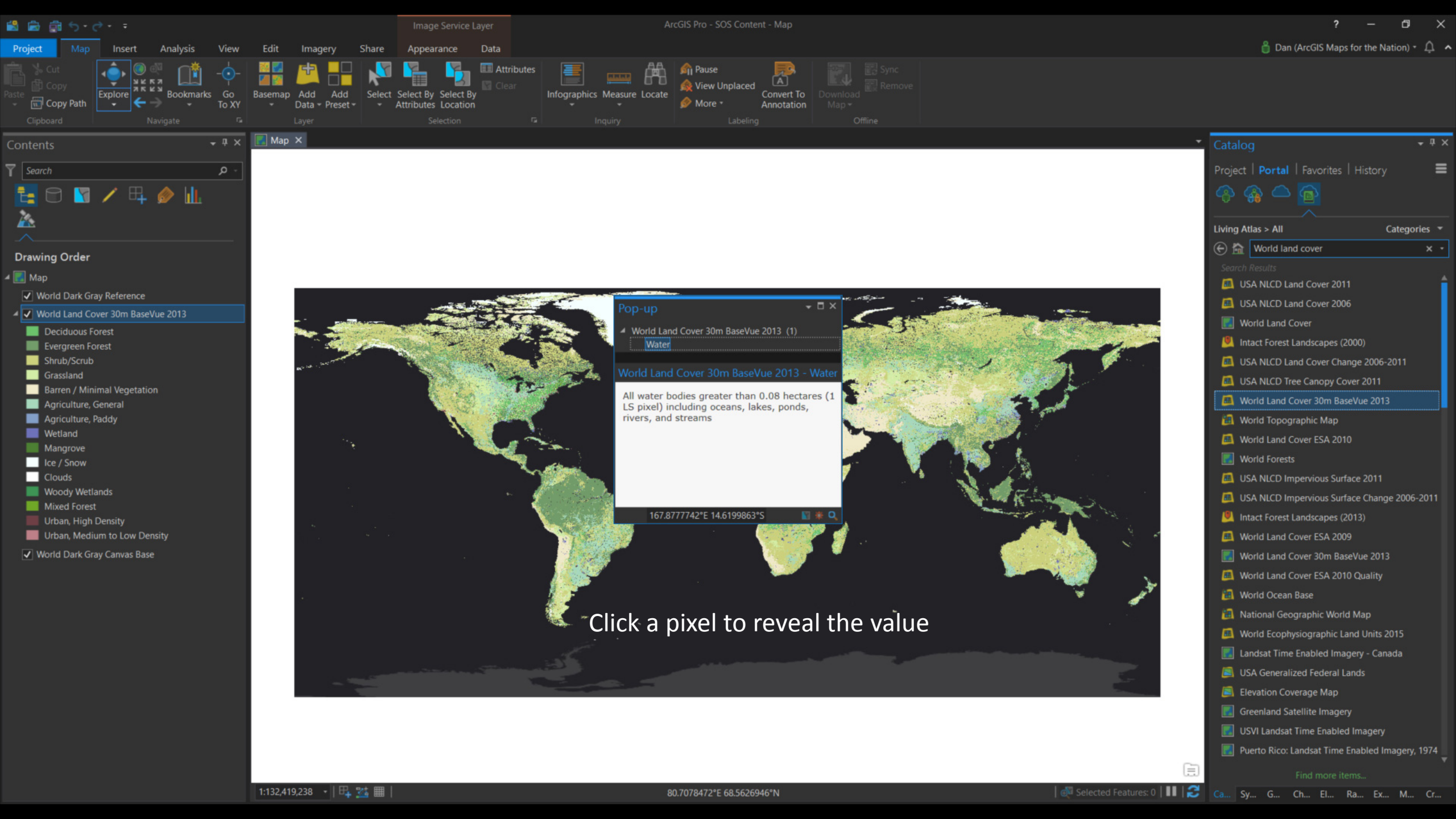
Living Atlas > All

World land cover

Search Results

- USA NLCD Land Cover 2011
- USA NLCD Land Cover 2006
- World Land Cover
- Intact Forest Landscapes (2000)
- USA NLCD Land Cover Change 2006-2011
- USA NLCD Tree Canopy Cover 2011
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- Greenland Satellite Imagery
- USVI Landsat Time Enabled Imagery
- Puerto Rico: Landsat Time Enabled Imagery, 1974

Find more items...



