

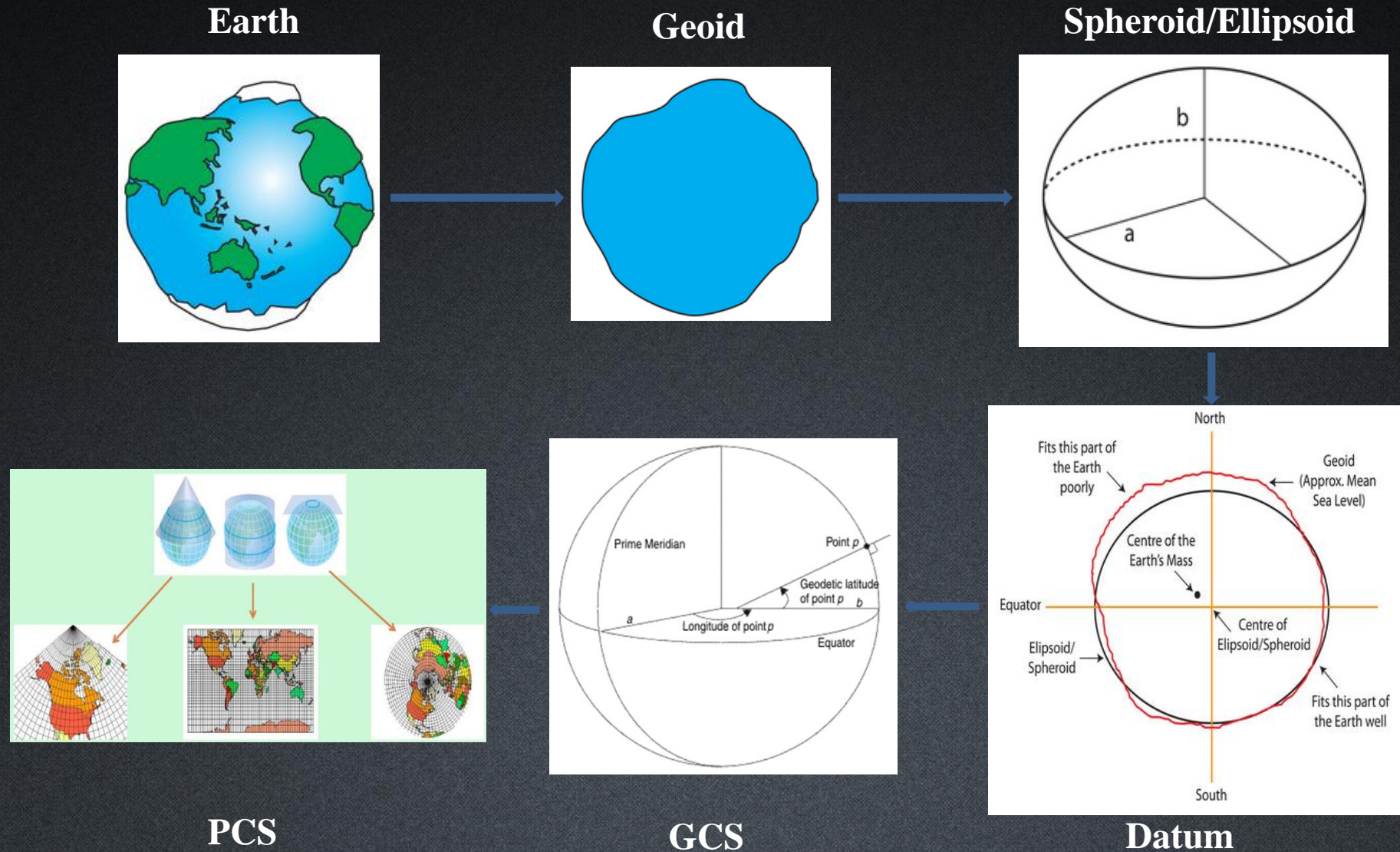
Coordinate Systems in GIS Software

SuperMap Software Co., Ltd.



