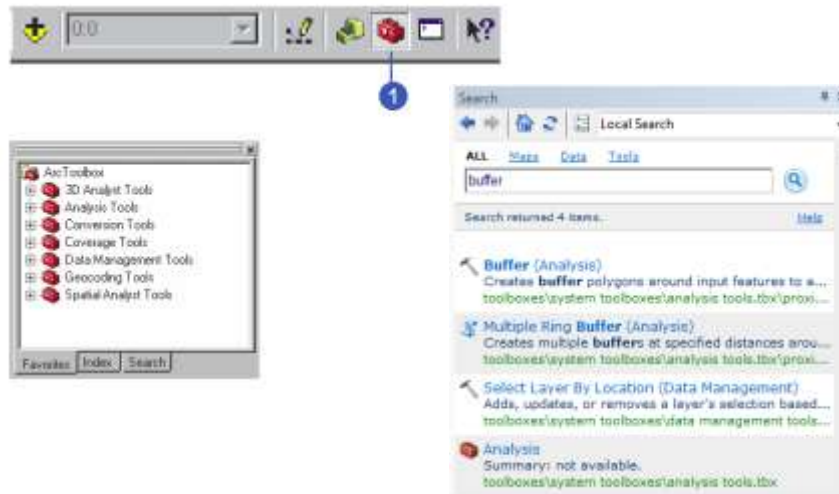







ArcToolBox: Analysis



ArcToolBox

ArcToolBox is available from both ArcCatalog and ArcMap.

-  A toolbox can contain tools, toolsets, and scripts and is organized according to the collection of geoprocessing commands it contains.
-  A toolset can contain tools, toolsets, and scripts and is organized according to the geoprocessing commands it contains.
-  A tool is a single geoprocessing command.
-  A script is a set of instructions usually stored in a file and interpreted, or compiled, at run time.
-  A model consists of one process or, more commonly, multiple processes strung together.

Scripts

```

PythonWin
File Edit View Tools Window Help
PythonWin 2.1 (#15, Apr 15 2001, 18:25:49) [MSC 32 bit (Intel) on win32]
Python Copyright 1994-2001 Mark Hammond (mhammond@rpinet.com.au) - see 'Help/About PythonWin'
for further copyright information
>>>
MultipleRingBuffer.py (read-only)

# Tool Name: Multiple Ring Buffer
# Source File: MultipleRingBuffer.py
# Version: ArcGIS 8.0
# Author: Environmental Systems Research Institute, Inc.
# Required Arguments: An input feature class or feature layer
#                      An output feature class
#                      A set of distances (meters) or a set of buffer values
# Optional Arguments: The name of the field to contain the distance values,
#                     "Distance" is the default name
#                     Option to save the output dissolved. "Diss" is the default,
#                     which will dissolve all overlapping polygons. "None" will
#                     still maintain all overlaps.
# Description: Creates a set of buffers for the set of input features. The buffers
# are defined using a set of variable distances. The resulting features
# class has the merged buffer polygons with or without overlapping
# polygons maintained as separate features.

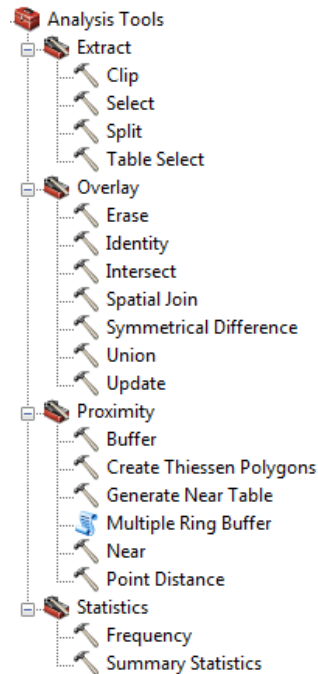
# Import required modules
import win32com.client, math, os

# Create the workspace object
WS = win32com.client.Dispatch("esriDataProcessing.Workspace")
WS.OutputWorkspace = 1

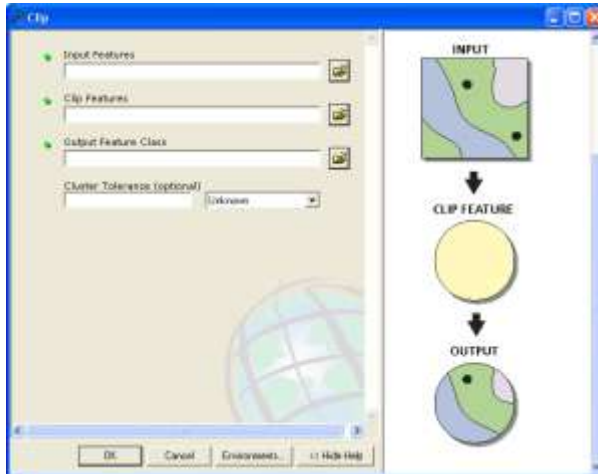
# Define message constants so they may be translated easily
msgList = "Distances must be provided in ascending size."
msgNullPoly = "Buffering error."
msgEmptyPoly = "Buffering error."
msgInvalid = "Invalid overlapping boundaries."
msgError = "Error in Multiple Ring Buffer function."
msgOutputError = "Output workspace is undefined. Please provide a full path."
  
