Geographic Information System

Digitalization

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Photo credit: ChatGPT

Outline

- Usage of Digitalization
- Digitalization Lab

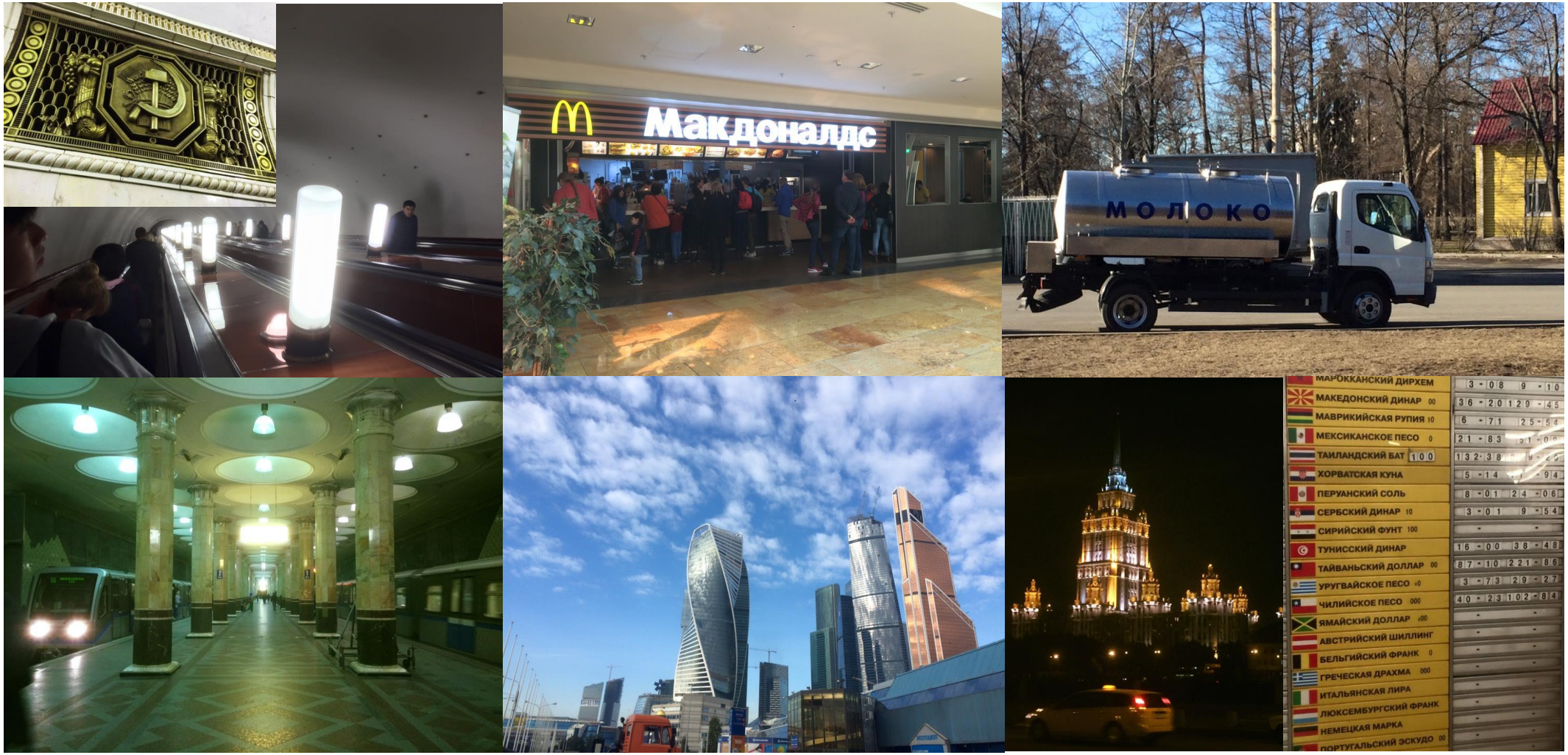
Usage of Digitalization

- In most cases, we have ESRI shapefile, Google KML or KMZ, GeoJSON, or any other geocoding file.
- However, we do not have some data that could be utilized for any kind of analysis; therefore, we have to digitalize a raster data (image) to a vector data (shapefile).
- This approach is widely adopted in both industrial and digital humanities, such as Ancient Taipei City Map.
- Two steps :: Georeferencing ➔ Editing

