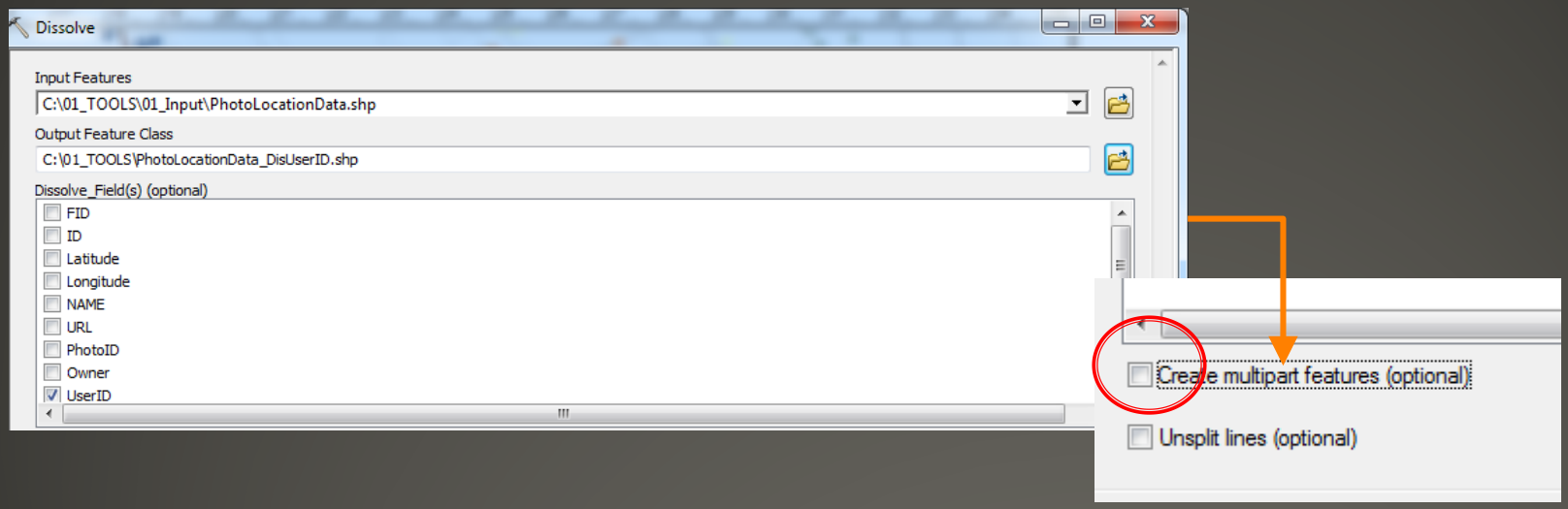
Workshop part 2: photo density

- Hot Spot Analysis for visualizing spatial distribution of photo
  - Spatial clustering in ArcGIS
  - Mapping and Symbolization