Click a pixel to reveal the value

Contents

Search

Drawing Order

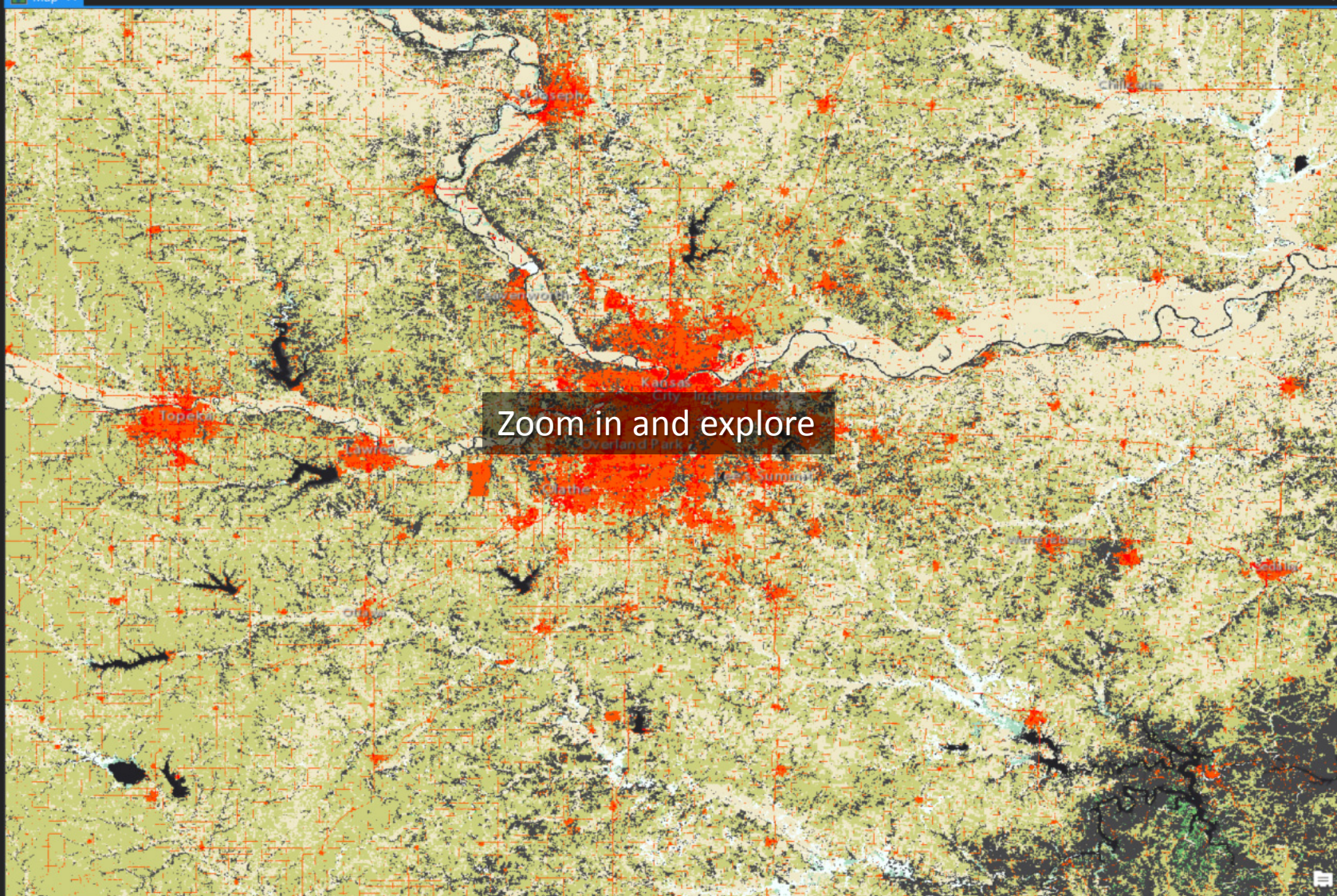
Map

- World Dark Gray Reference
- World Land Cover 30m BaseVue 2013

Class Name

- Deciduous Forest
- Evergreen Forest
- Shrub/Scrub
- Grassland
- Barren / Minimal Vegetation
- Agriculture, General
- Agriculture, Paddy
- Wetland
- Mangrove
- Water
- Ice / Snow
- Clouds
- Woody Wetlands
- Mixed Forest
- Urban, High Density
- Urban, Medium to Low Density

World Dark Gray Canvas Base



Zoom in and explore

Symbology - World Land Cover 30m BaseVue 2013

World Land Cover 30m BaseVue 2013

Primary symbology

Unique Values

Value field

Field 1 Class Name

Color scheme

Nodata

Values

Color	Value	Label
	Deciduous...	Deciduous...
Green	Evergreen...	Evergreen...
Light Green	Shrub/Scrub	Shrub/Scrub
Yellow	Grassland	Grassland
Light Yellow	Barren /...	Barren /...
Light Brown	Agriculture...	Agriculture...
Light Green	Wetland	Wetland
Light Green	Mangrove	Mangrove
White	Water	Water
Green	Ice / Snow	Ice / Snow
White	Clouds	Clouds
White	Woody...	Woody...
White	Mixed Forest	Mixed Forest
Red	Urban...	Urban...
Orange	Urban...	Urban...

The background is a dark blue gradient. On the left side, there is a semi-transparent globe showing the Earth's continents and oceans, overlaid with a white grid of latitude and longitude lines. On the right side, there is a pattern of overlapping hexagons in various shades of blue and green, some appearing as outlines and others as solid colors.

Add Data to Your Map



Search the ArcGIS Living Atlas of the World for maps, apps, and more



Search examples



All



Trending



Basemaps



Imagery



Boundaries



People



Infrastructure

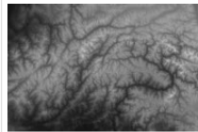


Environment

Filters: All content types All time All regions Esri-only content

Sort by: Relevance

1645 Results



Terrain

Imagery Layer By: esri

A multi-resolution world elevation layer providing access to elevation values for use in analysis with functions for slope, aspect, and hillshade.

Subscriber Authoritative



Active Hurricanes

Map Image Layer By: esri

This layer describes the path and forecast path of tropical activity from the National Hurricane Center and Joint Typhoon Warning Center. ArcGIS Online subscription required.

Subscriber Authoritative



USA Forest Type

Imagery Layer By: esri

This layer contains the Forest Type across the contiguous United States and Alaska.

Subscriber Authoritative



Severe Weather Web Map

Web Map By: jbaranyiDRP

Map containing live feed sources for severe weather across the United States.

Subscriber Authoritative



Ocean Basemap



USA Wildfire Activity

Living Atlas of the World

livingatlas.arcgis.com

a trusted source of ready-to-use data from all over the world

Global/Natural_Climatological_Fire_Disasters/MapServer

91.9 KVCR Admin Home Compass Living Atlas ArcGIS Maps My Applications Jira Box Living Atlas Com

ArcGIS REST Services Directory

[Home](#) > [services](#) > [Global](#) > [Natural_Climatological_Fire_Disasters \(MapServer\)](#)

[JSON](#) | [SOAP](#)

Global/Natural_Climatological_Fire_Disasters (MapServer)

View In: [ArcGIS JavaScript](#) [ArcGIS Online map viewer](#) [ArcGIS Earth](#) [ArcMap](#) [ArcGIS Explorer](#)

View Footprint In: [ArcGIS Online map viewer](#)

Service Description:

Map Name: Layers

[Legend](#)

[All Layers and Tables](#)

[Dynamic Legend](#)

[Dynamic All Layers](#)

Layers:

- [Natural_Climatological_Fire_Disasters_by_Total_Occurence](#) (0)
- [Natural_Climatological_Fire_Disasters_by_Total_Deaths](#) (1)
- [Natural_Climatological_Fire_Disasters_by_Total_Affected](#) (2)
- [Natural_Climatological_Fire_Disasters_by_Homeless](#) (3)
- [Natural_Climatological_Fire_Disasters_by_Affected_People](#) (4)
- [Natural_Climatological_Fire_Disasters_by_Total_Damage](#) (5)
- [Natural_Climatological_Fire_Disasters_by_Total_Injured](#) (6)

Description:

Copyright Text:

Spatial Reference: 4326 (4326)