```

Toolsets

- Extract
- Overlay
- Proximity
- Statistics



Extract - clip



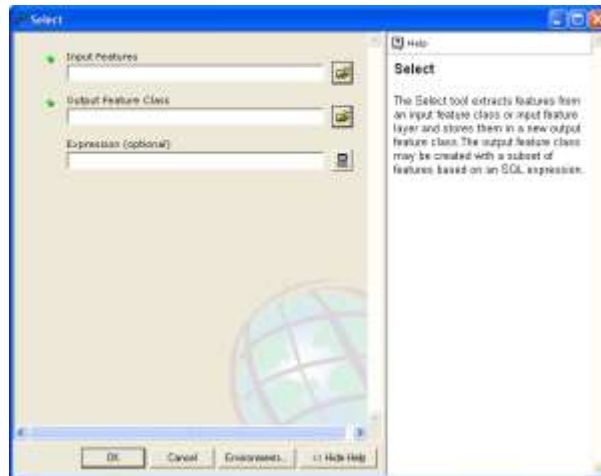
- Clip features must have polygon geometry.
- When using ArcMap layers as input, only the currently selected features are used in the CLIP operation.

Extract - split



- Split features must be polygons.
- The Split Field datatype must be character.

Extract - select



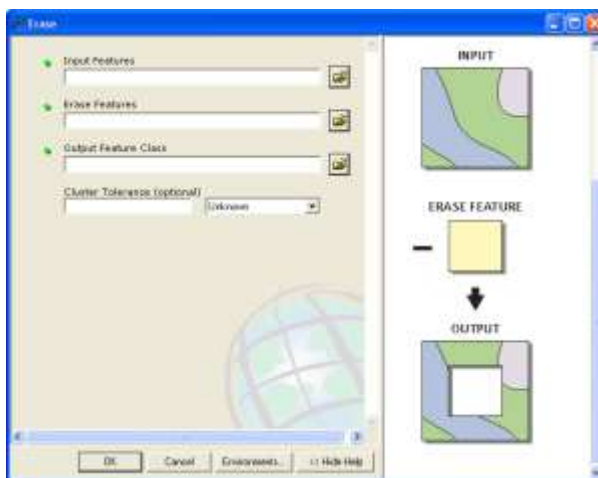
Extract - table select



Overlay Procedures (for all but spatial join tool)

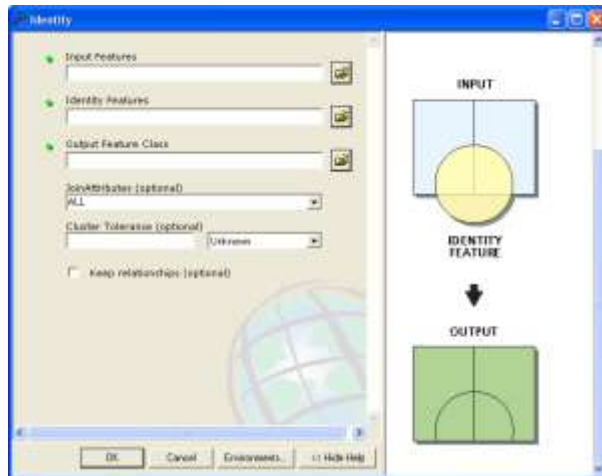
- Determine the spatial reference for processing. All the input feature classes are projected (on the fly) into this spatial reference.
- Crack and cluster the features.
- Discover geometric relationships (overlap) between the input features and the overlay features.
- Assign attributes based on the type of overlay.
- Remove features based on the combinations of attributes and overlay types.