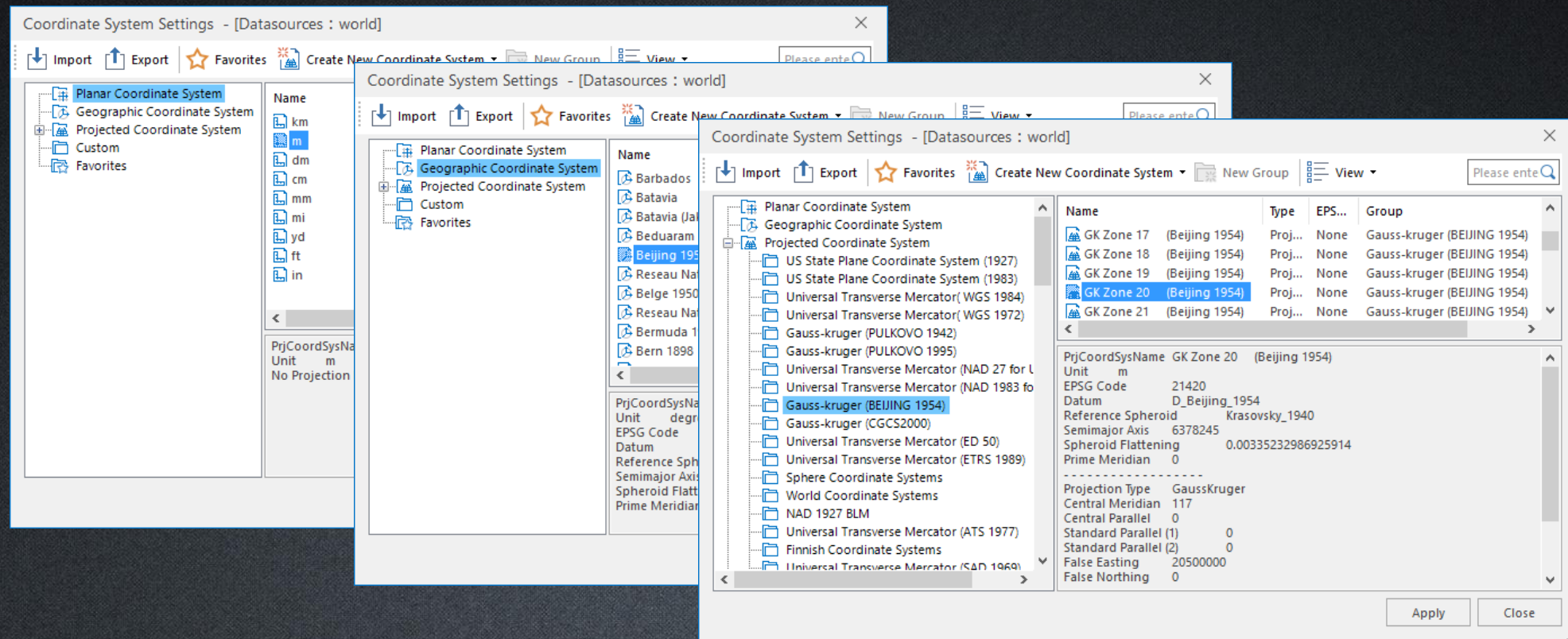
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Knowledge for Coordinate Systems