Single Fused Map Cache: false

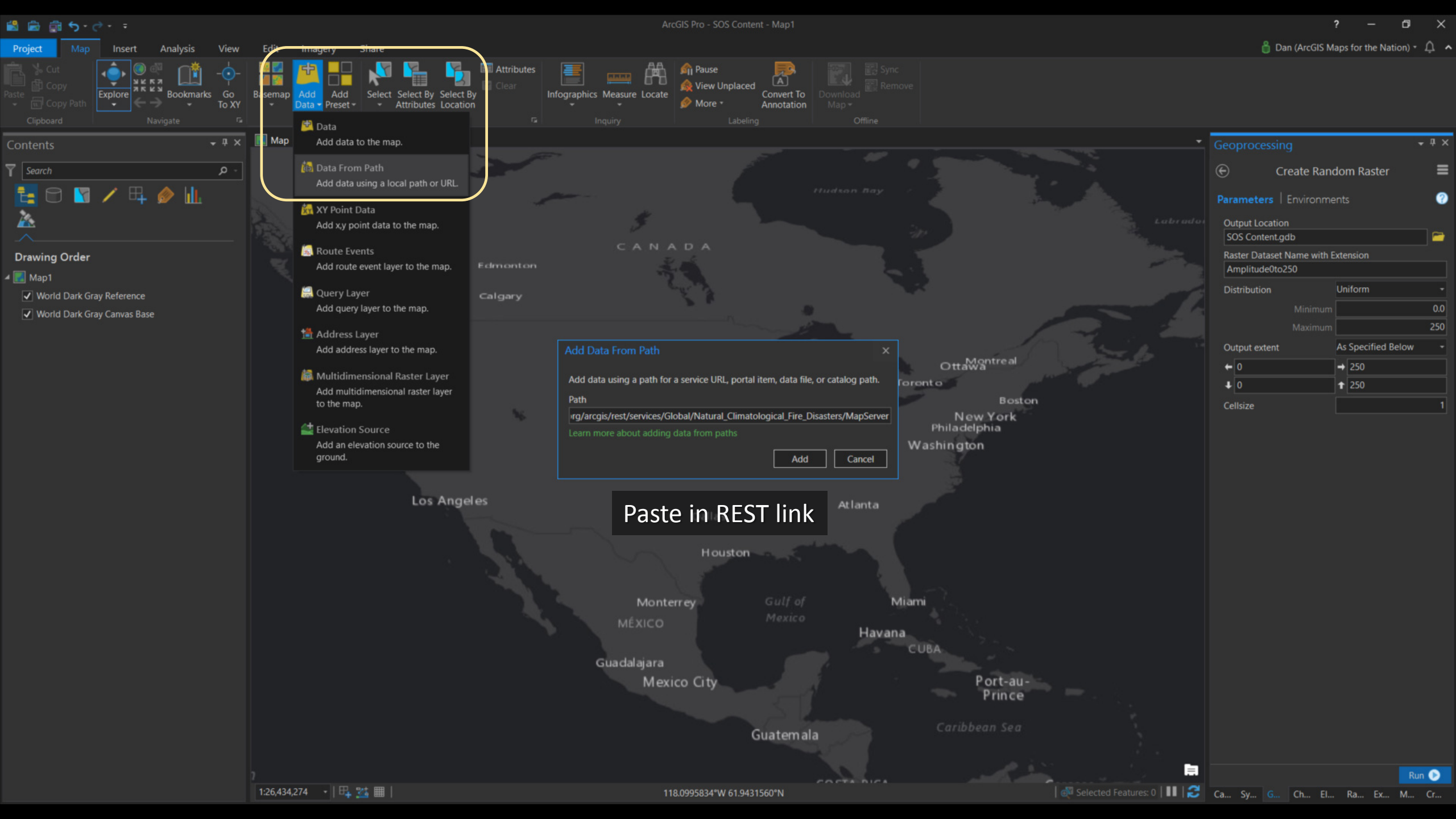
Initial Extent:

XMin: -201.11142857142846
YMin: -61.687720075428466
XMax: 247.50000000000006
YMax: 141.4037084960001
Spatial Reference: 4326 (4326)

Full Extent:

XMin: -179.99999999999991

Use a WMS or REST URL to load data to the map



Project | Map | Insert | Analysis | View | Edit | Imagery | Share

Clipboard | Navigate

- Add Data**
- Data
 - Add data to the map.
- Data From Path
 - Add data using a local path or URL.
- XY Point Data
 - Add x,y point data to the map.
- Route Events
 - Add route event layer to the map.
- Query Layer
 - Add query layer to the map.
- Address Layer
 - Add address layer to the map.
- Multidimensional Raster Layer
 - Add multidimensional raster layer to the map.
- Elevation Source
 - Add an elevation source to the ground.

Add Data From Path

Add data using a path for a service URL, portal item, data file, or catalog path.

Path

`http://arcgis/rest/services/Global/Natural_Climatological_Fire_Disasters/MapServer`

[Learn more about adding data from paths](#)

Add Cancel

Paste in REST link

Geoprocessing

Create Random Raster

Parameters | Environments

Output Location: SOS Content.gdb

Raster Dataset Name with Extension: Amplitude0to250

Distribution: Uniform

Minimum: 0.0

Maximum: 250

Output extent: As Specified Below

Left: 0 Right: 250

Down: 0 Up: 250

Cellsize: 1

Run

ArcGIS Pro - SOS Content - Map1

Project | Map | Insert | Analysis | View | Edit | Imagery | Share | Appearance

Clipboard | Navigate | Layer | Selection | Inquiry | Labeling | Offline

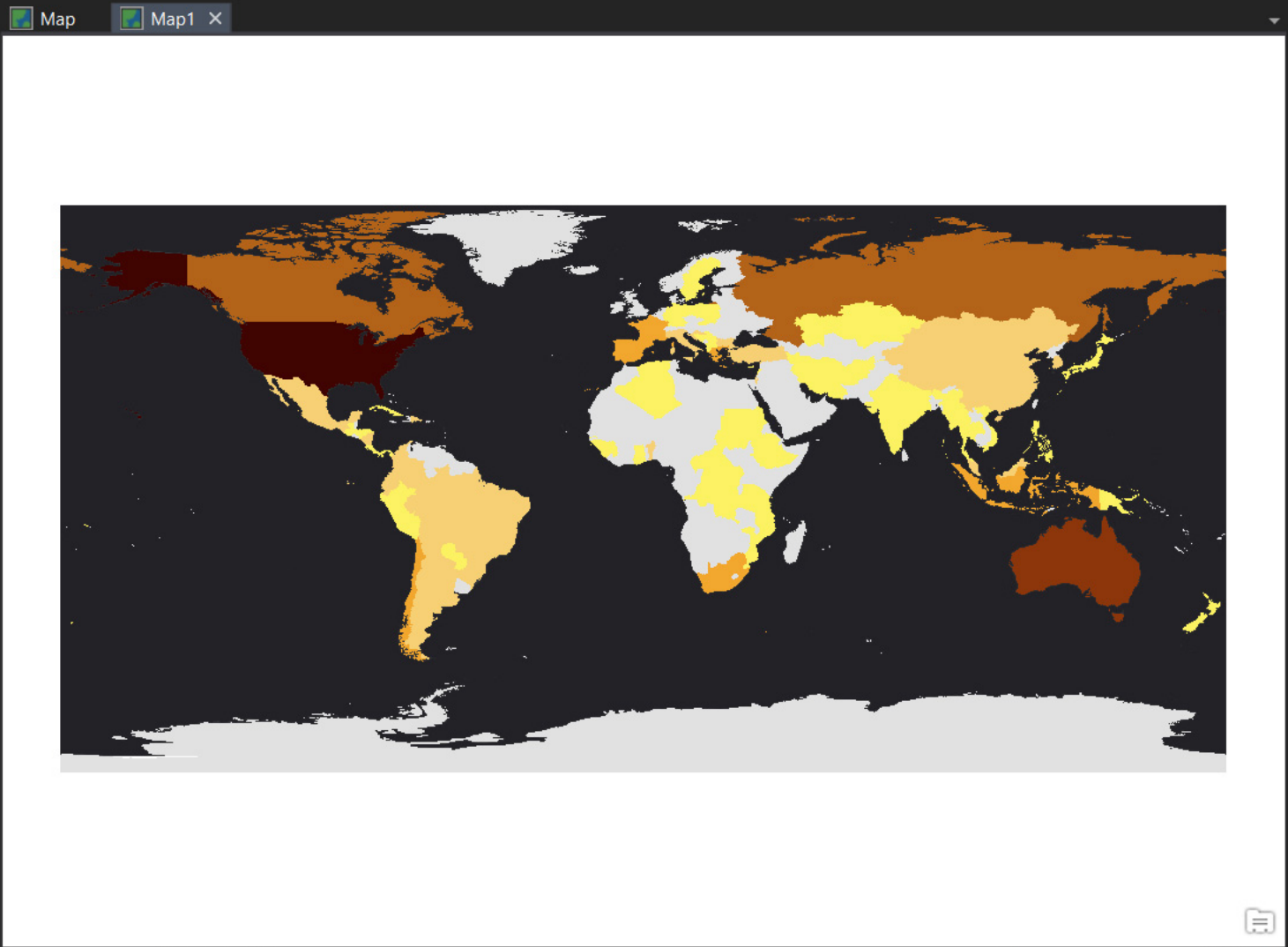
Explore | Bookmarks | Go To XY | Basemap | Add Data | Add Preset | Select | Select By Attributes | Select By Location | Attributes | Clear | Infographics | Measure | Locate | Pause | View Unplaced | More | Convert To Annotation | Download Map | Sync | Remove