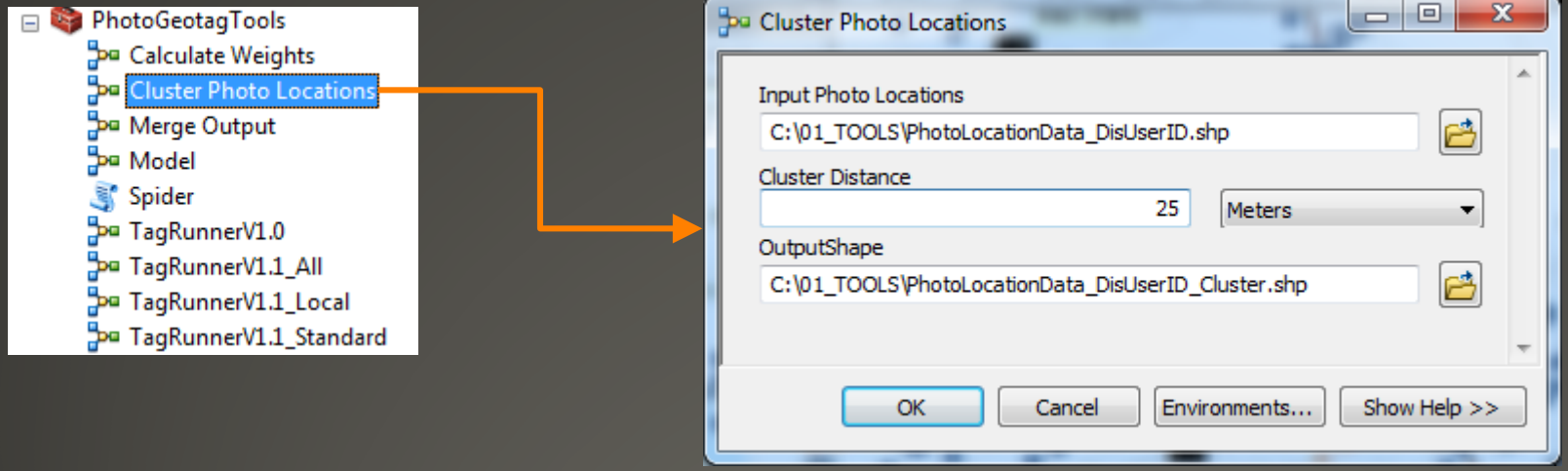


Prepare Data

- Start ArcCatalog & Open copy of **BasemapLayout.mxd** from previous step
- **Dissolve [UserID]-**Field for all Photo Locations in **PhotoLocationData.shp**

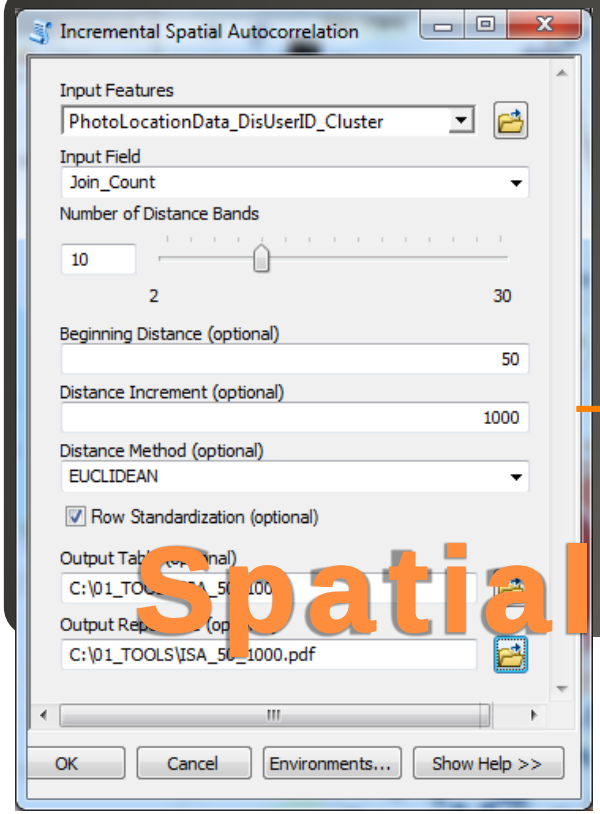
> only one photo per user per location is counted, this prevents single users from dominating results

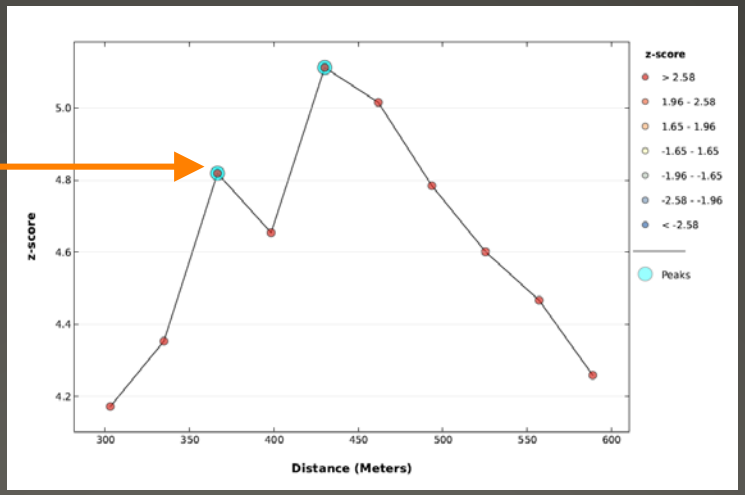
- Use Tool **Dissolve** (Data Management Tools > Generalization > Dissolve)
- Important: **Uncheck “Create multipart features”**



Cluster Photo Locations

- Open <**Cluster Photo Locations** > -Tool (PhotoGeotagTools-Toolbox)
- **Choose Cluster Distance based on Scale and Final Display / Paper- Size**
- Photos are aggregated to a single, arithmetically centered point if distance < Cluster Distance

