



Spatial Pattern of Flash-flood Vulnerability in Texas

Team 4

About us



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- Motivation
 - Dangerous
 - But difficult to monitoring
 - Objectives
 - Python Toolbox
 - Generate maps
 - Spatial pattern of vulnerability to flash-flood
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- Data
 - Event Data
 - Provided by NOAA
 - County Shapefile
 - Provided by Texas Department of Transportation
 - Method
 - Join the event data with county shapefile
 - Using Average Hourly Damage Per Capita (AHDPC) as the index of Vulnerability
 - Visualize it via graduated colors renderer
-

- Python Toolbox
 - Flood Map Renderer
 - User-defined input layer and input table
 - Join the layer with the table
 - User-defined fields
 - Render the map by Graduated Colors Renderer
 - User-defined field for classification
-

Programming Components



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● Python Toolbox

```
110 Layer_Join_Field = parameters[1].valueAsText
111 Input_Table = parameters[2].valueAsText
112 Table_Join_Field = parameters[3].valueAsText
113 Class_number_input = int(parameters[4].value)
114 Classification_Field = parameters[5].valueAsText
115 County_Event = "county_joined"
116
117
118 County_joined_events = arcpy.AddJoin_management(Counties_Layer, Layer_Join_Field,
119                                                  Input_Table, Table_Join_Field)
120 arcpy.CopyFeatures_management(County_joined_events, County_Event)
121
122 counties = project.listMaps('Map')[0]
123
124 for layer in counties.listLayers():
125     # Check that the layer is a feature layer
126     if layer.isFeatureLayer:
127         # Obtain a copy of the layer's symbology
128         symbology = layer.symbology
129         # Makes sure symbology has an attribute "renderer"
130         if hasattr(symbology, 'renderer'):
131             # Check if the layer's name is "Structures"
132             if layer.name == Counties_Layer:
133                 symbology.updateRenderer('GraduatedColorsRenderer')
134                 symbology.renderer.classificationField = Classification_Field
135                 symbology.renderer.breakCount = Class_number_input
136                 symbology.renderer.colorRamp = project.listColorRamps('Orange-Red (Continuous)')[0]
137                 layer.symbology = symbology
138                 arcpy.AddMessage("Renderer completed")
139             else:
140                 arcpy.AddMessage("NOT Counties")
```

Geoprocessing

Flood Map Renderer

Parameters Environments

- * Input Layer
- * Layer Join Field
- * Input Table
- * Table Join Field
- * Classes number
- * Field using in classification

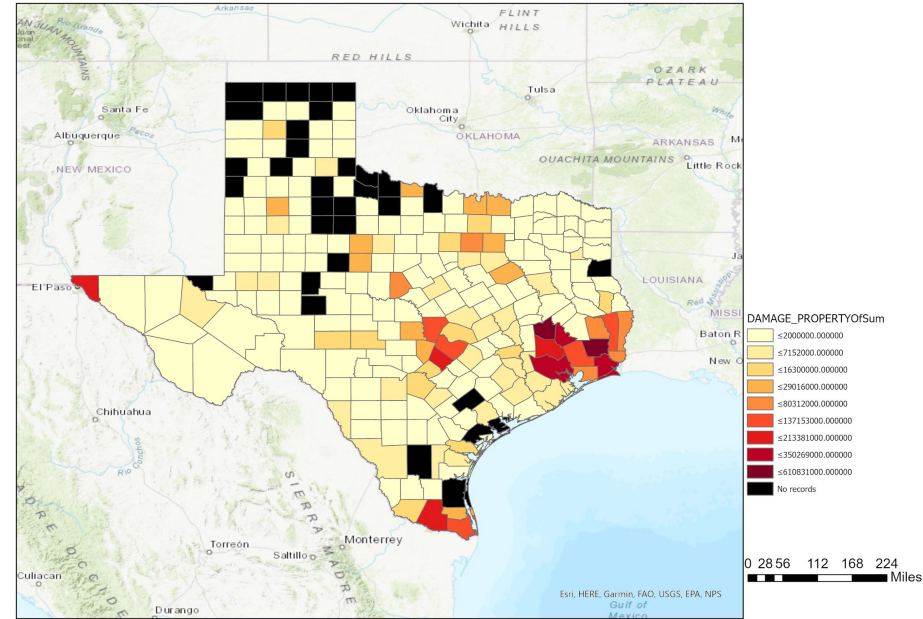
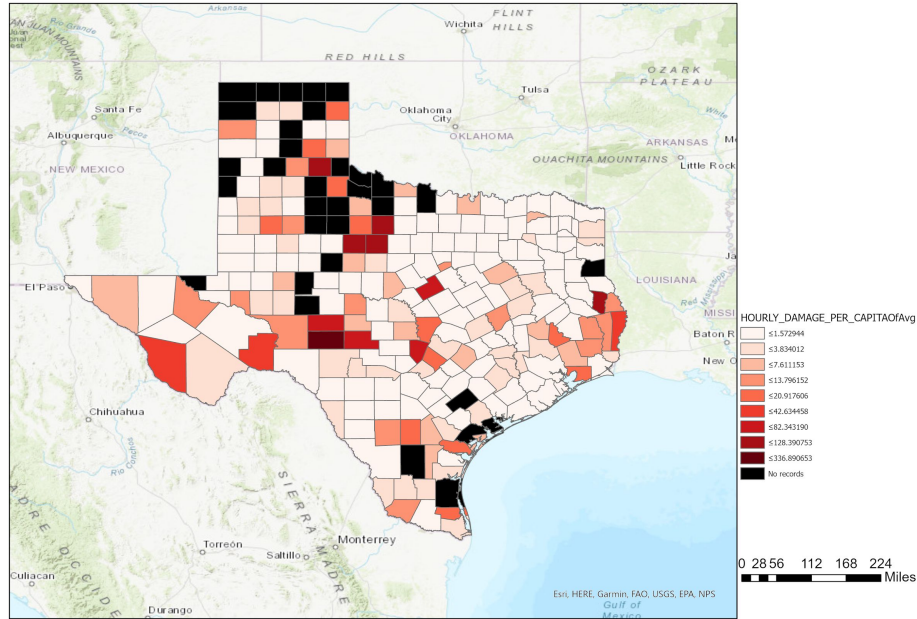
Run

Catalog Geoprocessing Export

Results & Discussion



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- Average Hourly-Damage Per Capita (AHDPC)
 - Used to evaluate the Vulnerability
 - High vulnerability areas:
 - Surrounding Houston
 - Some Inland areas
 - Total Damage vs. AHDPC
 - Inconsistent
 - High damage but not high AHDPC
 - Hays & Hidalgo
 - Low damage but high AHDPC
 - Some inland areas
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Thanks for Your Attention!