Overlay - erase



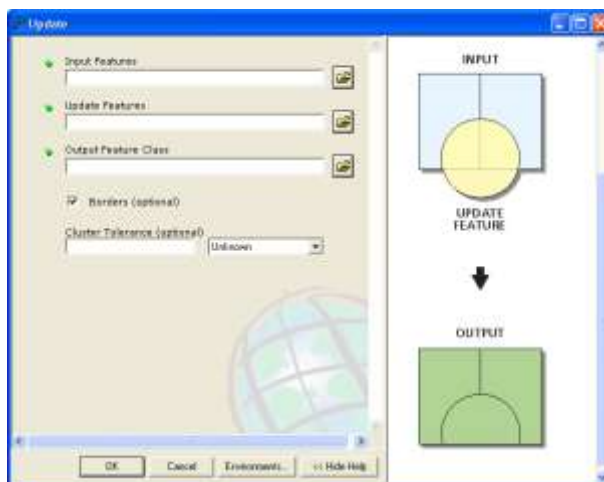
- Erase features must be polygons.

Overlay - identity



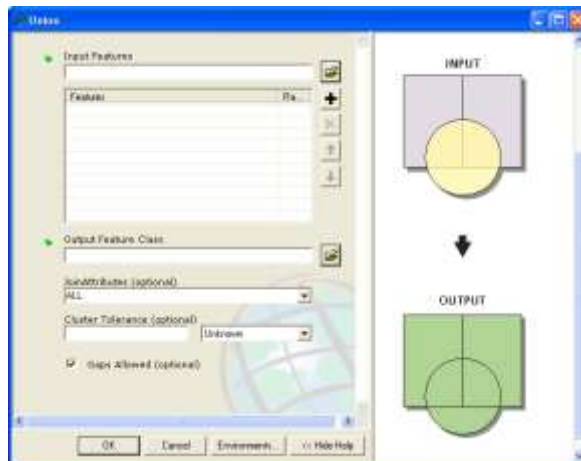
- Identity features must be polygons.

Overlay - update



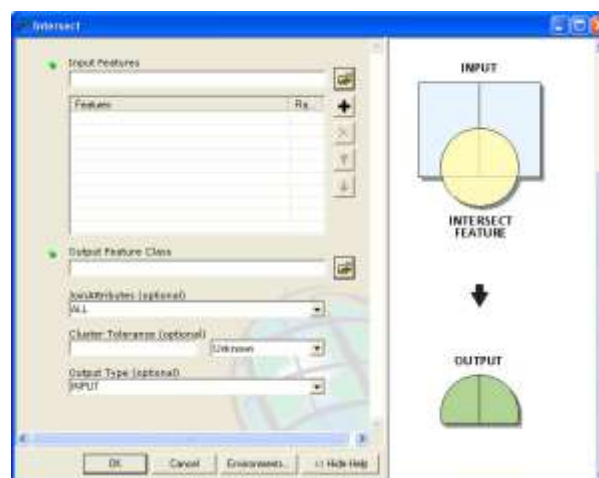
- Update features must be polygons
- The Input Features and Update Features field names must match