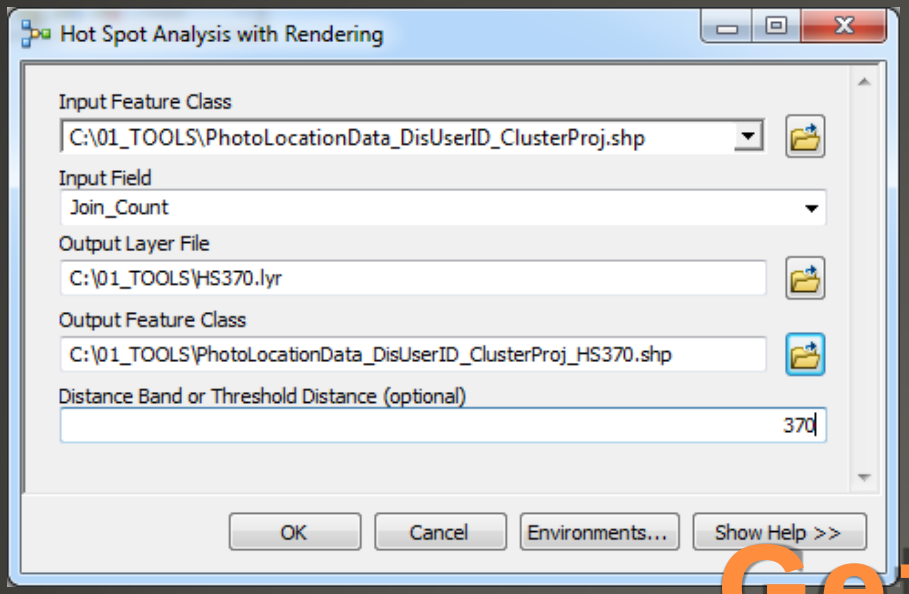




Spatial Autocorrelation

- Optionally, to detect the Distance where Clustering is most pronounced:

- run **Incremental Spatial Autocorrelation** (Spatial Statistic Tools > Analyzing Patterns)
- The **First Spike** is usually indicating the **distance** where clustering is most pronounced (Example: at about 370 m)
- Use this value for Hot Spot Analysis **Distance Band Threshold**