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 - Global/Natural_Climatological_Fire_Disasters
 - World Dark Gray Canvas Base



Geoprocessing

Create Random Raster

Parameters | Environments

Output Location: SOS Content.gdb

Raster Dataset Name with Extension: Amplitude0to250

Distribution: Uniform

Minimum: 0.0

Maximum: 250

Output extent: As Specified Below

0 250

0 250

Cellsize: 1

Run

PointData - Excel

File Home Insert Page Layout Formulas Data Review View Acrobat Tell me what you want to do

Cut Copy Paste Format Painter

Clipboard Font Alignment Number

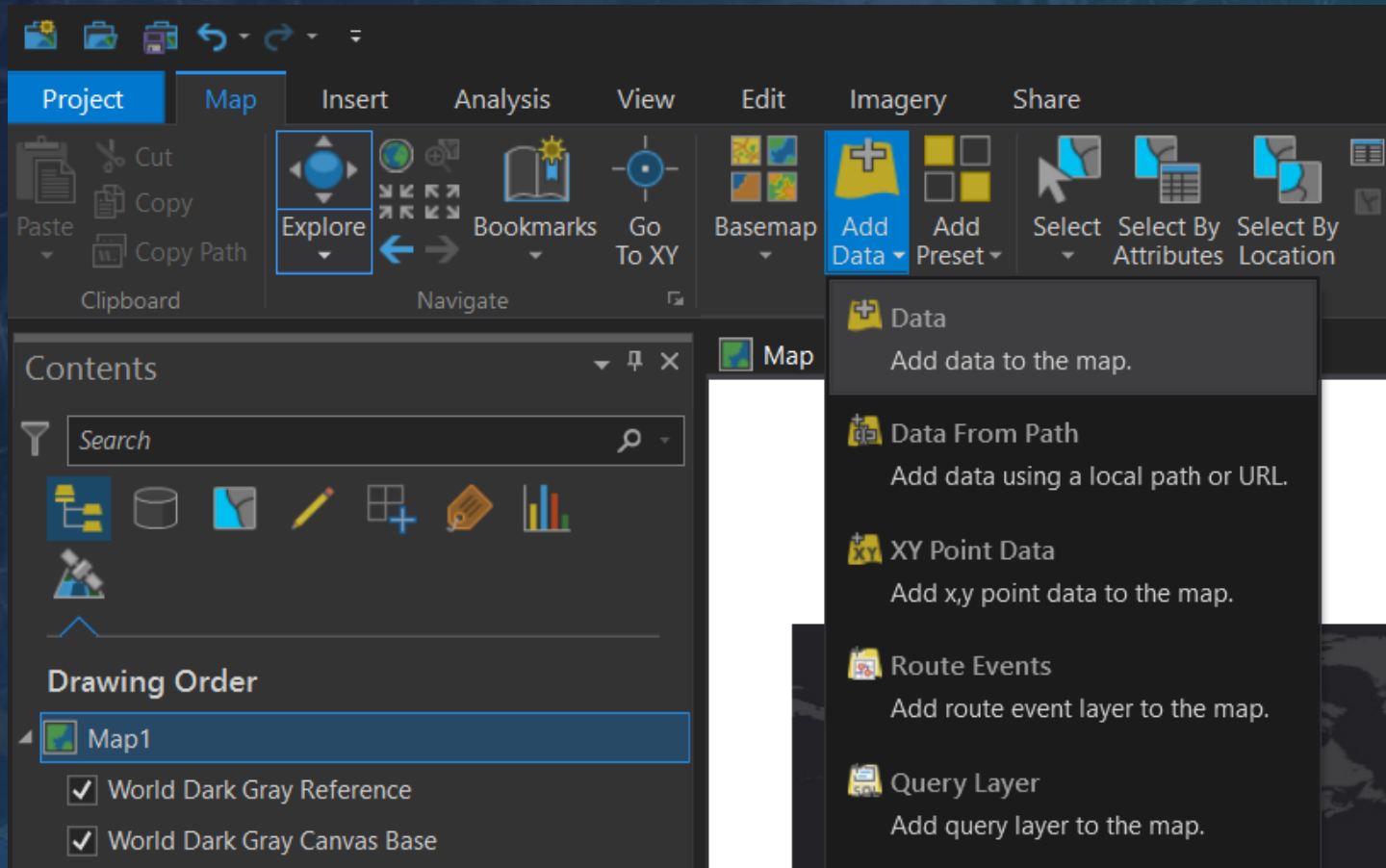
Calibri 11 A A Wrap Text Merge & Center

General

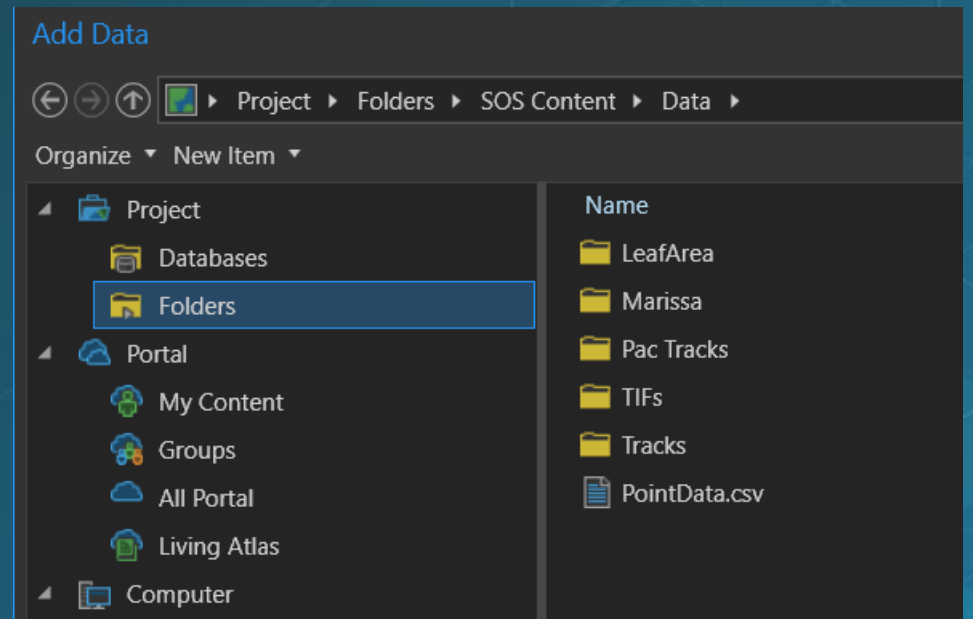
U30

	A	B	C	D	E	F	G	H	I	J	K
1	Station ID	Station Name	First Year	Last Year	Year Rang	% Comple	MSL Trench	+/- 95% C	MSL Trench	+/- 95% CI (ft/ce	
2	1611400	Nawiliwili, HI	1955	2017	63	0.9947	1.65	0.45	0.54	0.15	
3	1612340	Honolulu, HI	1905	2017	113	0.944	1.48	0.21	0.49	0.07	
4	1612480	Mokuoloe, HI	1957	2017	61	0.8242	1.43	0.54	0.47	0.18	
5	1615680	Kahului, HI	1947	2017	71	0.9519	2.21	0.42	0.73	0.14	
6	1617760	Hilo, HI	1927	2017	91	0.8352	3.08	0.3	1.01	0.1	
7	1619000	Johnston Atoll	1947	2003	57	0.93	0.75	0.56	0.25	0.18	
8	1619910	Midway Atoll	1947	2017	71	0.9554	1.34	0.43	0.44	0.1	
9	1630000	Apra Harbor, Guam	1993	2017	25	0.956	5.04	4.15	1.65	1	