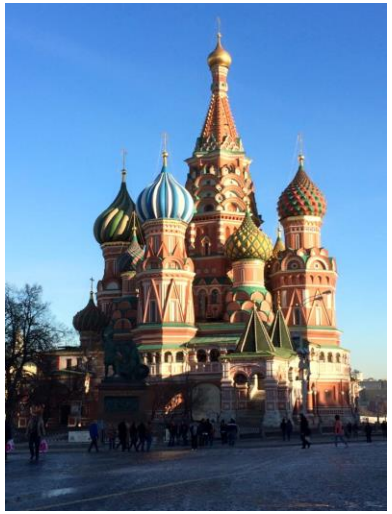
Digitalization Lab

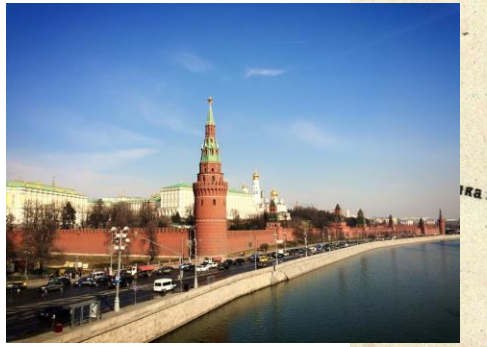
- Today, we have to digitalize an ancient map of Kremlin in Moscow, Russian Federation.
- Here is the link of dataset: https://download.geofabrik.de/russia/central-fed-district.html
- Two shapefiles will be used in this Lab:
  - gis_osm_roads_free_1.shp
  - gis_osm_buildings_a_free_1.shp