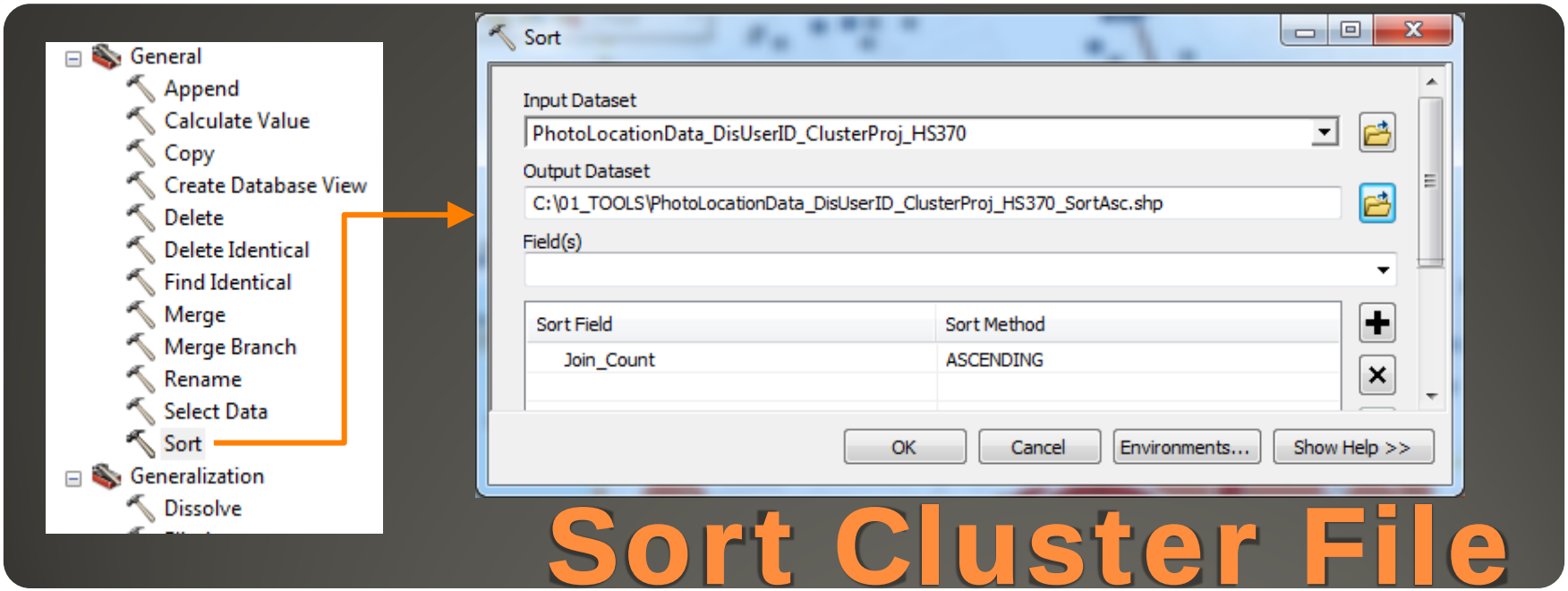


Getis-Ord Gi*

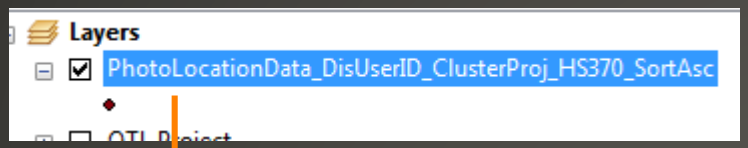
- Run **Hot Spot Analysis with Rendering** for visualizing characteristic photo distribution patterns:

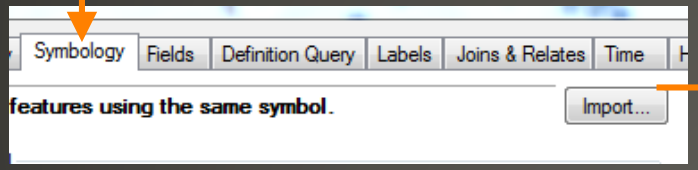
- Hot Spot Analysis uses the Getis-Ord GI-Star Statistic > evaluates number of photos at each location by comparing the local mean to the global mean and then determining, whether the difference is statistically significant

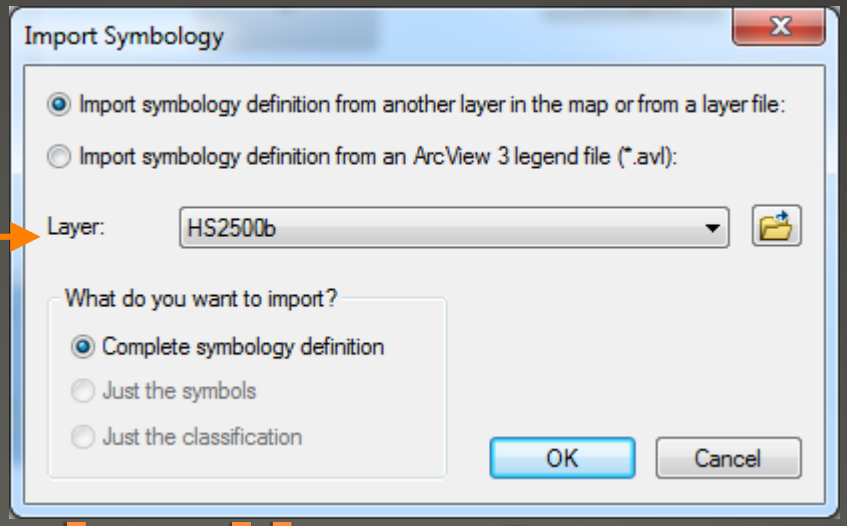
- open Tool Hot Spot Analysis with Rendering (Spatial Statistic Tools > Rendering)
- Input Field = **Join_Count** (Number of photos per cluster)
- Enter Distance from previous Step (Example: 370 m) as **Threshold Distance**
  OR: choose Threshold Distance based on desired precision of information (Scale/Paper Size)



- To prevent small Cluster Points from overlapping large Cluster Points, sort Cluster-File:
  - Use Tool **Sort** (Data Management Tools > General > Sort)
  - **Sort ASCENDING** based on Field **[Join_Count]**

