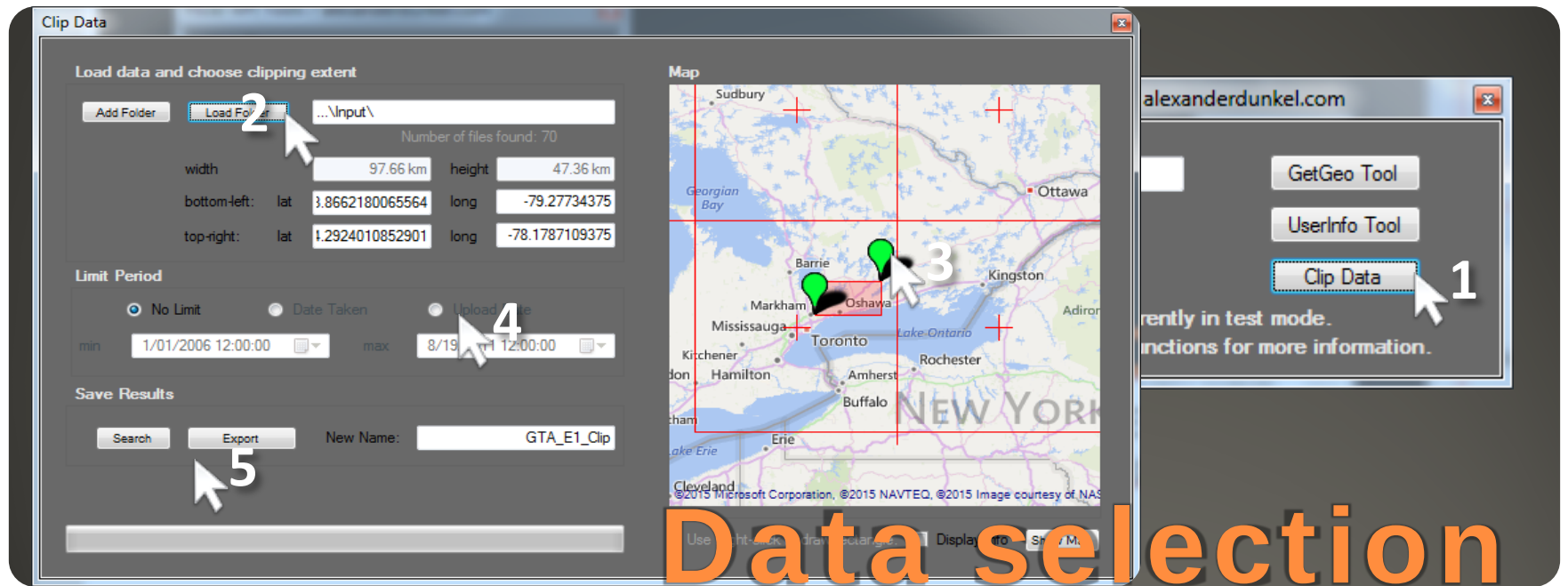


[illegible]

- Retrieving photo data from Flickr API
- Quantitative processing in MS Access
 - Spatial clustering in ArcGIS
 - Mapping and Symbolization

