

Buffer & Overlay Analysis

SuperMap Software Co., Ltd.

The SuperMap logo features the word "SuperMap" in a white, italicized serif font. A white dot is positioned above the letter "a", and a white arc curves over the letters "p" and "a". Below the text is a thin horizontal line.

SuperMap

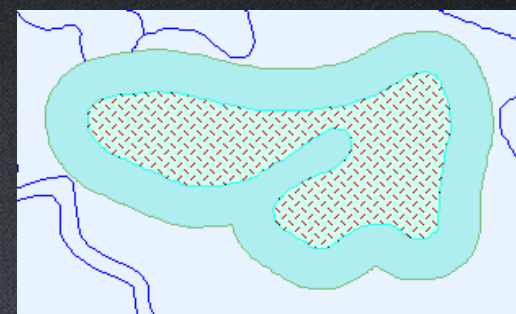
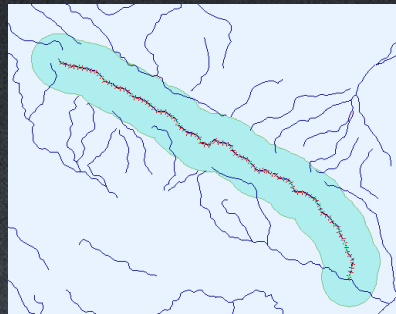
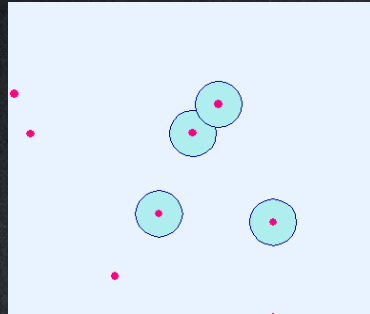
TO BE THE GLOBAL LEADING GIS

Course Overview

- Buffer Analysis
 - Create Buffer for Selections/ Dataset
 - Create Multiple Ring Buffer
- Overlay Analysis
 - Clip
 - Erase
 - Intersect
 - Union
 - Identity
 - XOR
 - Update

Buffer Analysis

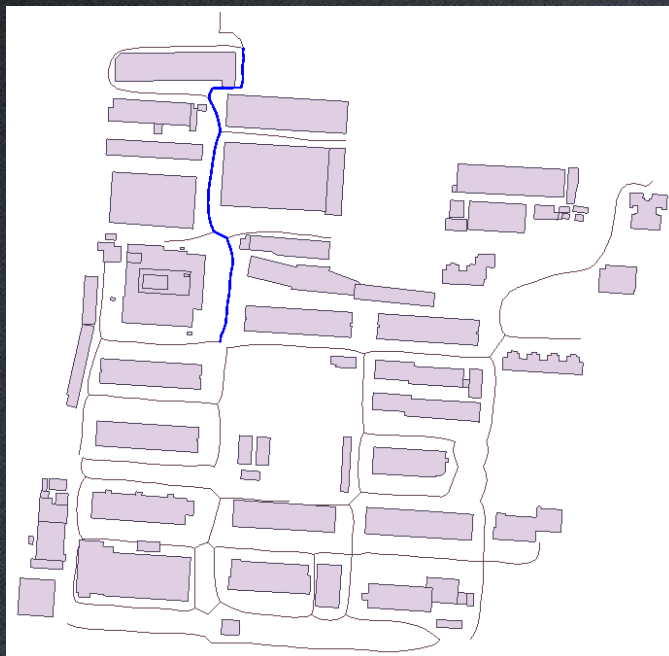
- What is buffer ?
 - The extension space created around a given object, such as a point, a line, or a polygon.



- Application Examples:
 - Create buffer for the selected road line and then use the buffer result to query residential buildings intersect with the buffer region.
 - Get affected region around some dangerous spots.
 - What neighborhoods will be affected by the flood?

Create Buffer for Selection

- Create buffer for point, line, or region.
- The left and right buffer radius can be different for lines.
- Union Buffer can dissolve the left and the right buffer space.
- The buffer end type for lines can be round or flat.