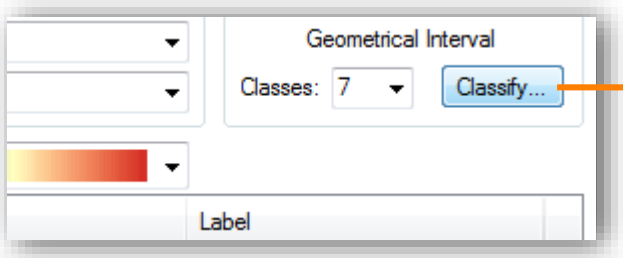


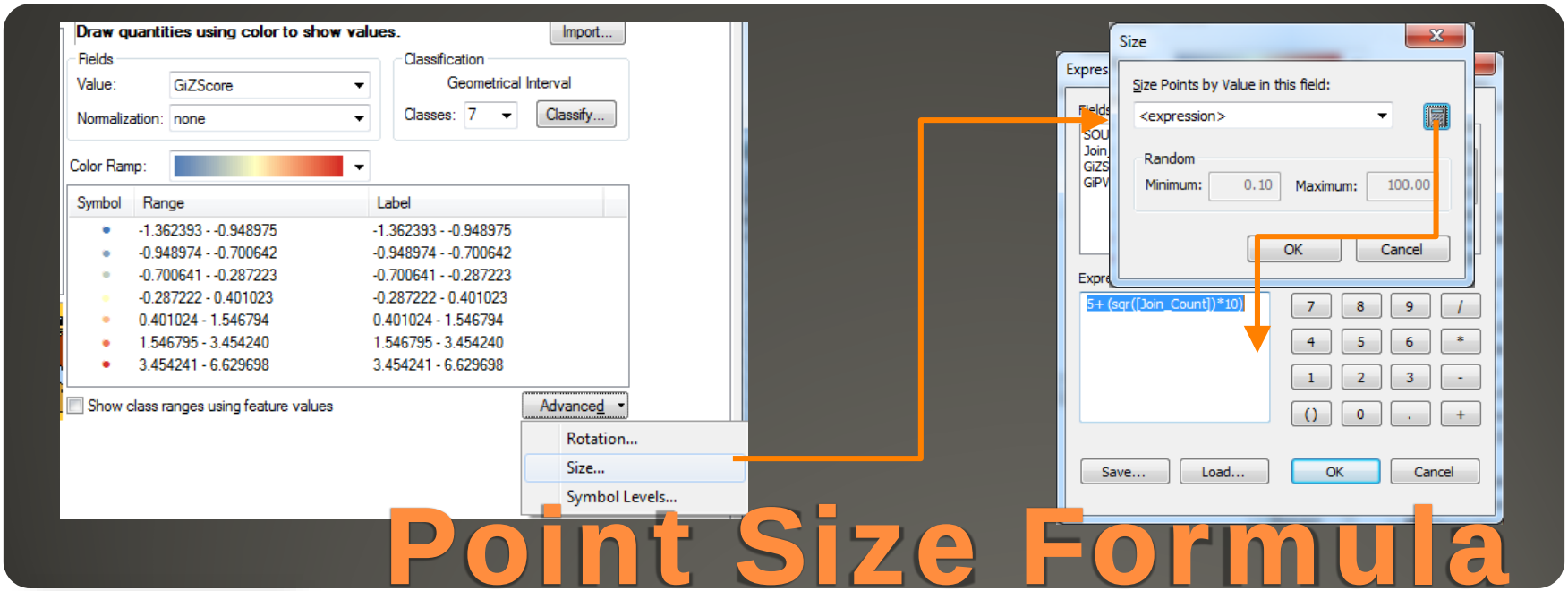




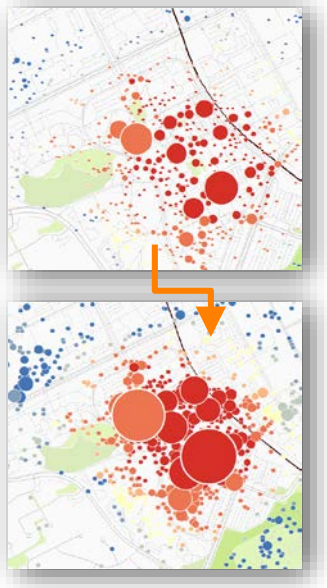
Symbolize Layer

- Layer properties > Symbology > Import..
- Import Layer Symbol Definition from existing Layer in BasemapLayout.mxd: “HS2500b”
- Choose **GIScore** –Field in next Window & Click ok
- Click **Classify** & Recalculate based on **Geometric Interval** or **Natural Breaks** Algorithm





Point Size Formula



- Layer properties > Symbology > **Advanced** > **Size**
- Click on **Calculator** (Expression Builder):

Formula: **5+ (sqr([Join_Count])*10)**

- **5+** > Set Size of Smallest Points
- **Sqr()** > Optional Point Size Curve flattening (reduce difference between largest and smallest points)
- *** 10** > Set Size of Largest Points