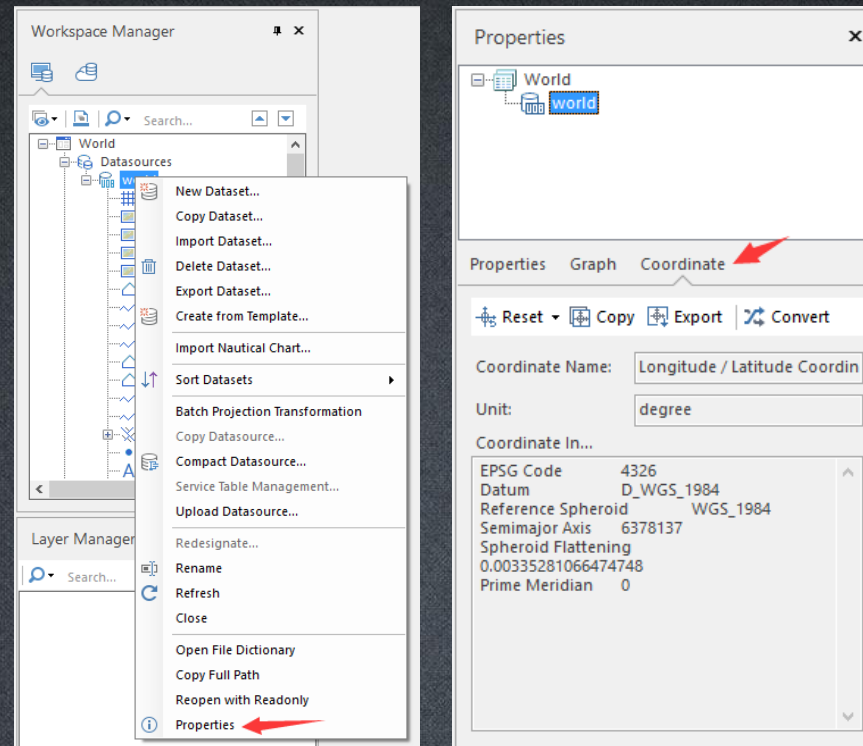
Coordinate Systems

- Types of Coordinate Systems of data in GIS software:
 - Planar Coordinate System, Geographic Coordinate System, Projected Coordinate System.



Coordinate Systems

- **Datasources, Datasets, and Maps** have their own Coordinate Systems
 - We can view their coordinate system information by **Right click -> Properties -> Coordinate**.
 - A newly created **dataset** has the same coordinate system with its datasource by default.
 - The coordinate system of a new **map** is identical to the first dataset added into it.