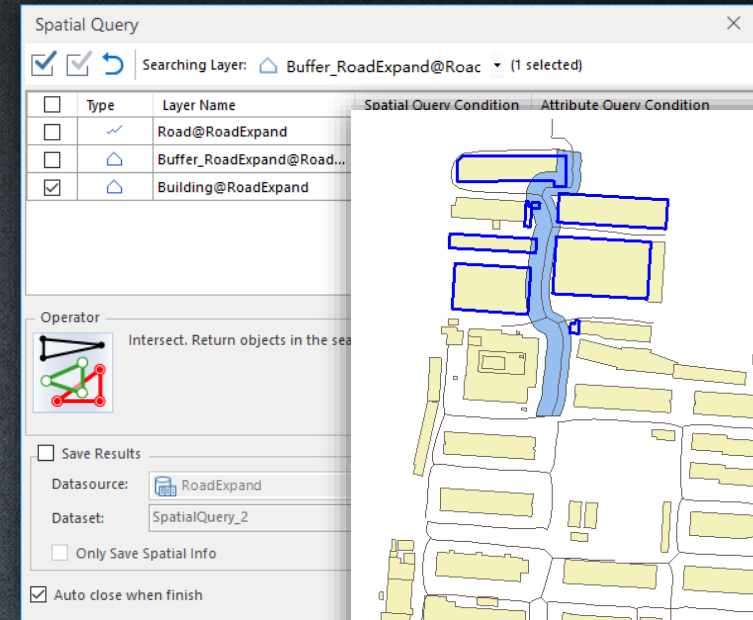
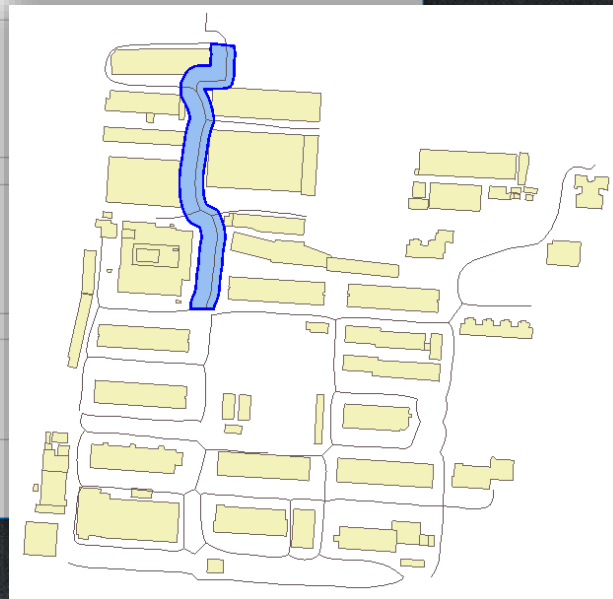
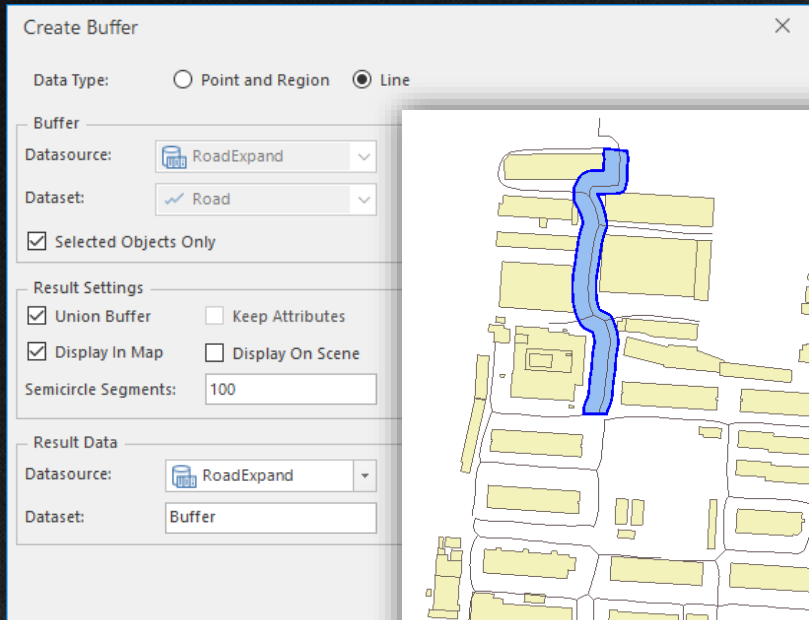
The screenshot shows the 'Create Buffer' dialog box with the following settings:

- Data Type:** Point and Region Line
- Buffer:**
 - Datasource: RoadExpand
 - Dataset: Road
 - Selected Objects Only
- Result Settings:**
 - Union Buffer Keep Attributes
 - Display In Map Display On Scene
 - Semicircle Segments: 100
- Result Data:**
 - Datasource: RoadExpand
 - Dataset: Buffer
- Buffer Type:**
 - Round Left Right
 - Flat
- Buffer Radius:**
 - Unit: m
 - Numeric
 - Left Radius: 8
 - Right Radius: 8
 - Field
 - Left Radius: SmUserID
 - Right Radius: SmUserID