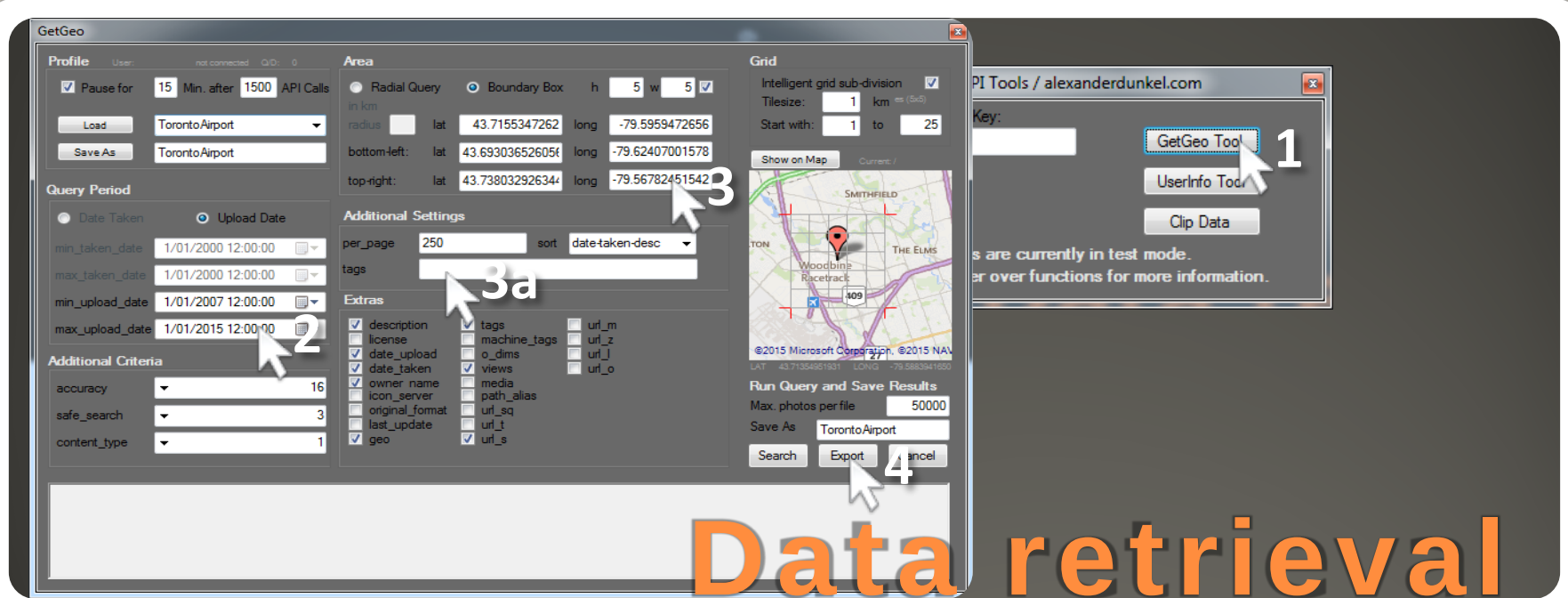
- Software:
 - MS Access 2003, 2007, 2010, 2013
 - **or MS Access Runtime (free)**
(See Software/AccessRuntime_x64_de-de.exe (64bit), AccessRuntime_x86_de-de.exe (32 bit))
 - Access Photo data processing form: <..\02STEP\importdata.accdb >
- ESRI ArcGis 10.1+, ArcInfo License
(Standard License may work, but slow due to using Buffer instead of Aggregate)
 - Flickr ArcGis Toolbox ...\\03STEP\\01_TOOLS\\PhotoGeotagTools.tbx >
 - Recommended: Copy "01_TOOLS" Folder to <C:/01_TOOLS/ >
- PhotoData Toolkit <...\\01STEP\\GetGeo.exe > (Windows 2007/2008 x64/x86 only)
(in case program does not run, install using <...\\01STEP\\Setup_Files\\setup.exe >
- Optionally:
 - LibreOffice Portable for editing *.dbf-Files
(See <Software/LibreOfficePortable/LibreOfficeCalcPortable.exe >)

Preparations



Data selection

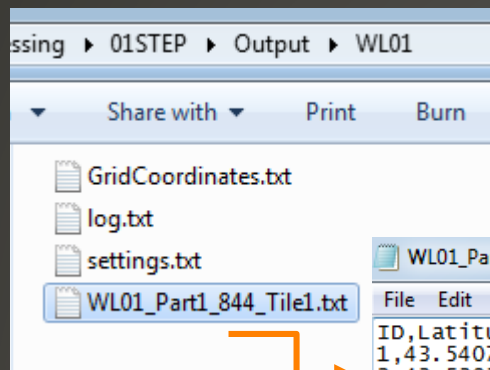
- For clipping data from existing dataset
 - OPEN <..\01STEP\GETGEO.EXE >
 - Open ClipData Tool (1)
 - **Load Folder** <..\Input\> (2)
- areas with existing datasets are highlighted by red boundary
 - Choose clipping extent by moving markers (3)
 - Optionally use temporal constraints for photodata (4)
- **Search** will preview available photo data for criteria (5)
- **Export** will save photo data to < ..\Output\NAME\ > (5)



Data retrieval

- For retrieving new data from Flickr API
 - Open GetGeo Tool (1)
 - Choose timespan for photo data (2)
- Choose spatial extent for photo data (3)
 - Click „Show Map“
 - zoom/pan to area
 - click on LAT / LONG to update position
- Optionally, limit search to specific tags, separated by comma (3a)
 - Enter Name and click **Export** (4)
- **Export** will save photo data to < ...\\Output\\NAME\\ >

- Output folder < ...\\Output\\NAME\\ > contains datafiles + additional files
 - Photos itself are not downloaded
- Datafiles contain comma separated photo data, including URL to photo
 - Select all datafiles..

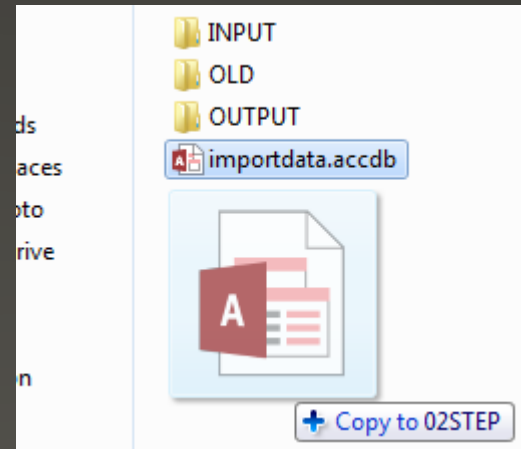


WL01_Part1_844_Tile1.txt - Notepad

ID	Latitude	Longitude	NAME	URL	PhotoID	Owner	UserID	DateTaken	UploadDate	Views	Tags	MTags
1	43.540771	-80.553646	St. Jacobs Mill	https://farm8.staticflickr.com/7504/15844733307_66b								
2	43.539394	-80.553796	Night-Time St. Jacobs Snowy Photowalk 9	https://farm8.staticflickr.								
3	43.539635	-80.55386	Night-Time St. Jacobs Snowy Photowalk 10	https://farm8.staticflickr.								
4	43.539635	-80.55386	Night-Time St. Jacobs Snowy Photowalk 3	https://farm9.staticflickr.c								
5	43.539122	-80.55386	Night-Time St. Jacobs Snowy Photowalk 5	https://farm6.staticflickr.c								
6	43.54032	-80.553249	Night-Time St. Jacobs Snowy Photowalk 1	https://farm9.staticflickr.c								
7	43.539635	-80.55386	Night-Time St. Jacobs Snowy Photowalk 4	https://farm8.staticflickr.c								