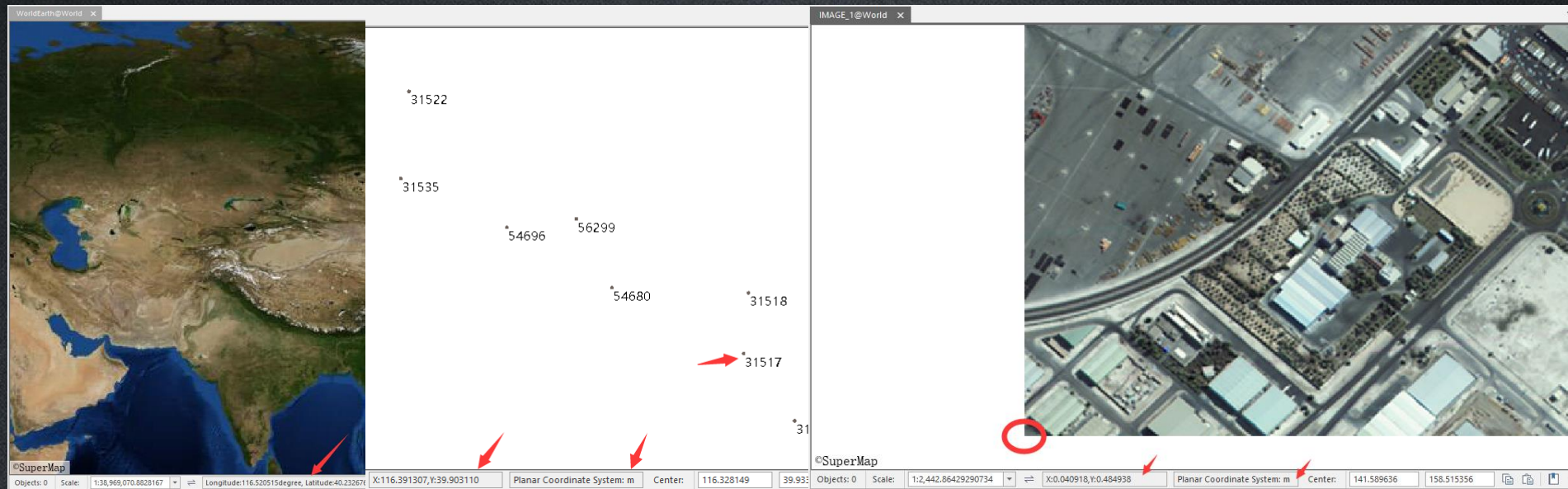


Exercise

- Create a new datasource to see what its default coordinate system is.
- Create a new dataset and set its coordinate system to be the same as the WorldEarth.
- Create a new map, add the new dataset into it, and check the coordinate system of the map.

Check the coordinates of the data

- Whether coordinate values of the data is correct?
- Whether the coordinate information of the dataset is correct?
 - Both are correct. 😊
 - Coordinate values are correct, while the coordinate system information is not. ➡ **Reset**
 - Coordinates of the data are not correct. ➡ **Registration**



Projection Settings

- Right Click on dataset -> Properties -> Coordinate -> Reset

The first screenshot shows the 'Workspace Manager' with a list of datasets. The dataset 'BuildingCoordinate_Sheet1' is selected, and a right-click context menu is open. The 'Properties' option is highlighted with a red arrow.

The second screenshot shows the 'Properties' dialog box for the selected dataset. The 'Coordinate' tab is selected, and the 'Reset' button is highlighted with a red arrow. The 'Coordinate Name' is set to 'Planar Coordinate System---m' and the 'Unit' is set to 'm'.

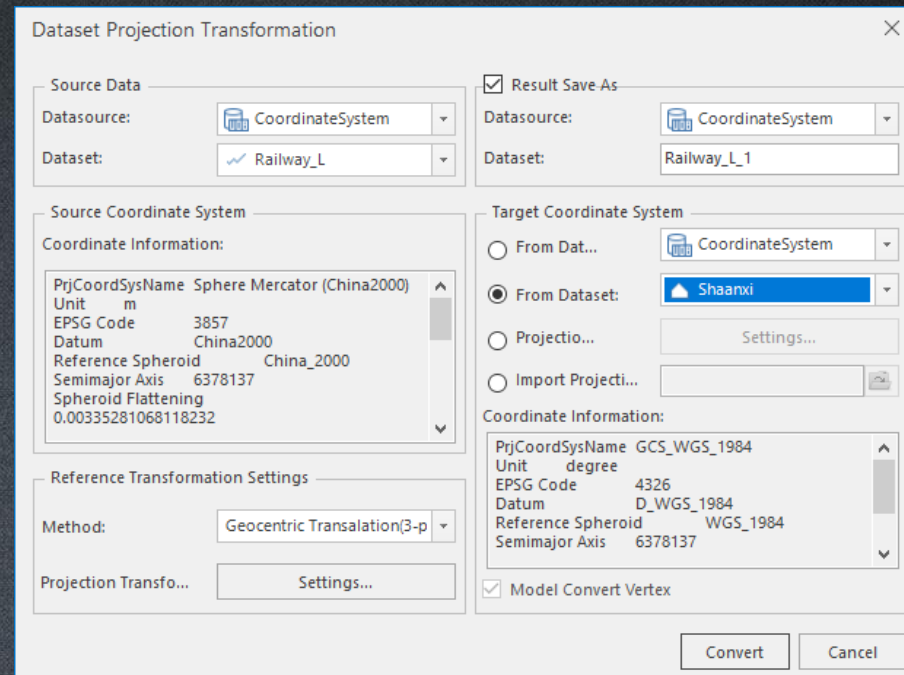
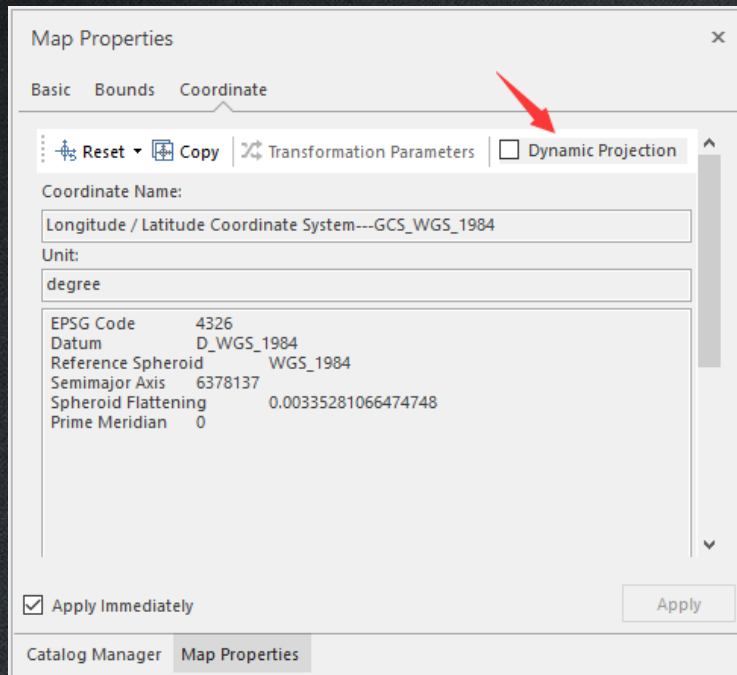
The third screenshot shows the 'Coordinate System Settings' dialog box. The 'Geographic Coordinate System' is selected in the left pane. In the right pane, the 'WGS 1984' system is selected from the list. The 'Name' column shows 'WGS 1984' and the 'Type' column shows 'Geographic Coordinate System'.