Buttons: OK, Cancel

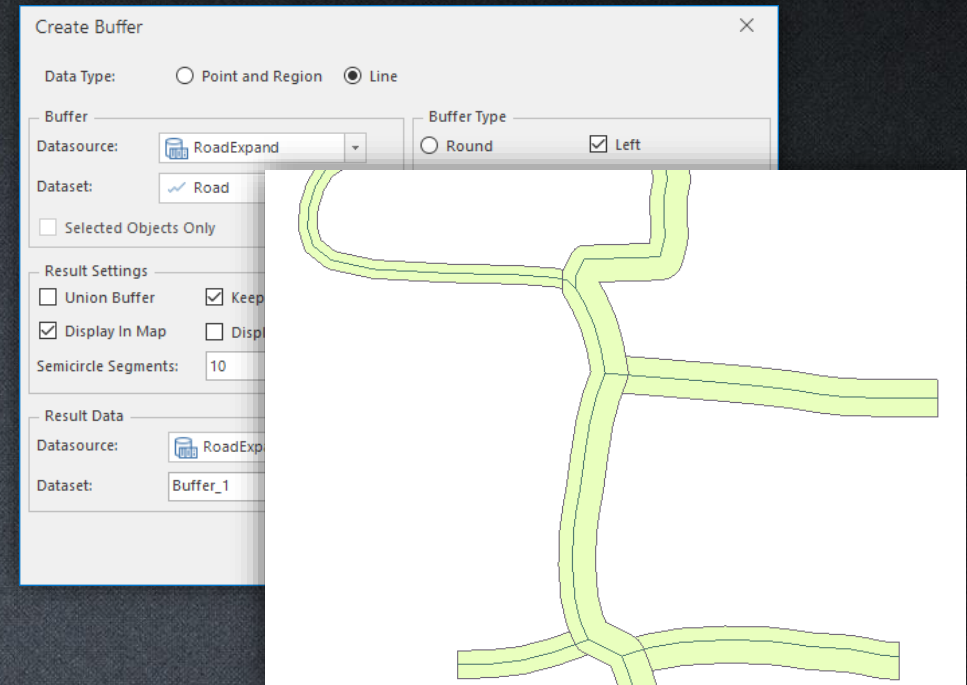
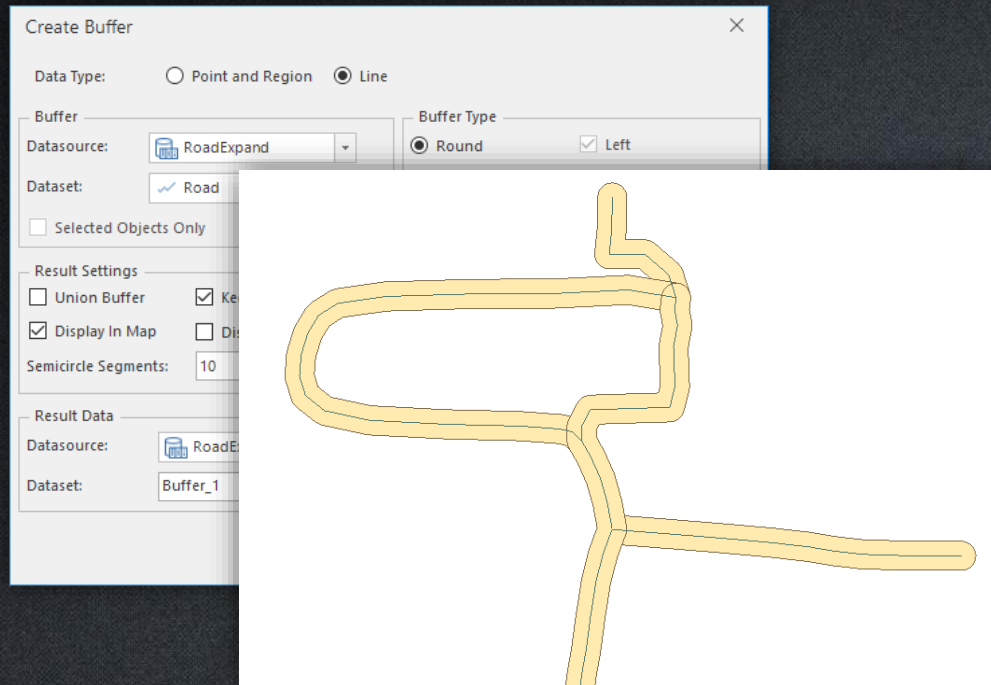
Exercise:

- Find buildings that will need to be demolished due to the expansion of a road.
- Use spatial query to get the affected buildings.



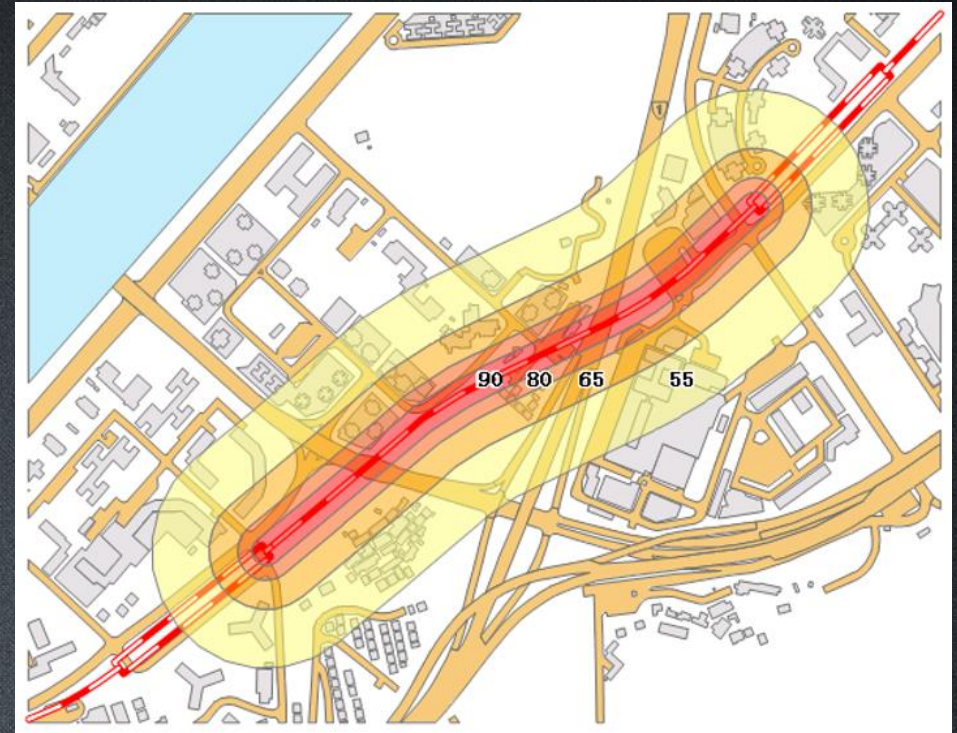
Create Buffer for Dataset

- Generate buffer region dataset for a road dataset.
- Compare Round & Flat buffet type, Numeric & Field buffer radius.