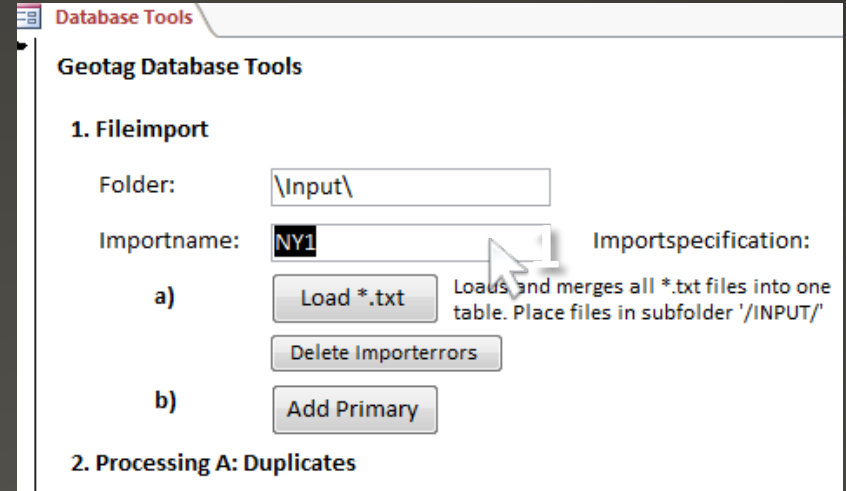
Review Data

- ..and copy to folder
< 02STEP\INPUT\ >
- Go to Folder
< ...\02STEP\>
- Copy
importdata.accdb
- Rename & open
new Access
Database



Prepare Access database

- Enter name for Import table (1)
- .. Click
 - a) Load *.txt
 - b) Add Primary
- Remove any duplicate data entries (2):



The screenshot shows the 'Database Tools' window with the 'Geotag Database Tools' tab selected. Under the '1. Fileimport' section, the 'Folder' is set to '\Input\' and the 'Importname' is 'NY1'. To the right, the 'Importspecification' text reads: 'Loads and merges all *.txt files into one table. Place files in subfolder "/>1

2. Processing A: Duplicates

Name Original: WL01_UID

Column: PhotoID

Remove Duplicates

Copies table and removes duplicates in specified column.

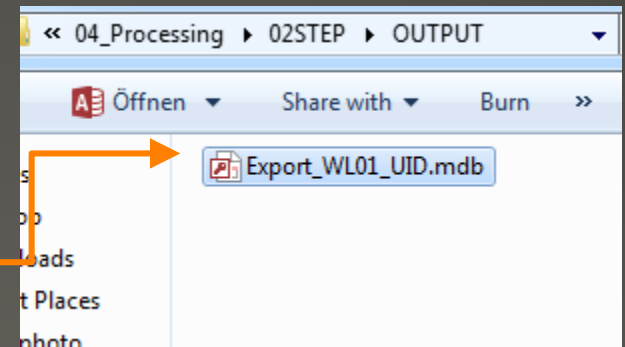
Import data to Access database

- Export table to *.mdb
(ArcGIS 10.0 compatible database)
- ...data is exported to
< ...02STEP\OUTPUT*.mdb >
- We will later use this file for mapping
photo location data in ArcGIS

Table:

Save As:

Exports data from specified table to
MDB compatible with ArcGis 10.



Export photodata to ArcGIS

3. Processing B: Tags

Table:

a)

1/1 Done.

b)

Name:

Template:

Sort Out Global:

Sort Out InStr *:

Output:

(Pre-)Processing Tags

- Analyze available tags in dataset
 - Clean Tag Data first (1)
(each tag is counted once per user)
- Remove tags based on stop list (2)
(optionally edit stop list first >

Tables: SortOutAlways and SortOutAlways_InStr)

- Count distinct tags (1)
 - ...duplicate list (2)..
- Select tags for clustering in ArcGIS ...
 - ..by first removing unwanted tags (3)
- .. number of total tags influences cluster processing time, recommended: first 1000 or less)

The screenshot shows the 'Database Tools' window in ArcGIS. On the left, the 'Table' is 'Taglist_WL01_UID_DistCl', the 'Field' is 'Tags', and the 'output' is 'Taglist_WL01_UID_DistCl_'. Below this, there are three buttons: 'Export *.XLS', 'Export *.XLSX', and 'Export *.DBF'. The 'Count distinct Tags' button is highlighted with a blue box and labeled 'a)'. The 'Duplicate' button is highlighted with a blue box and labeled 'b)'. An orange arrow points from the 'Duplicate' button to a table on the right. The table has two columns: 'TAGNAME' and 'TAGCOUNT'. The 'sky' row is highlighted with a blue box and labeled '3'.