Name	Type	EPSG Code	Group
Zanderij	Geographic Coordinate System	None	Geographic Coordinate System
Yoff	Geographic Coordinate System	None	Geographic Coordinate System
Yacare	Geographic Coordinate System	None	Geographic Coordinate System
Xi-An 1980 China	Geographic Coordinate System	None	Geographic Coordinate System
WGS 1984	Geographic Coordinate System	None	Geographic Coordinate System
WGS 1972 Transit Broa...	Geographic Coordinate System	None	Geographic Coordinate System
WGS 1972	Geographic Coordinate System	None	Geographic Coordinate System
WGS 1966	Geographic Coordinate System	None	Geographic Coordinate System
War Office	Geographic Coordinate System	None	Geographic Coordinate System
Walbeck	Geographic Coordinate System	None	Geographic Coordinate System
Wake-Eniwetok 1960	Geographic Coordinate System	None	Geographic Coordinate System
Wake Island Astro 1952	Geographic Coordinate System	None	Geographic Coordinate System
Voirol Unifie 1960 (Paris)	Geographic Coordinate System	None	Geographic Coordinate System
Voirol Unifie 1960	Geographic Coordinate System	None	Geographic Coordinate System
Voirol 1875 (Paris)	Geographic Coordinate System	None	Geographic Coordinate System
Voirol 1875	Geographic Coordinate System	None	Geographic Coordinate System
Viti Levu 1916	Geographic Coordinate System	None	Geographic Coordinate System
Trucial Coast 1948	Geographic Coordinate System	None	Geographic Coordinate System

PrjCoordSysName WGS 1984
Unit degree
EPSG Code 4326
Datum D_WGS_1984
Reference Spheroid WGS_1984
Semimajor Axis 6378137
Spheroid Flattening 0.00335281066474748
Prime Meridian 0