Overlay - union

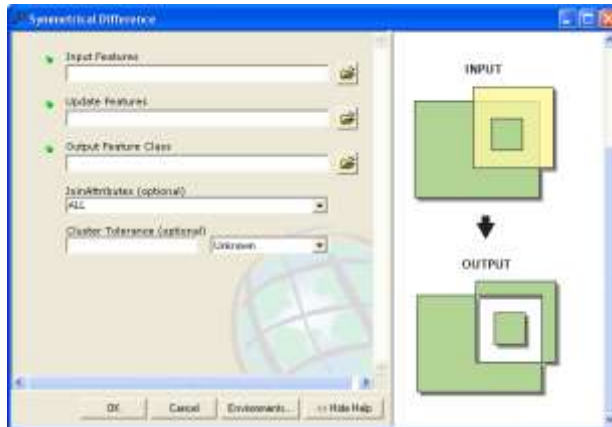


- Input features must be polygons

Overlay - intersect

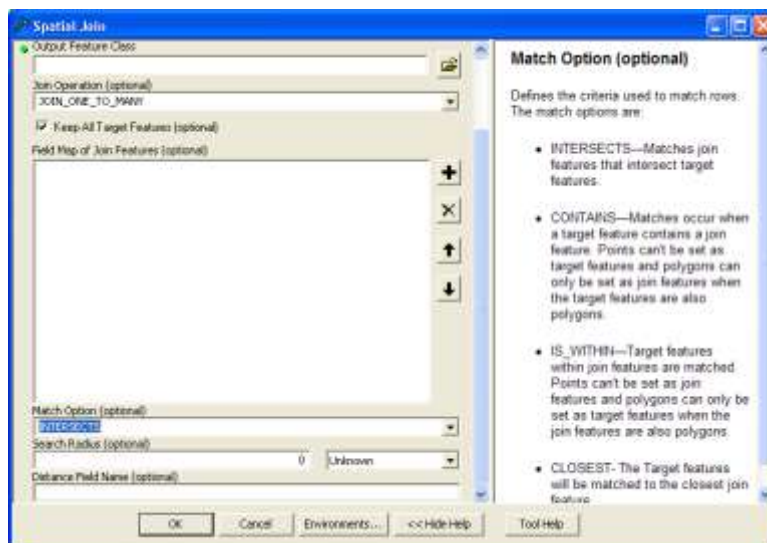


Overlay – symmetrical difference

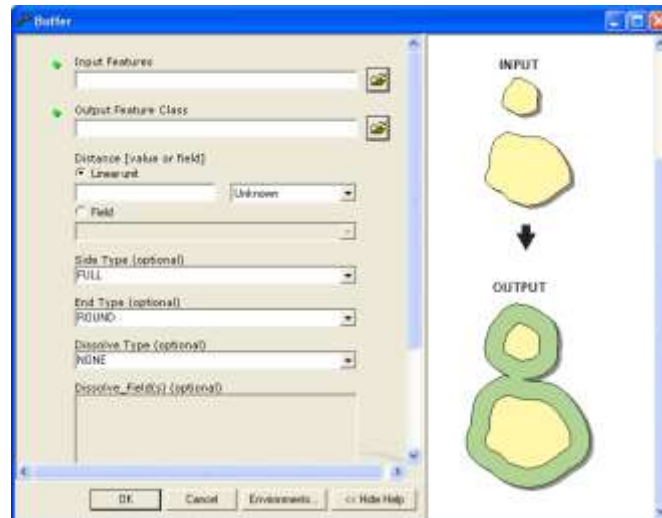


- Input and update features must be polygons

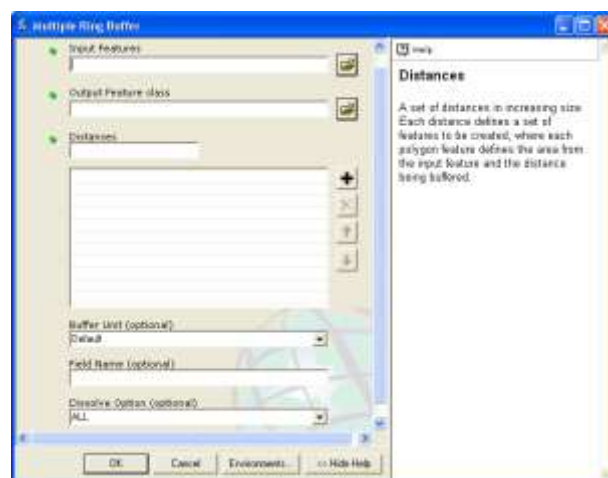
Overlay – Spatial Join



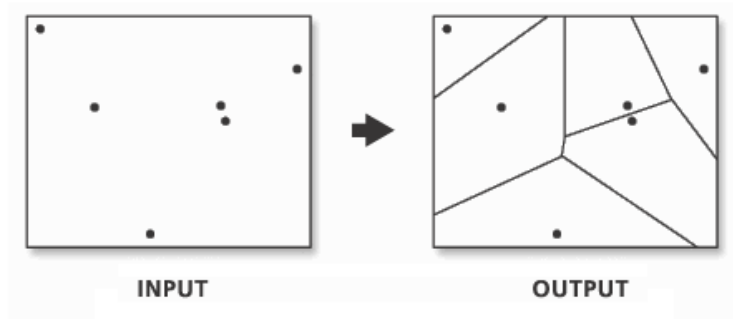
Proximity - buffer