TAGNAME	TAGCOUNT
stjacobs	47
ontario	42
canada	35
jacobs	11
waterloo	11
st	10
river	9
sky	8
orange	7
tree	7
trees	7
bridge	6
snow	6
winter	6

Generate Tag List

- Export table to
*.dbf File (only works in Access 2010 and earlier)
or *.xls File (Excel)
- Saved to < ...02STEP\OUTPUT*.xls >

The screenshot illustrates the process of exporting data from a Microsoft Access table. On the left, the 'Export' dialog box is shown with the following settings:

- Table: Taglist_WL01_UID_DistCI
- Field: Tags
- output: Taglist_WL01_UID_DistCI_
- Table: Taglist_WL01_UID_DistCI
- Folder: \Output\

Three export options are listed with numbered callouts:

- a) Count distinct Tags** (Callout 1): A button to create a summary table.
- b) Duplicate** (Callout 2): A button to create a duplicate of the table.
- Export *.DBF** (Callout 3): A button to export the table as a DBF file.

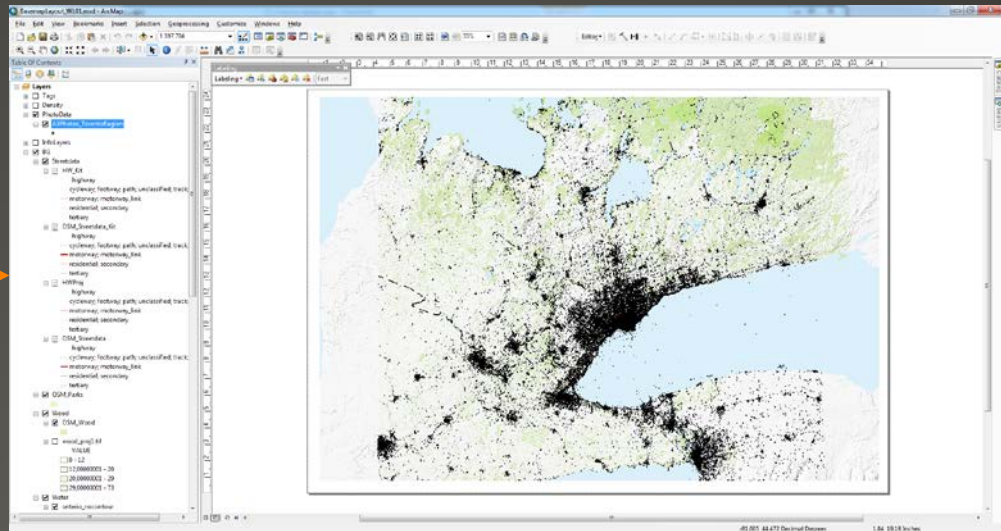
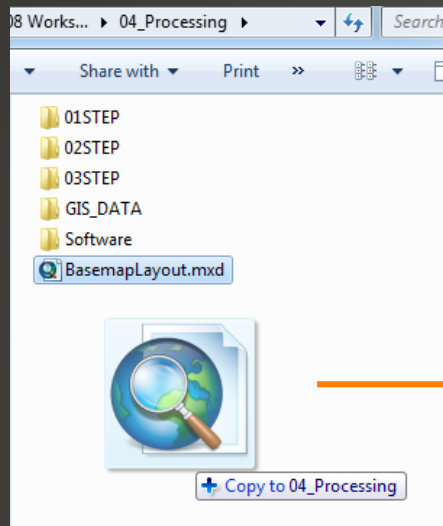
Below the buttons, descriptive text is provided:

- Export *.XLS**: Exports data from specified table to Excel Spreadsheet.
- Export *.XLSX**: Exports data from specified table to Excel 2007 Spreadsheet (allows more than 65,536 rows).
- Export *.DBF**: Exports data from specified table to *.dbf table (Supported only in Access 2010 and below).

An orange arrow points from the 'Export *.XLS' button to a file explorer window on the right. The file explorer shows the path 'ing > 02STEP > OUTPUT' and contains two files:

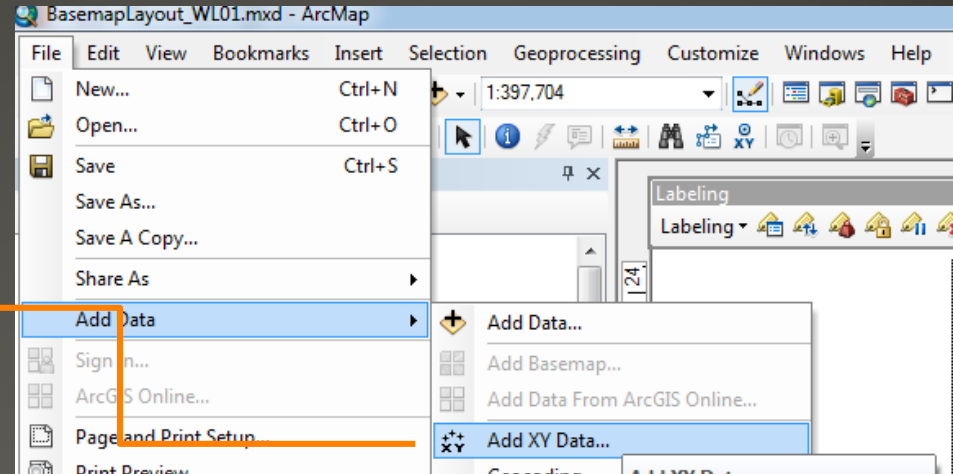
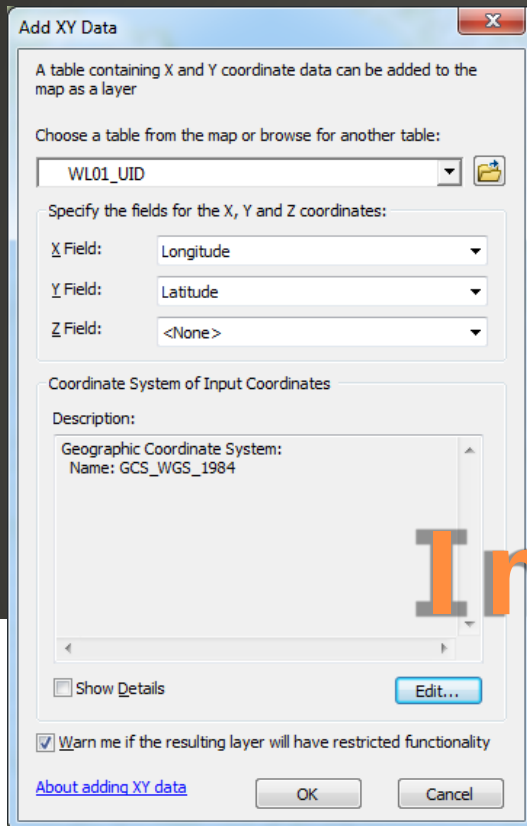
- Export_WL01_UID.mdb
- Taglist_WL01_UID_DistCI_Count_Sel.xls

Export Tag List



Mapping data in ArcGis

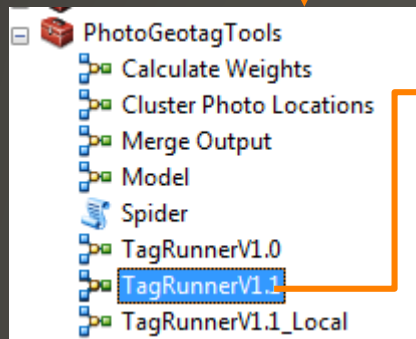
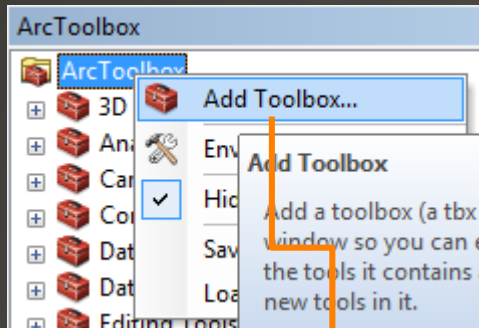
- make a copy of **BasemapLayout.mxd**
 - Rename & open file in ArcGIS
 - Repair missing data links if necessary
- Set paper layout to A1 Oversize or similar (24.61 x 35.43 Inches)
 - Display example photo data: Enable Layer **AllPhotos_TorontoRegion**



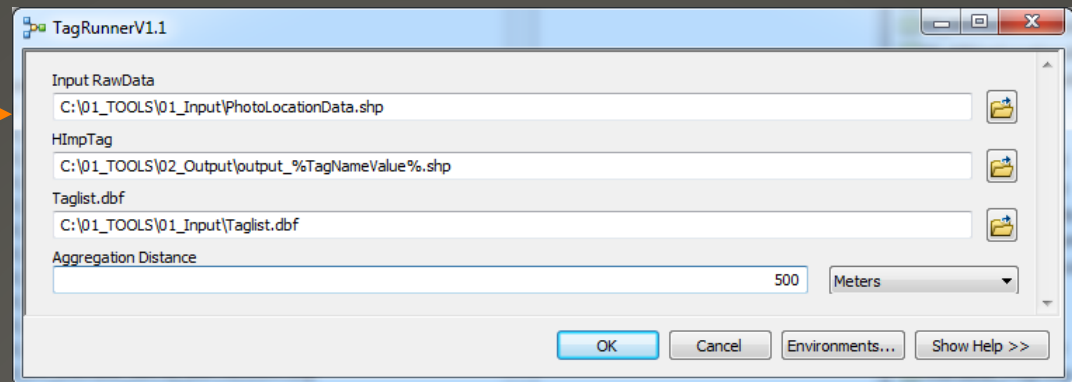
Import photo data

- Choose File > Add Data > Add XY Data
 - Load < ...02STEP\OUTPUT*.mdb >
 - X Field = Longitude
 - Y Field = Latitude
 - Coordinate System of Input: **GCS WGS 1984**
 - (Edit > Geographic Coordinate Systems > World > WGS1984)
 - Click OK to import data
 - Right-Click > Zoom to Layer
 - Project Features to WGS_1984_UTM_Zone_17N (Canada)...
 - (Menu Geoprocessing > Search For Tools > **Project Tool**)
- Save to < C:\01_TOOLS\01_Input\PhotoLocationData.shp >

- Open ArcCatalog, Open Toolbox-Window
- Load < C:\01_TOOLS\PhotoGeotagTools.tbx >
- Open PhotoGeotagTools > **TagRunnerV1.1**, choose..