10	1770000	Pago Pago, American Samoa	1948	2009	62	0.8592	2.21	0.81	0.72		
11	1820000	Kwajalein, Marshall Islands	1946	2017	72	0.9849	2.36	0.78	0.77		
12	1890000	Wake Island, Pacific Ocean	1950	2017	68	0.9383	2.07	0.43	0.68		
13	2695540	St. Georges, Bermuda	1932	2017	86	0.8777	2.17	0.37	0.71		
14	8410140	Eastport, ME	1929	2017	89	0.9632	2.13	0.17			
15	8411250	Cutler, ME	1979	2010	32	0.9396	2.34	0.61			
16	8413320	Bar Harbor, ME	1947	2017	71	0.9254	2.22	0.21			
17	8418150	Portland, ME	1912	2017	106	1	1.87	0.1			
18	8419870	Seavey Island, ME	1926	2001	76	0.74	1.76				
19	8443970	Boston, MA	1921	2017	97	0.9974	2.82				
20	8447930	Woods Hole, MA	1932	2017	86	0.9571	2.8				
21	8449130	Nantucket Island, MA	1965	2017	53	0.9843					
22	8452660	Newport, RI	1930	2017	88	0.9857					
23	8454000	Providence, RI	1938	2017	80	0.8					
24	8461490	New London, CT	1938	2017	80						
25	8467150	Bridgeport, CT	1964	2017							
26	8510560	Montauk NY	1947	2017							

Use a CSV file of locations and values to create a dot map



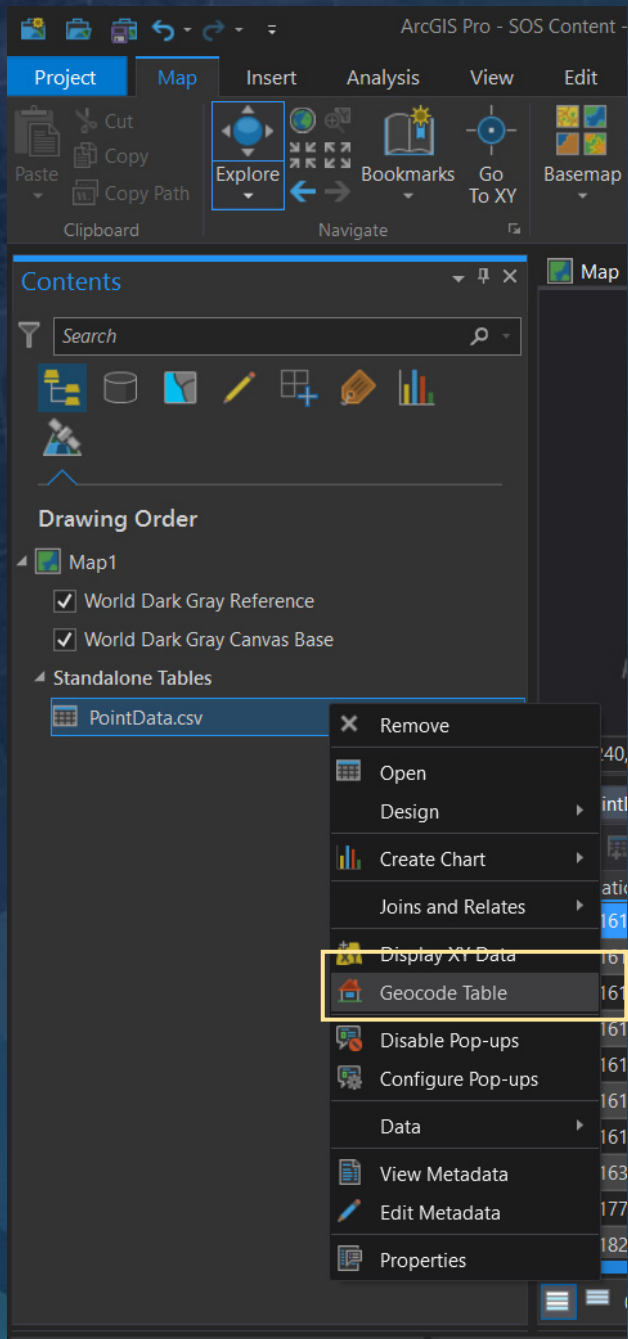
Use the Add Data tab to load your CSV file into the map



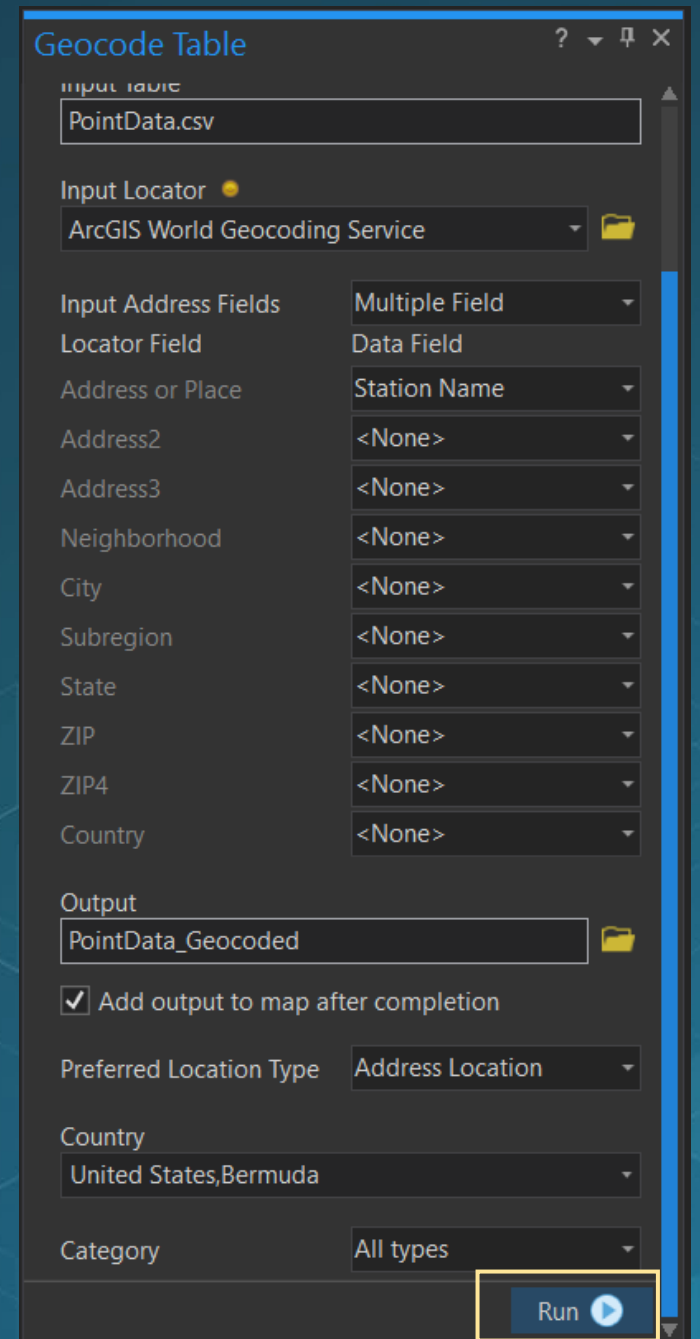
The screenshot shows the ArcGIS Desktop interface. The main map displays the United States and parts of Mexico and South America. The 'Standalone Tables' panel on the left lists 'PointData.csv'. The 'Table' window at the bottom displays the following data:

Station ID	Station Name	First Year	Last Year	Year Range	% Complete	MSL Trends (mm/yr)	+/- 95% CI (mm/yr)	MSL Trend (ft/cent)
1611400	Nawiliwili, HI	1955	2017	63	0.9947	1.65	0.45	
1612340	Honolulu, HI	1905	2017	113	0.944	1.48	0.21	
1612480	Mokuoloe, HI	1957	2017	61	0.8242	1.43	0.54	
1615680	Kahului, HI	1947	2017	71	0.9519	2.21	0.42	
1617760	Hilo, HI	1927	2017	91	0.8352	3.08	0.3	
1619000	Johnston Atoll	1947	2003	57	0.93	0.75	0.56	
1619910	Midway Atoll	1947	2017	71	0.9554	1.34		
1630000	Apra Harbor, Guam	1993	2017	25	0.956	5.04		
1770000	Pago Pago, American...	1948	2009	62	0.8592	2.21		
1820000	Kwajalein, Marshall Is...	1946	2017	72	0.9849			

The CSV is added as Standalone Table. Right click and Open to show the imported table features



Next we'll geocode the addresses so they have a lat/lon field in the attribute table.



Project Map Insert Analysis View Edit Imagery Share Appearance Labeling Data

Visibility Range: <None> 0.0 %

Effects: Masking, Display Filters, Import

Drawing: Symbology

Extrusion: Field, Type, Unit

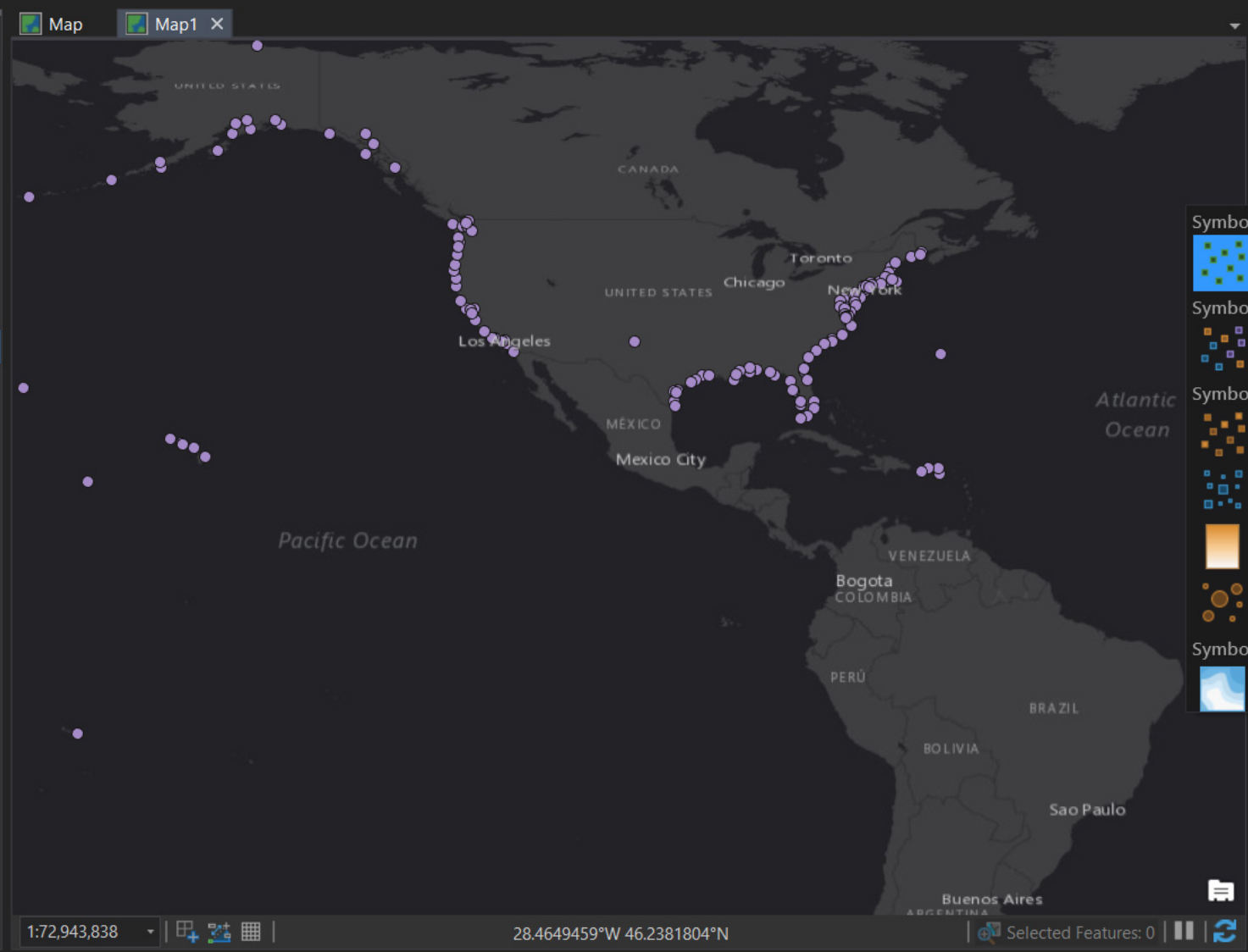
3D: Face Culling, Lighting

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 - PointData_Geocoded
 - World Dark Gray Canvas Base
- Standalone Tables
 - PointData.csv



Symbology - PointData_Geocoded

Primary symbology: Single Symbol

Symbolize your layer using one symbol

- Single Symbol** (Selected): Draw using single symbol.

Symbolize your layer by category

- Unique Values: Draw categories using unique values of one or multiple fields.

Symbolize your layer by quantity

- Graduated Colors: Draw quantities using graduated colors.
- Graduated Symbols: Draw quantities using graduated symbols.
- Unclassed Colors: Draw quantities using an unclassed color gradient.
- Proportional Symbols: Draw quantities using proportional symbols.

