



Workflow for Creating an Emerging Hot Spot Analysis and Time Space Cube

STEP 1 - Geocode the data:

- Click on Add Data > Choose Address Layer from the drop down option.
- Geocode Addresses dialog box will appear.
- Select the CSV file as Input.
- Input Address Locator should be the standard BPD Address Locator (instructions to connect to this locator can be found at the following link <http://10.3.14.103/pdfs/Geocoder%20Instructions.pdf>).
- Give a name for the output feature class and select Environments > Output Coordinate System.
- Select your preferable Coordinate System like for us it will be 'NAD 1983 StatePlane Maryland FIPS 1900 (US Feet)' and click on run.

STEP 2 - Creating Optimized Hot Spot Analysis:

- Use the output Points feature class from the last tool as an input to this tool.
- Give a name for the output features.
- Keep the analysis field as blank.
- Bounding Polygons should be the 'Police Districts.' for Baltimore.

STEP 3 - Create Space Time Cube by Aggregating Points.

- This tool will be required to generate the NetCDF File.
- Use the Points feature class as an input to this tool.
- Give an Output Location to save the .NetCDF file.
- Time Field should be a date type field and for us it will be the User Offence Date.
- Time Step Interval will be 28 Days/4 Weeks.
- Time step Assignment will be End Time.
- Aggregation Shape Type will be Fishnet Grid.
- Distance Interval will be 1000 Ft.
- Click on Environments and under Extent choose the Police Districts.
- Run the tool and generate the netcdf.

Note: Projected Data is required for this analysis.

STEP 4 – Run the Emerging Hot Spot Analysis:

- Input Space time cube will be the .NetCDF file created in the above step
- Analysis Variable is Count.
- Conceptualization of the spatial relationship is Fixed distance



- Neighborhood Distance will be 1000 ft.
- Polygon Analysis Mask will be the Police Boundary layer.
- Define Global window will be the Entire cube.

STEP 5 – Visualize in the Space Time Cube Explorer:

- Click on Create Layer first and give the .NetCDF file as an input.
- Give a new name for the Output Feature Class.
- Choose Emerging Hot Spot as the Analysis Type.
- Click on Create Layer.
- After this step is completed, every information gets automatically populated in the Visualize Layer section.
- Choose the favourable option for visualisation under Display Theme Gallery.

STEP 6 – Check your data in Global Scene:

- Click on Insert and choose Global Scene.
- Copy the last output layer from the Space Time Cube Explorer to the scene.

Sharing the Scene to ArcGIS Online:

- Click on the Share Tab on the Ribbon.
- Web Scene.
- Fill in all the Parameters and click on Analyze.
- Finally Publish the Scene.

STEP 7 – ArcGIS Online:

- Launch arcgis.com or Sign in to ArcGIS Online.
- Click on Add data under Contents Tab. And choose Add data from Computer.
- Select the file 'Police Districts' and check the box to publish the layer.
- Give it a title and some tags. Click Okay.
- The layer will be published.
- Now open the Scene in the Scene Viewer.
- Click on the Edit icon to modify scene. Click on Add Layers, search and add the Police Districts data to the Scene Package.
- We can choose to Rename any layer by navigating to the three dots or more options for the layer.
- To change the symbology visualization click on Layer Styles from three dots or more options of the layer. Choose the main attribute to visualize from the first drop down.
- Then choose a drawing style > Options > Change Color and Set Transparency.
- We can even choose to Label the layer. Click Done and save the Scene with the correct title.

Note: Contact GIS Unit for further assistance.

Examples of Emerging Hot Spot Analysis using 2019 homicide data:

3D Scene:

<https://bpdgis.maps.arcgis.com/home/webscene/viewer.html?webscene=aa399d7bc5d14fe69eed1668683cd417>

Web Map:

<https://bpdgis.maps.arcgis.com/home/webmap/viewer.html?webmap=cf05673ebd0c4ec482d9a45660be6c98>