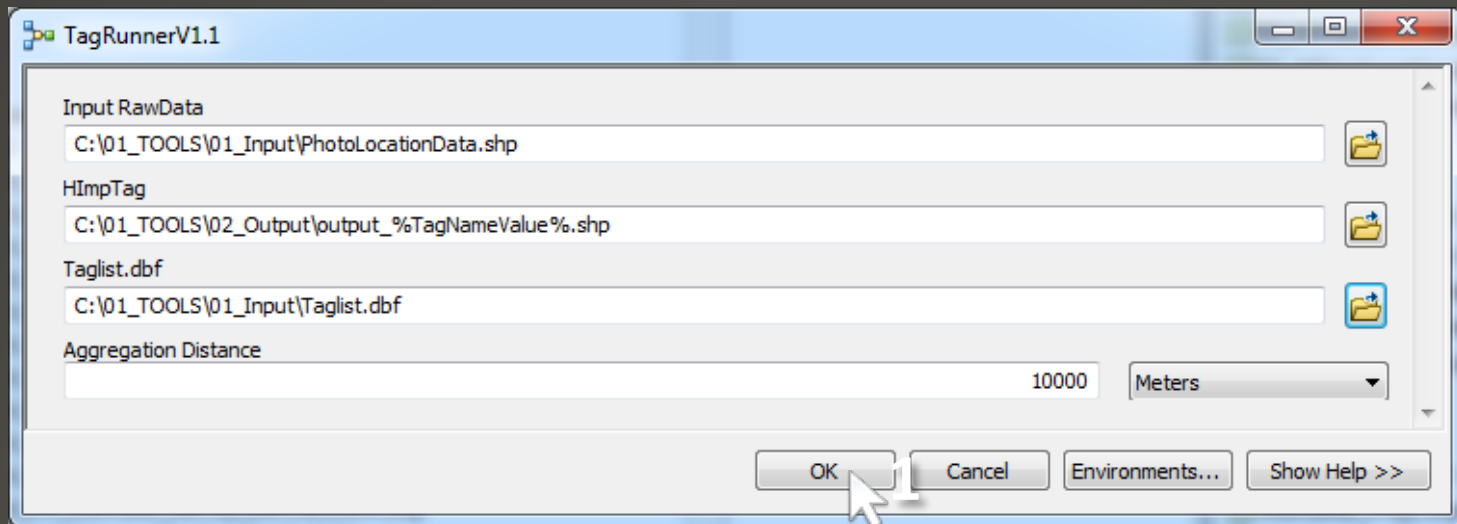


- **_Standard** > Fast [Regional Scale]
- **_Local** > Medium [City Scale]
- **_All** > Slow [Street Scale]



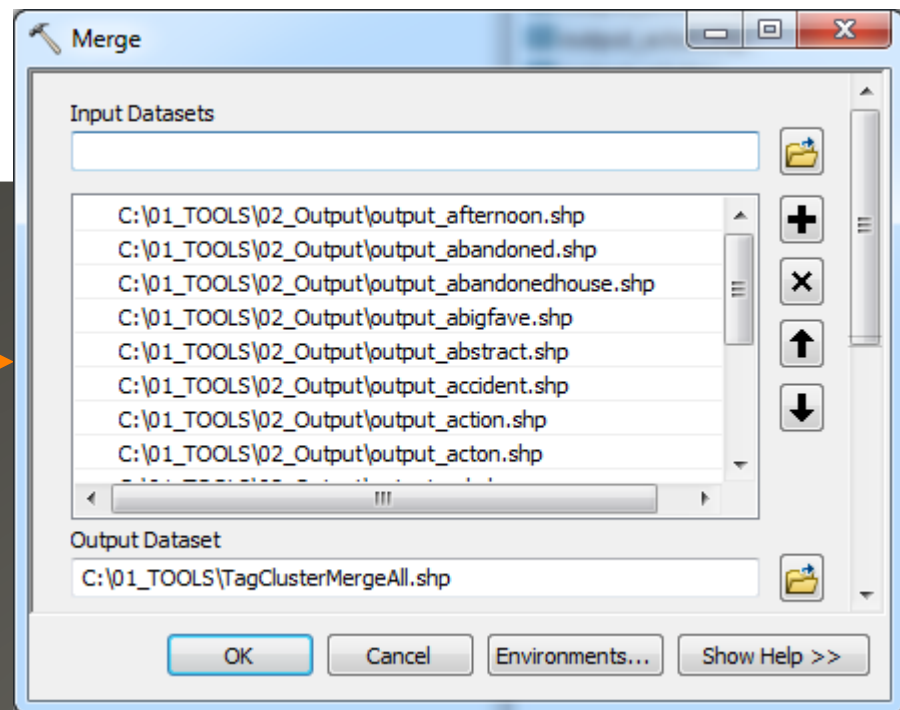
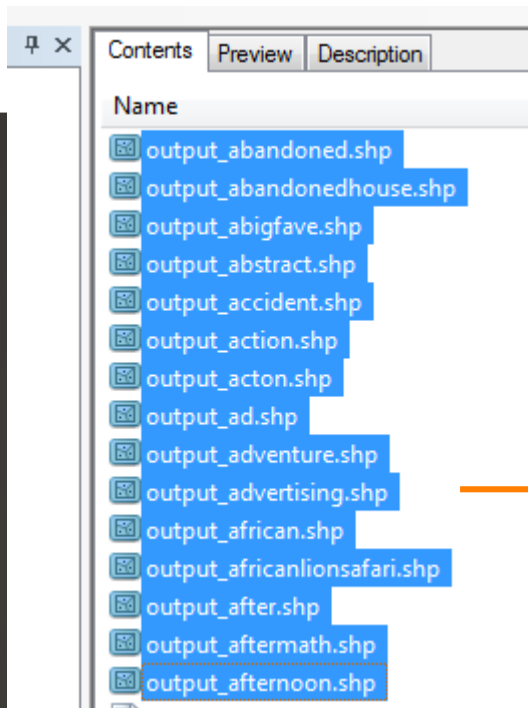
Generate Tag Clusters