Symbolize your layer by density

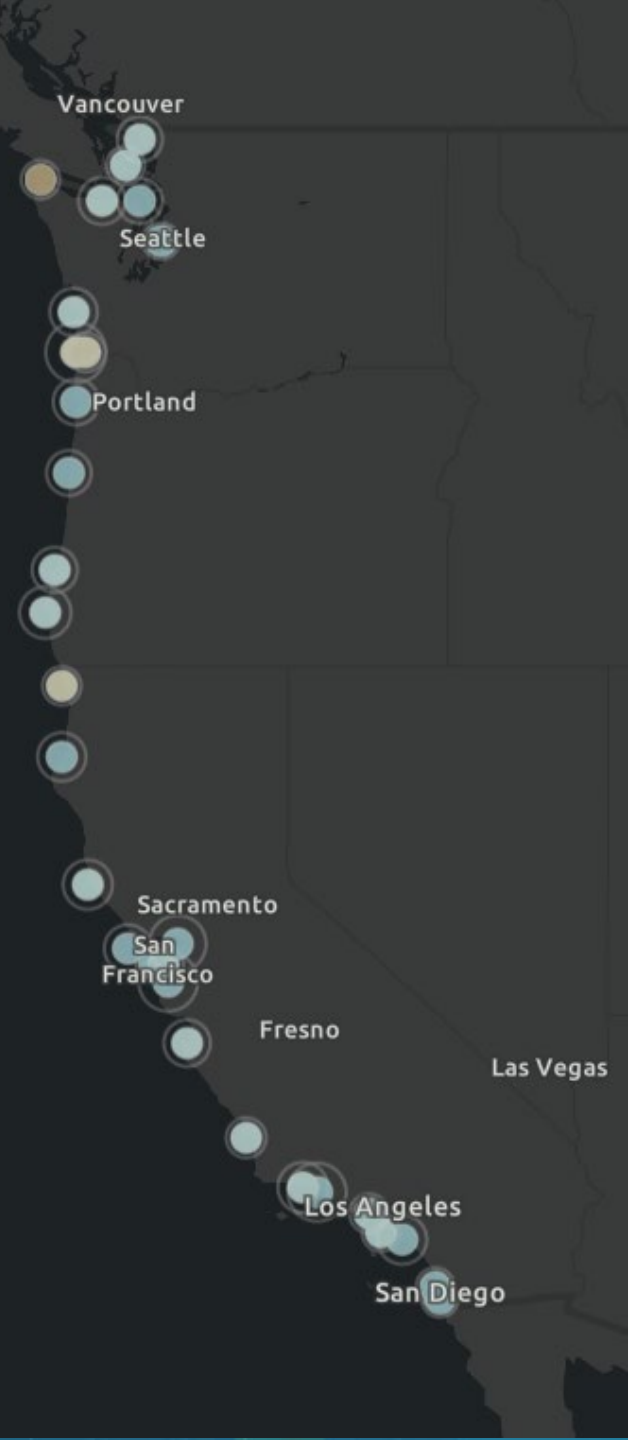
- Heat Map: Draw the density of points as a continuous color gradient.

1:72,943,838 | 28.4649459°W 46.2381804°N | Selected Features: 0

Symbols are colored based on expected Mean Sea Level Trend

Layer is duplicated and symbolized with Confidence Interval with no fill and a stroke of increasing diameter

Symbols are semi-transparent so overlaps can be seen





Add a shapefile and
change the symbols

Gallery / Lessons

Explore Future Climate Projections

Answer questions about the earth's climate and map future climate models. ⌚ 2 hours

Start lesson

Overview

Lessons

Although climate change has become a major political topic, most people have never explored climate data or models of possible future climates. The data is often stored in scientific file formats that require specialized software and can seem unintelligible to those unfamiliar with climate terms and concepts.

In this lesson, you'll map historical and projected climate data in ArcGIS Pro. You'll learn about climate at both local and global levels, as well as how climate might change in the future. Overall, you'll gain understanding of major climate concepts and familiarity with real climate data.

Lesson plan

Builds skills in

Imagery & Remote Sensing | Mapping & Visualization

Focus industry

Government

Requirements

ArcGIS Pro (get a [free trial](#))

Learn to use raster data (GeoTIFF and NetCDF) in the analysis of climate change scenarios

<https://learn.arcgis.com/en/projects/explore-future-climate-projections/>

NASA NEO NASA EARTH OBSERVATIONS

ATMOSPHERE ENERGY LAND LIFE OCEAN NEWS ABOUT 0 IMAGES ANALYZE

LEAF AREA INDEX (1 MONTH - TERRA/MODIS)

ADD TO ANALYSIS

Currently viewing:
February 2017
Permalink

Downloads ⓘ

File Type: GeoTIFF (raster) ▾

Color Grayscale

1.0 degrees	360 x 180 ▾
0.5 degrees	720 x 360 ▾
0.25 degrees	1440 x 720 ▾
0.1 degrees	3600 x 1800 ▾

View by date:
8 day 1 mo

m^2/m^2
0 7
Download color table ⓘ

Dataset you are currently viewing: February 2017 Select Year 2017 ▾

2017 March 2017 April 2017 May 2017 June 2017 July 2017

● Data ● No Data ● Currently Viewing

What do the colors mean?
The colors in this palette range from tan, showing little or no leaf cover, to light green, indicating the area is entirely covered by one layer of leaves, to dark green showing thick forest canopies, where seven or more layers of leaves cover an area. Black means no data.

Related Websites
MODIS
Terra
The Amazon's Seasonal Secret
MODIS Land Science Team
ATBD (Algorithm Theoretical