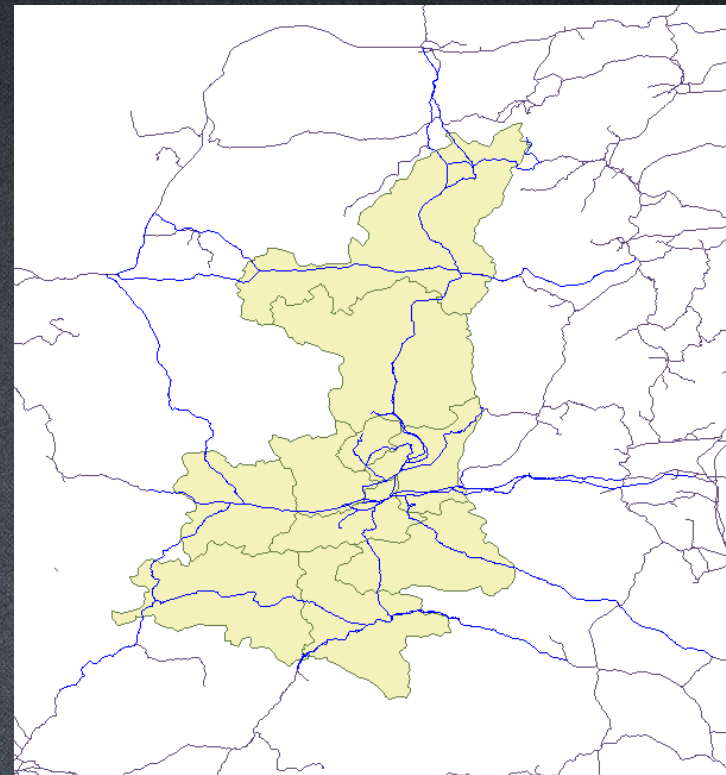
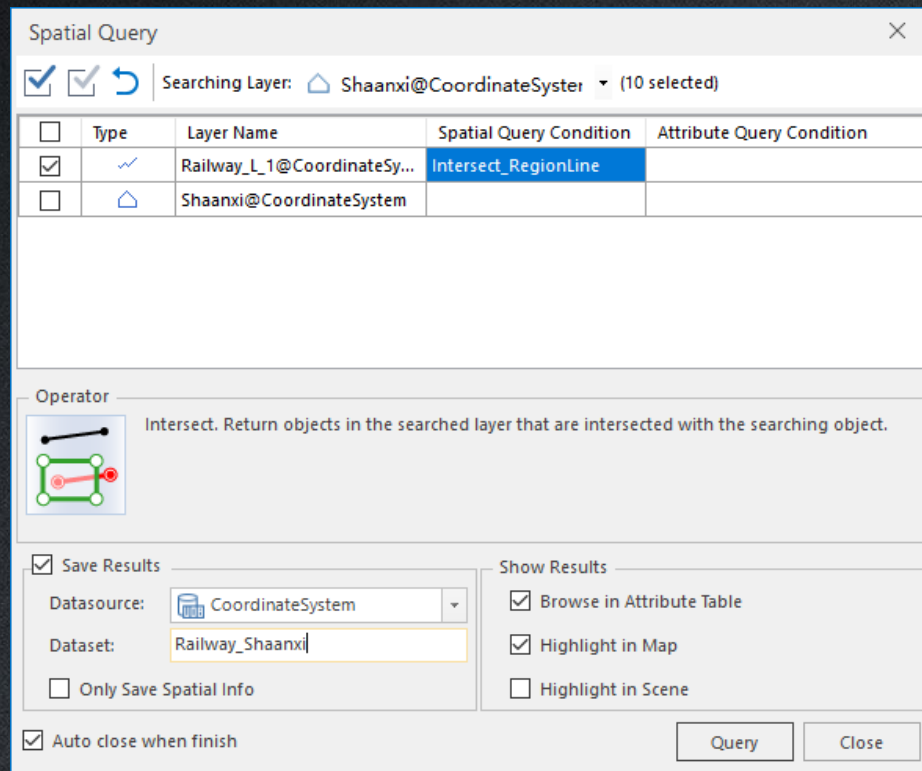
The data in different coordinate systems

- How to put two or more datasets in different coordinate systems together?
 - If the datasets only used for displaying on the map. ➡ **Dynamic Projection**
 - If the datasets will be used for data processing,
e.g. Append Row, Overlay Analysis, Structure Network, etc. ➡ **Projection Transformation**



Exercise

- How many railways there are in Shaanxi Province?
 - Step 1: Coordinate Transformation
 - Step 2: Spatial Query



Thank You!

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