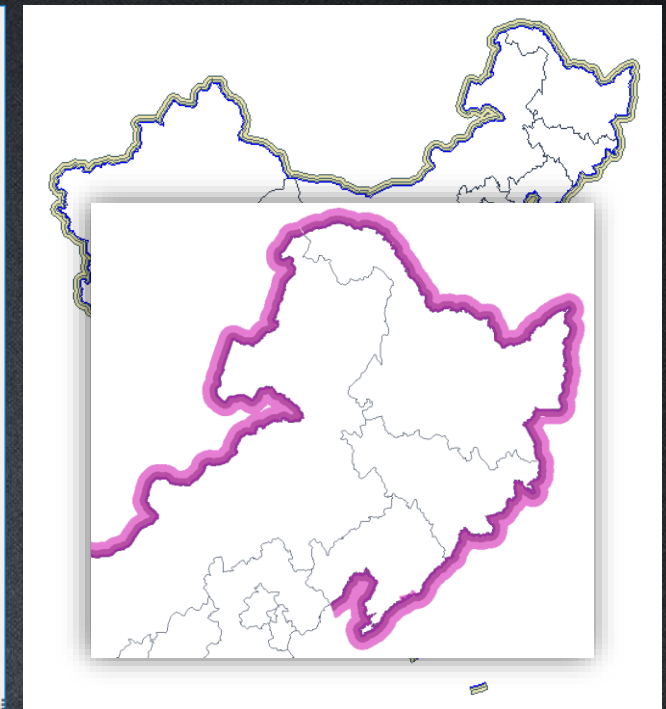
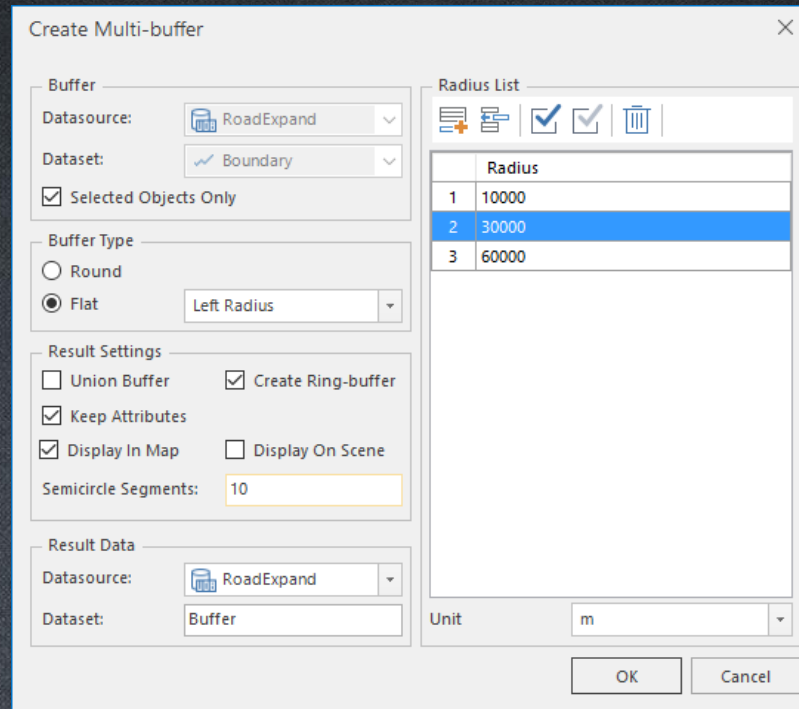
Create Multi-Buffer Zone

- Create multi-buffer zone for a railway line to analyze different levels of noise affection to the residential areas nearby.
- Create multi-buffer zone
 - Point, line, or region dataset
 - Several buffer radius