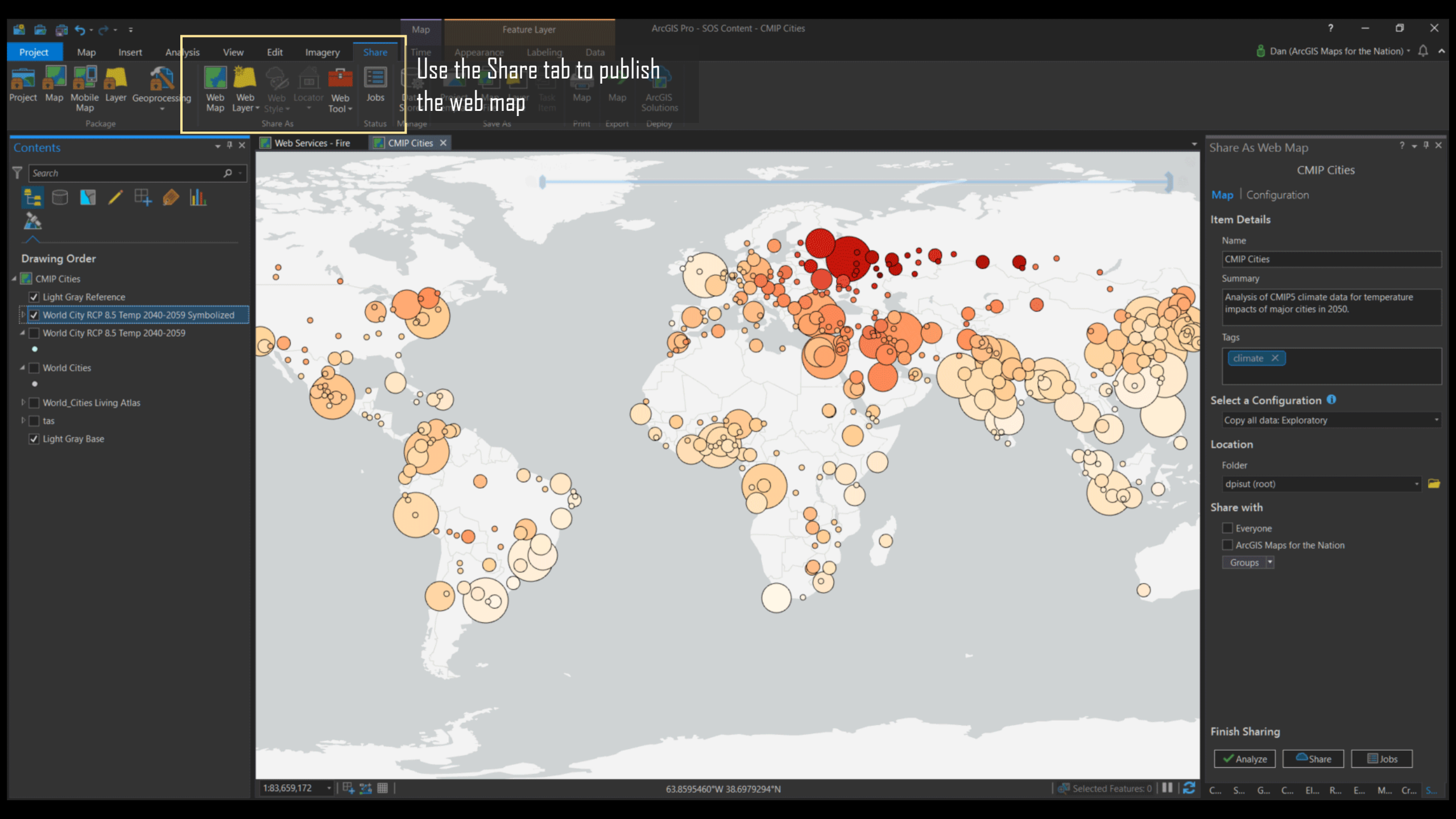
Provides GeoTIFFs in two flavors:

- 0-255 RGB value "Rasters"
- "Floating point" actual data values

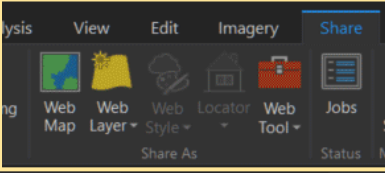
Analyze the GeoTIFF (mean, difference, etc)
in ArcGIS Pro



Share Your Maps with
the World



Use the Share tab to publish the web map



Share As Web Map

CMIP Cities

Map | Configuration

Item Details

Name
CMIP Cities

Summary
Analysis of CMIP5 climate data for temperature impacts of major cities in 2050.

Tags
climate

Select a Configuration
Copy all data: Exploratory

Location
Folder
dpisut (root)

Share with
 Everyone
 ArcGIS Maps for the Nation
Groups

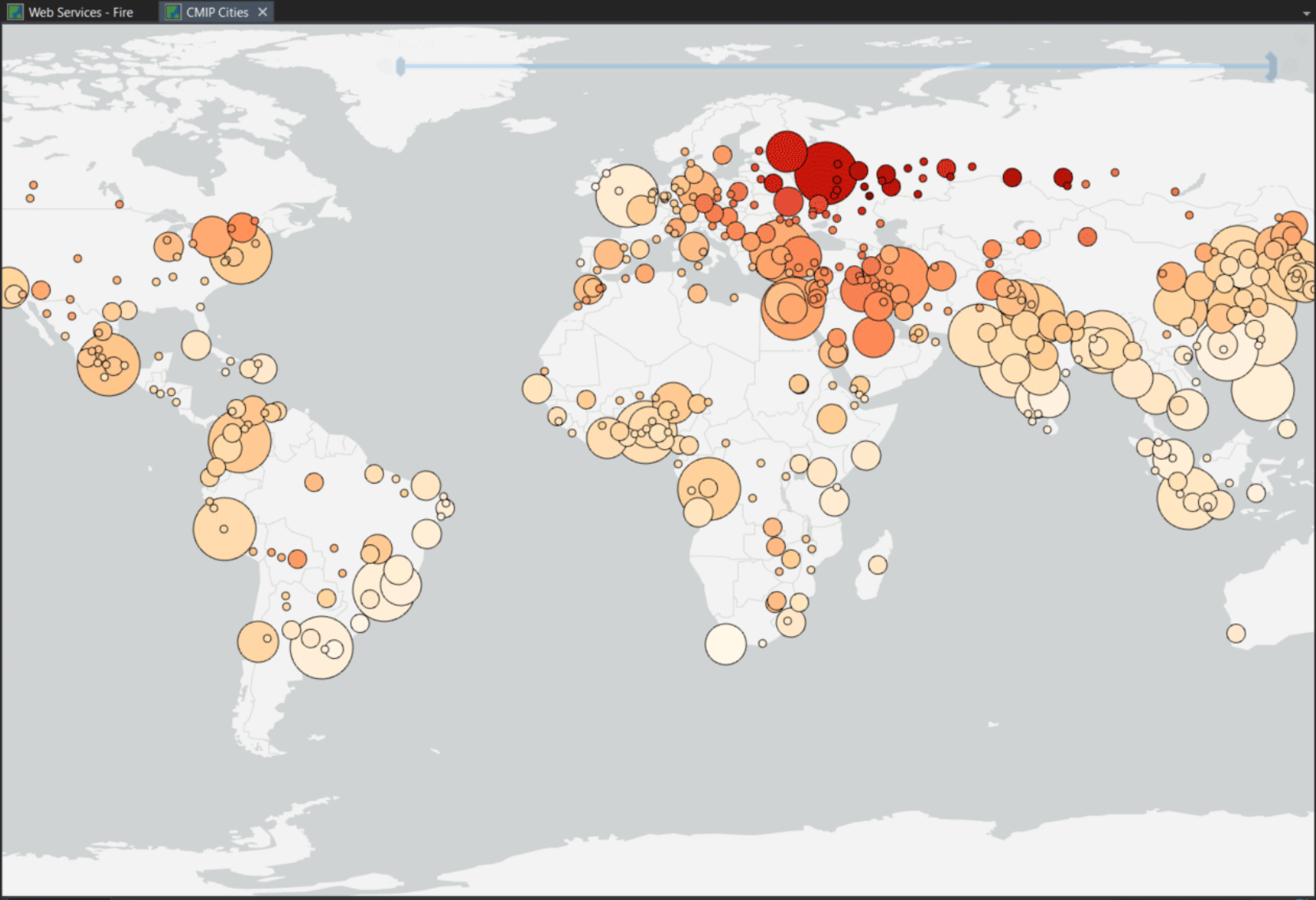
Finish Sharing

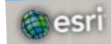
Contents

Search

Drawing Order

- CMIP Cities
 - Light Gray Reference
 - World City RCP 8.5 Temp 2040-2059 Symbolized
 - World City RCP 8.5 Temp 2040-2059
- World Cities
- World_Cities Living Atlas
- tas
- Light Gray Base





A Story Map

The Whole Map and Nothing but the Map

no margins, no frames...just the map image

Learn to output your map for the Science On a Sphere
[Esri Story Map](#)