- Input RawData:
 - .. Single photo locations and tags
- HImpTag:
 - .. Output cluster files for each tag in Taglist.dbf
- Aggregation Distance:
 - .. Accuracy of processing: choose value based on scale of analysis & final display size



Generate Tag Clusters

- Output Files are saved to..
< C:\01_TOOLS\02_Output\ >
- Select all output files and Merge to a single file using Merge
(Data management Tools)
(Menu Geoprocessing > Search For Tools > **Merge Tool**)
 - Or: Use Tool *PhotoGeotag Tools* > “**Merge Output**”



Merge Results

TagClusterMergeAll

	FID	Shape *	Join Count	TARGET FID	Views	FREQUENCY	COUNT User	SUM FREQUE	ImpTag	TagCountG	HImpTag
▶	0	Polygon	4	0	824	1	1	4	afternoon	1136	0
	1	Polygon	3	1	540	2	2	3	afternoon	1136	0
	2	Polygon	3	2	1547						
	3	Polygon	1	0	8						
	4	Polygon	1	0	427						
	5	Polygon	1	0	11						
	6	Polygon	1	0	248						
	7	Polygon	1	0	210						
	8	Polygon	1	0	5						
	9	Polygon	1	0	538						
	10	Polygon	1	0	12						
	11	Polygon	1	0	5						

Calculate Weights

Input Data
C:\01_TOOLS\TagClusterMergeAll.shp

Output Data
C:\01_TOOLS\TagClusterMergeAll_Weights.shp

Weights Formula

$$1 + [\text{Join_Count}] * (\text{sqrt}(1 / ([\text{Join_Count}] / [\text{COUNT_User}]) ^ 3))$$

OK Cancel Environments... Show Help >>

Standard Weights
Formula

Calculate Weights

- Merged results file contains a list of all Tag Clusters:
[Join_Count] > Number of Photos in each Cluster
[Views] > Sum of Views for Photos in each Cluster
[COUNT_User] > Number of Photographers
[ImpTag] > Tag Cluster Name

- **Weights** are used to calculate Font Size
 - To Calculate Weights, ...

use Tool *PhotoGeotag Tools* > “**Calculate Weights**”

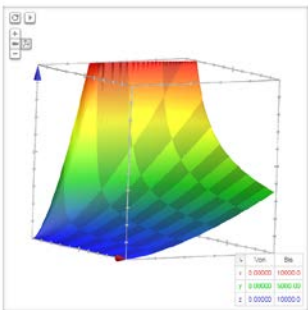


Table Of Contents



Layers

Tags

- ☒ GTA_AllTagsMerge5k_SortedWeightTags
- ☒ GTA_AllTagsMerge5k_SortedWeightTags
- ☒ GTA_AllTagsMerge5k_SortedWeightTags

Data Source

ss:
ie:
ype:

Shapefile Feature Class
PhotoTags_MergeAll_Weights
E:\Promotion_2014-04-14\01_Daten\Arcgis\Canada\To
Simple
Polygon

- Copy
- Remove
- Open Attribute Table
- Joins and Relates

Set Data Source...