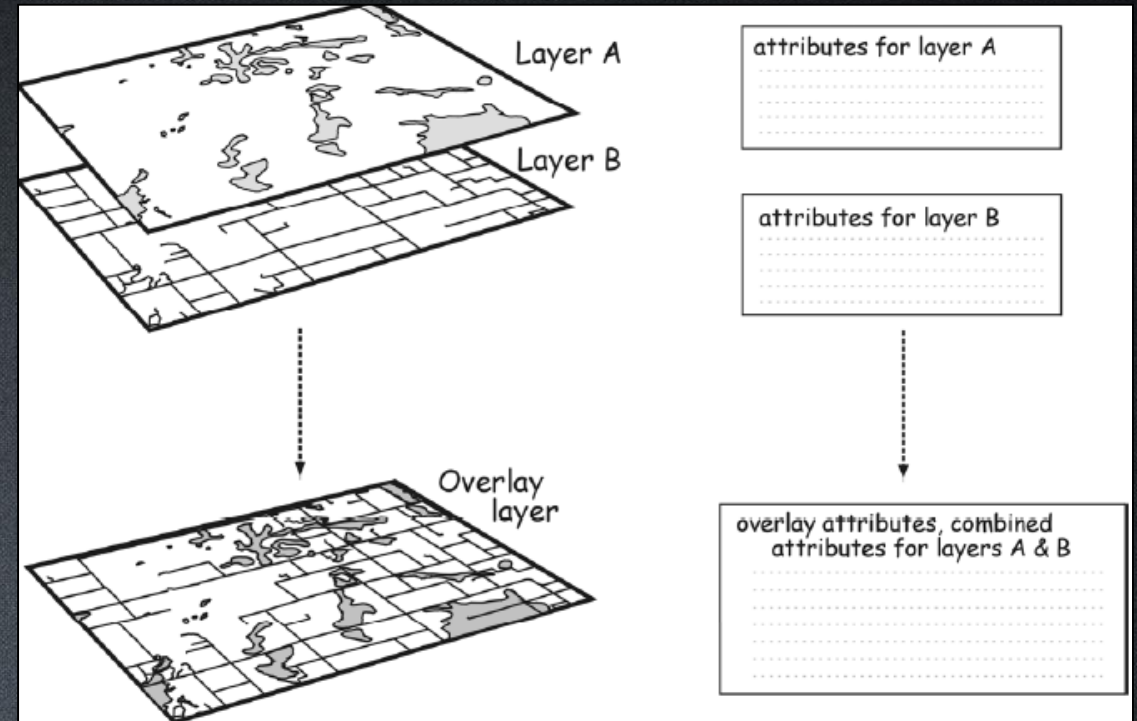
Exercise:

- Create gradient effects for country boundary(id=10), and make a unique map for the buffer result dataset.



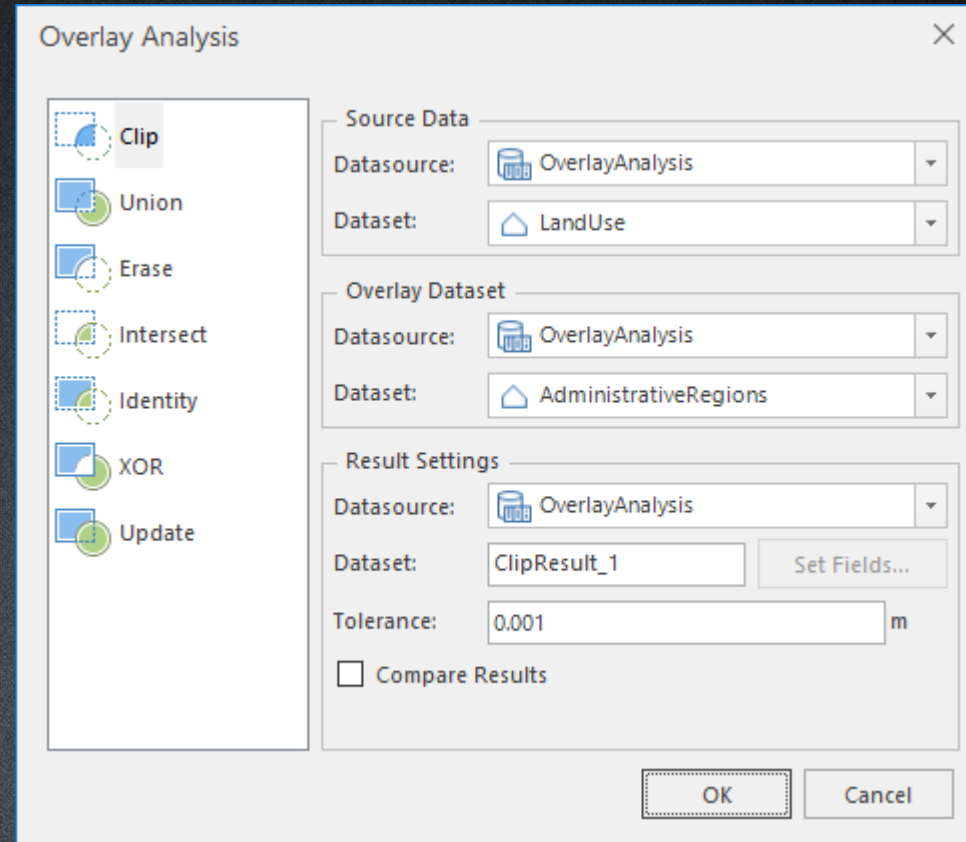
Overlay Analysis

- What's Overlay?
 - The operation of comparing variables between two datasets.
- Application Examples
 - Find out the lake distribution of a certain province.
 - With the land use data in two years, we can get the land use changed areas in these two years using Symmetrize.
 - With land use data and recovering forest distribution data, we can get the new land use data after recovering using Update.