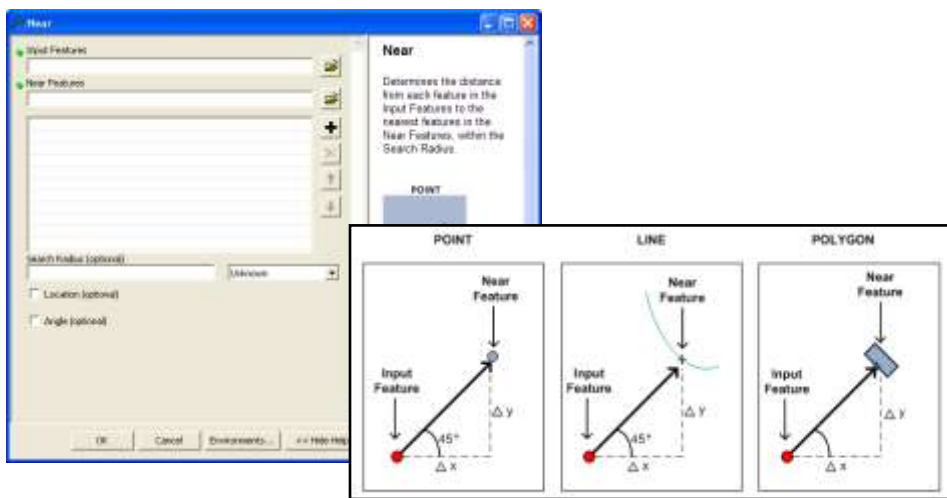
Proximity – multiple ring buffer



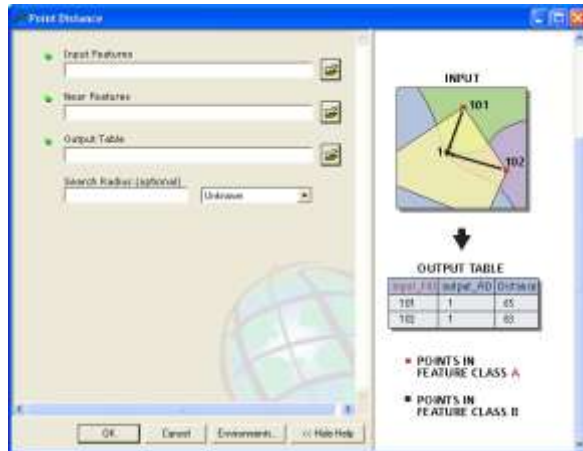
Proximity – create Thiessen polygons



Proximity – near - generate near table

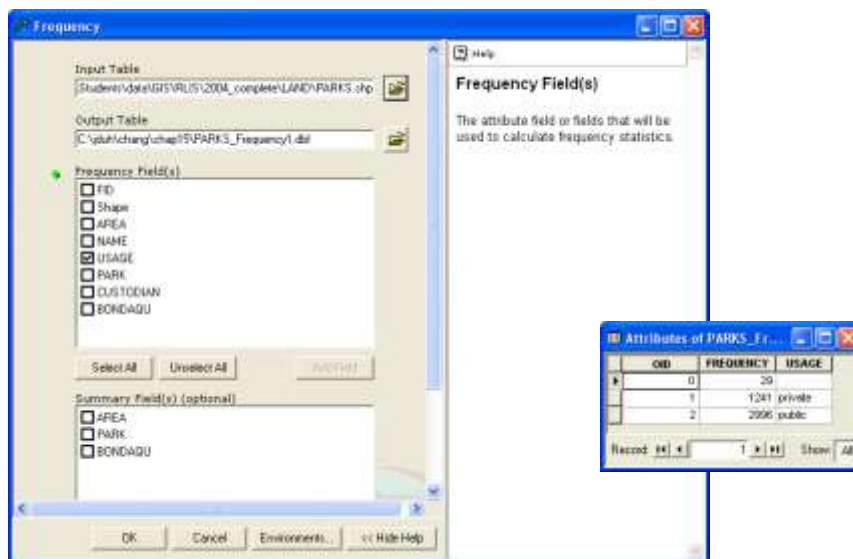


Proximity – point distance



- Both input and near features (layers) must have point geometry.

Statistics – frequency



Statistics – summary statistics