Map Results

- Open your copy of **BasemapLayout.mxd**
- Use existing symbolization for Tags-Layers:
Right Click First Layer > Properties > Data Source
 - Click **Set Data Source** and Choose **Merged Results File** from previous step
 - Repeat process for next two tag layers

AllTags1000_Merge_Weights

FID	Shape *	Join Count	TARGET FID	Views	FREQUENCY	COUNT User	SUM FREQUE	ImpTag	HImpTag	Weights
2872	Polygon	4539	0	110126	235	235	4539	waterloo	1	54.471418
1445	Polygon	3578	0	571855	158	158	3578	kitchener	1	34.202093
3359	Polygon	609	0	87986	77	77	609	cambridge	1	28.379622
2307	Polygon	149	1	18768	37	37	149	river	1	19.437815
1114	Polygon	93	0	23508	30	30	93	grandriver	1	18.038855
						22	40	church	1	17.315637
						28	83	train	1	17.2629
						42	349	park	1	15.570056
						31	149	galt	1	15.14
						16	21	bridge	1	14.965945
						18	32	water	1	14.5

Layer Properties

General Source Selection Display Symbology Fields Definition Query

Definition Query:

"Weights" >= 20 AND "HImpTag" = 1

Adjust Definition Query

- Tags are placed on the map in the following sequence:
First, most used tags (largest font size) are placed in background

Layer 3: **Weights** > x AND [HImp] = 1

Second, each cluster with the most occurrences for each tag is placed:

Layer 1: **Weights** < x AND [HImp] = 1

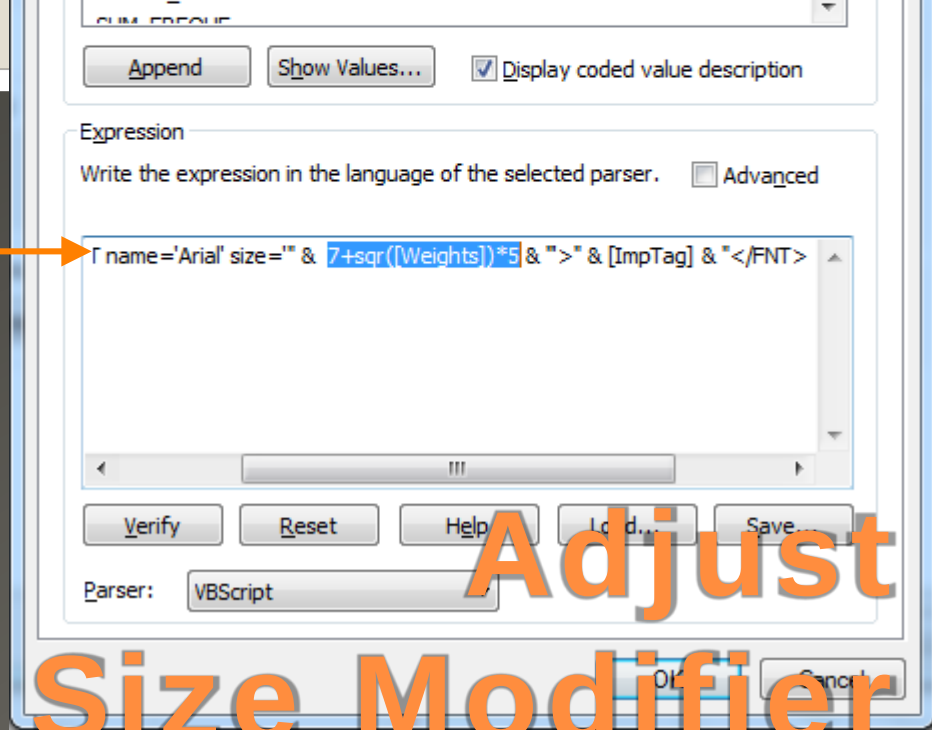
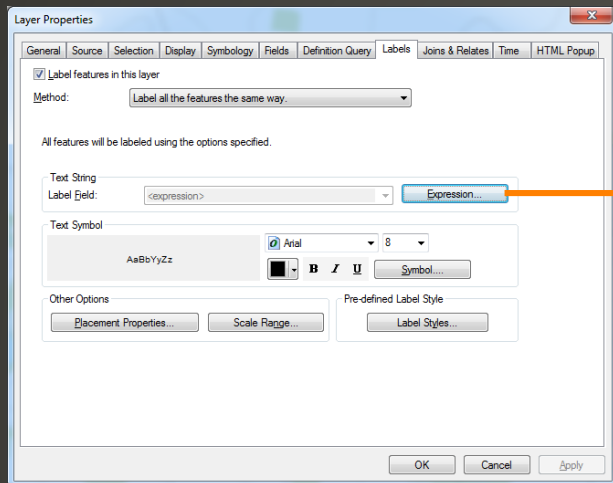
Finally, all other tags are placed:

Layer 2: [HImp] = 0

- Edit **Definition Query** (Layer Preferences) to select the number of tags which should get placed in background:

Example:

Definition Query "**Weights**" >= 20, all labels with weights over 20 are placed in background.



Font Size Modifier

- The Font Size Modifier is used to adjust Fonts to your final map display size (Paper Size)
 - **For each tag layer**, go to ...
Layer Properties > Labels > Expression
 - Adjust Modifier: $7 + \text{sqr}([\text{Weights}]) * 5$
 - 7 = Set minimum Font Size
 - Sqr = optional flattening of font size display curve
 - * 5 = Set largest Font Size