Overlay Analysis

- Overlay mode
 - Clip
 - Erase
 - Intersect
 - Union
 - Identity
 - XOR
 - Update



Clip

- Exercise: get land use data of Liuzhuang Village.

The screenshot shows the 'Overlay Analysis' dialog box with the following settings:

- Source Data:** Datasource: OverlayAnalysis, Dataset: LandUse
- Overlay Dataset:** Datasource: OverlayAnalysis, Dataset: LiuzhuangVillage
- Settings:** Source: OverlayAnalysis, ClipResult_1, Set Fields..., Distance: 0.001 m

Buttons: OK, Cancel

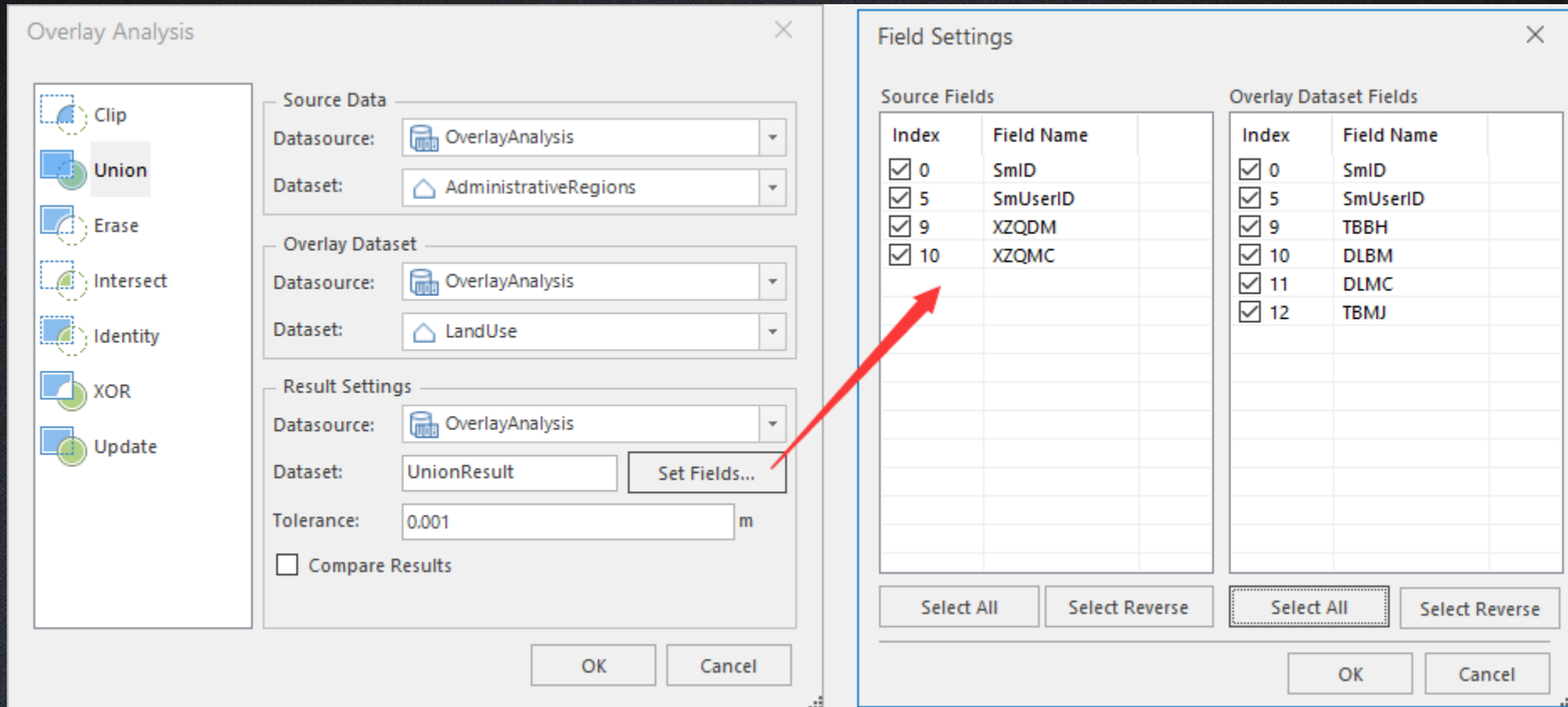
Diagram illustrating the Clip operation:

- Clipped Dataset:** A network of lines representing the land use data.
- Clip Dataset:** A polygon representing the Liuzhuang Village boundary.
- Result:** The intersection of the Clipped Dataset and the Clip Dataset, showing the land use data within the village boundary.

Map showing the result of the Clip operation: The land use data of Liuzhuang Village is highlighted in yellow, while the rest of the land use data is shown in cyan.

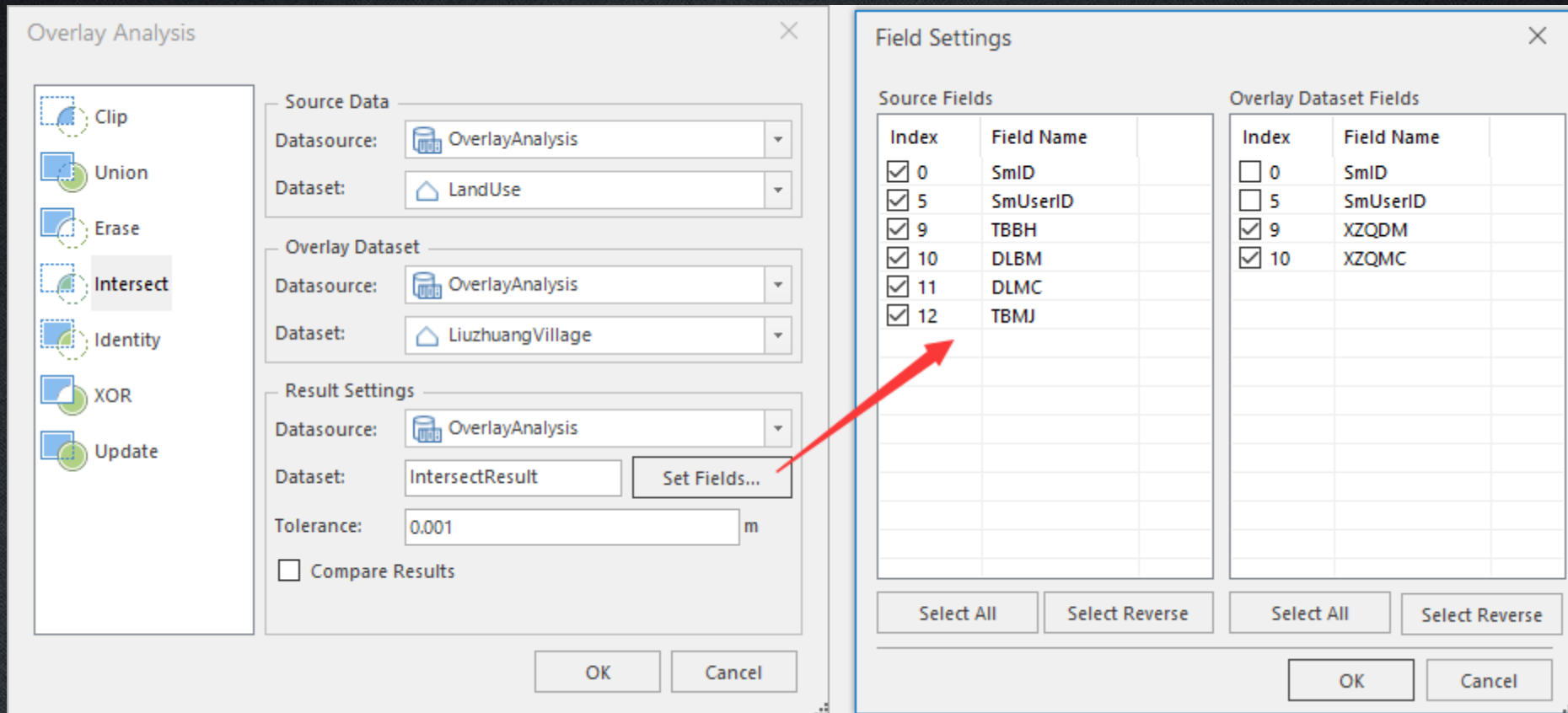
Union

- Get land use data with Administrative information



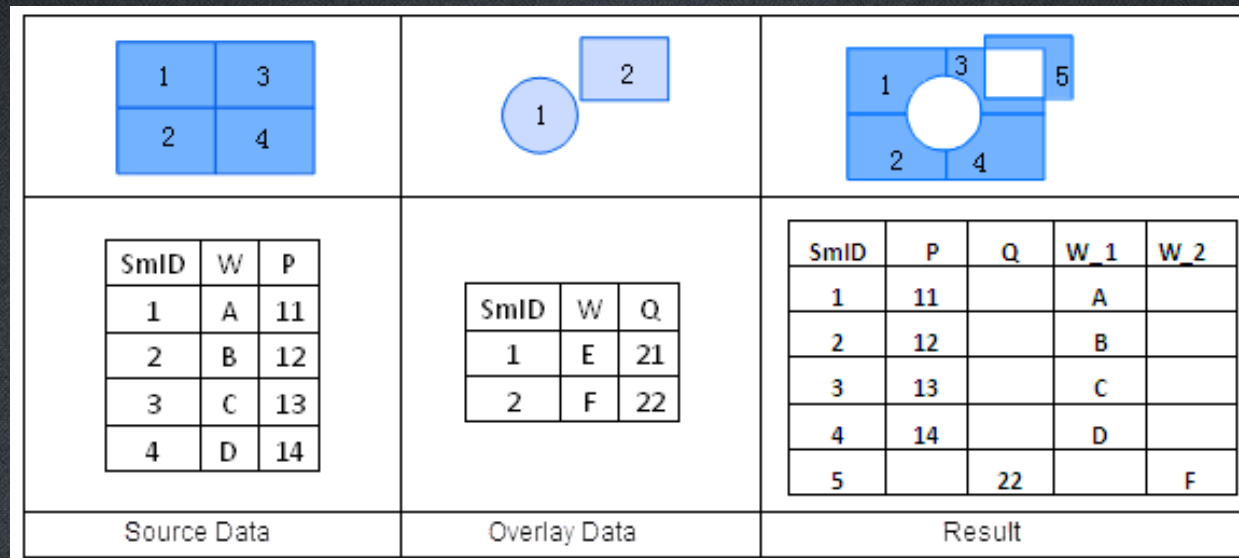
Intersect

- Get land use data with Administrative information for Liuzhuang village.



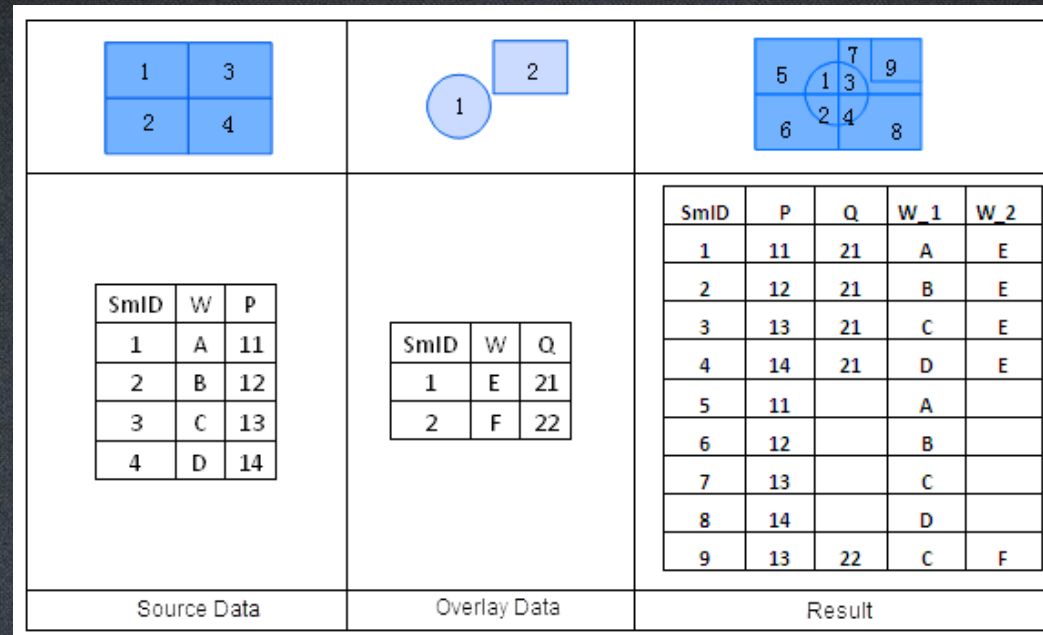
XOR (Symmetric Difference)

- Example:
 - Source dataset: land use of Beijing in 2000
 - Overlay dataset: land use of Beijing in 2005
 - Result: Land use change from 2000 to 2005.



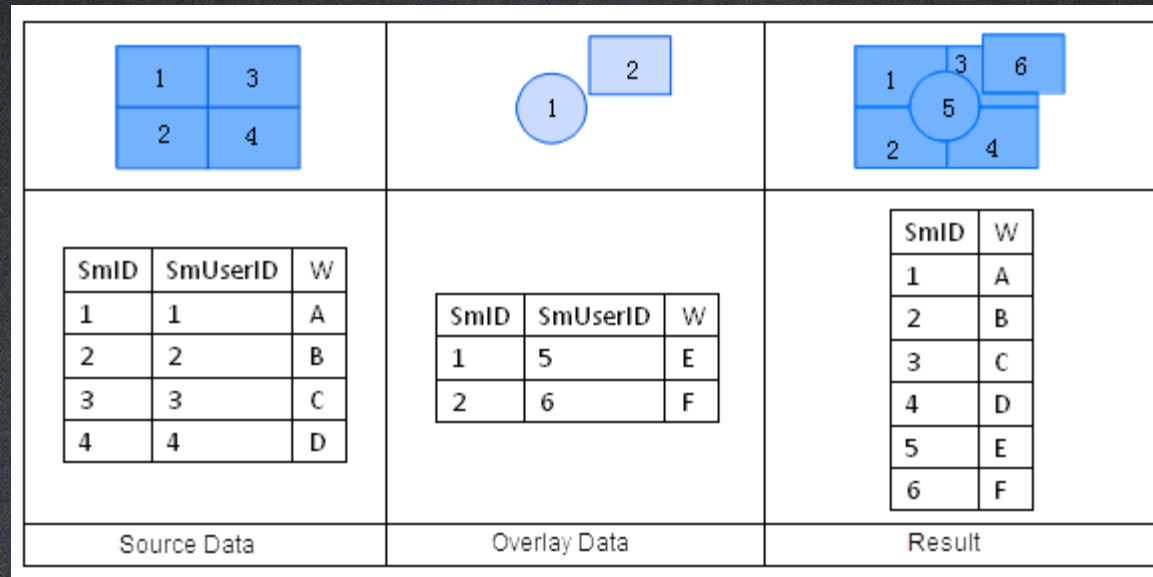
Identity

- Example:
 - Source dataset: Land use data of Beijing
 - Overlay dataset: Slope data of China
 - Result: Data of Beijing with land use and slope information



Update

- Example:
 - Source dataset: land use data of China
 - Overlay dataset: farmland areas need to be converted to forestry
 - Result: land use after conversion



Thank You!

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