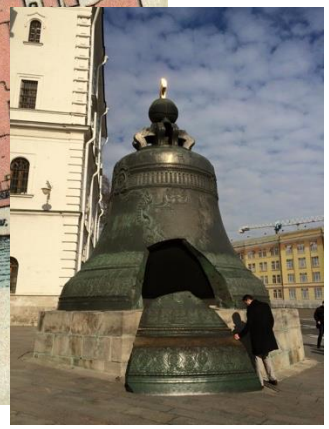
Digitalization Lab



Digitalization Lab

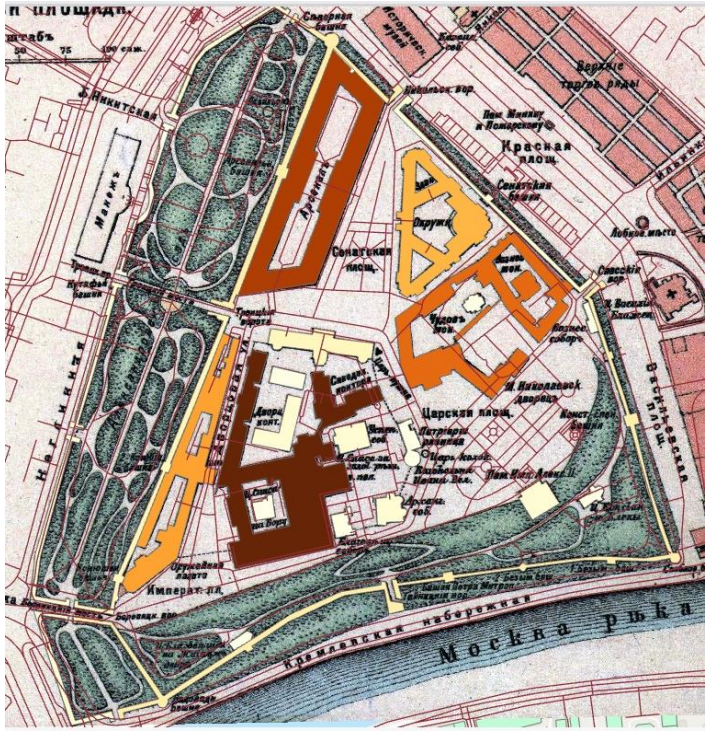




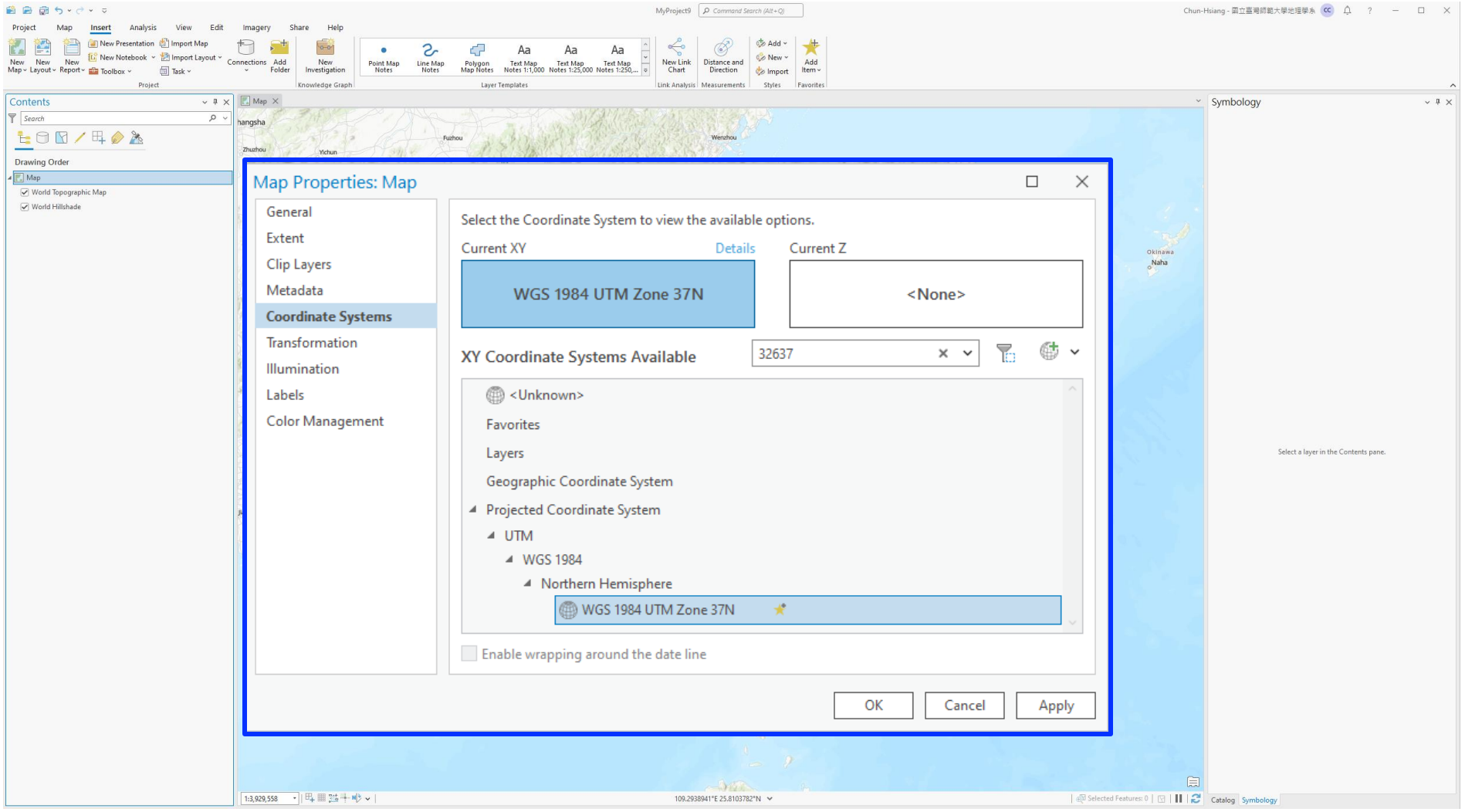


Digitalization Lab

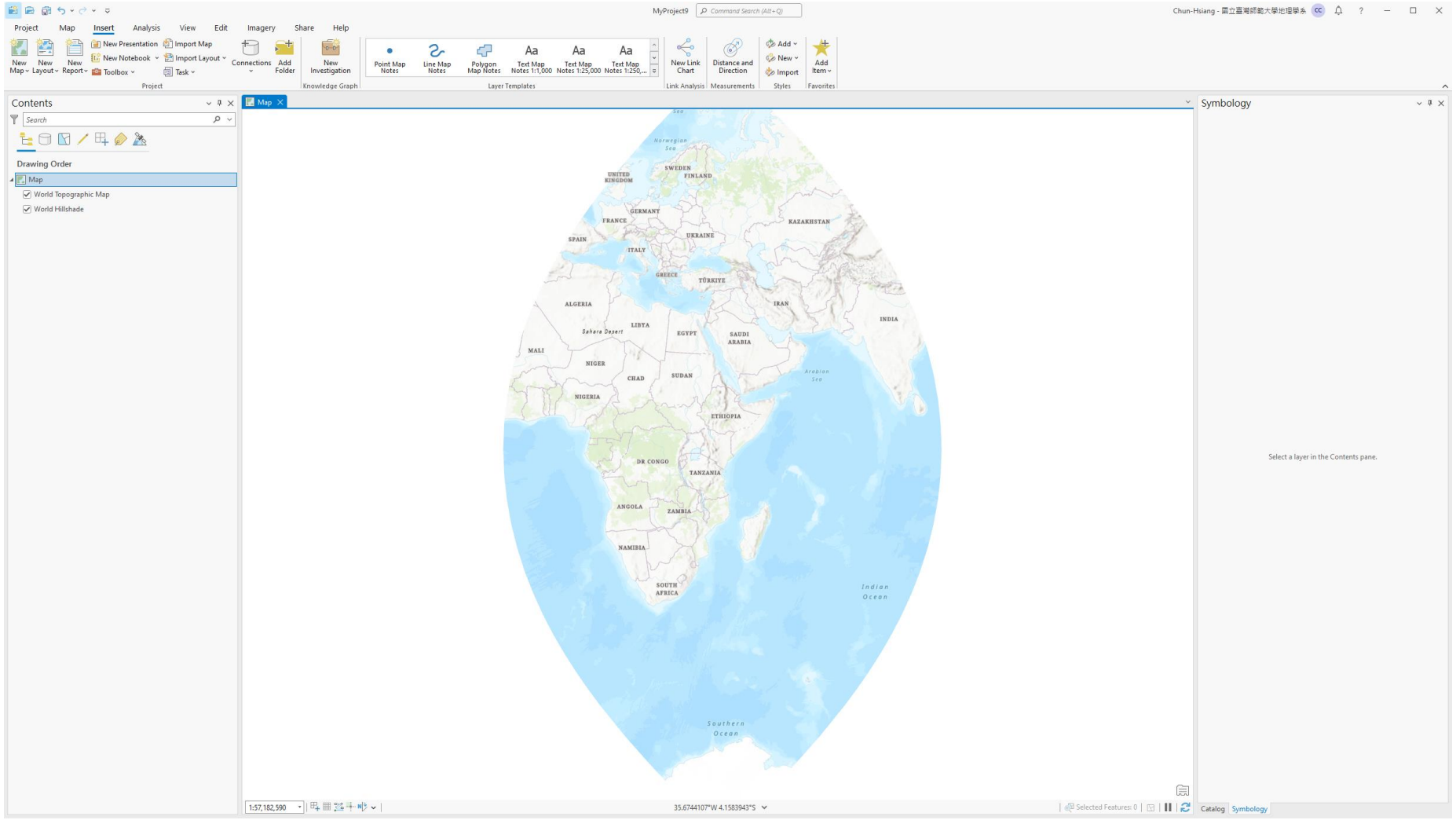
1) Set **PCS** for targeting area
2) **Create a Feature Class** (Shapefile)
3) **Georeferencing**
4) **Fit to Display**
5) **Add Control Points**
6) Show **Control Point Table** and **Save** it
7) **Edit :: Create** ➔ start to digitalizing all Kremlin buildings
8) **Create a Feature Class** (Shapefile) for Erasing the overlapped areas
9) **Erase** the overlapped areas
10) **Create a Feature Class**(Shapefile) for adding the overlapped areas
11) **Union** the added areas
12) **Calculate Geometry** :: Perimeter and Area
13) **Symobology** with Area values



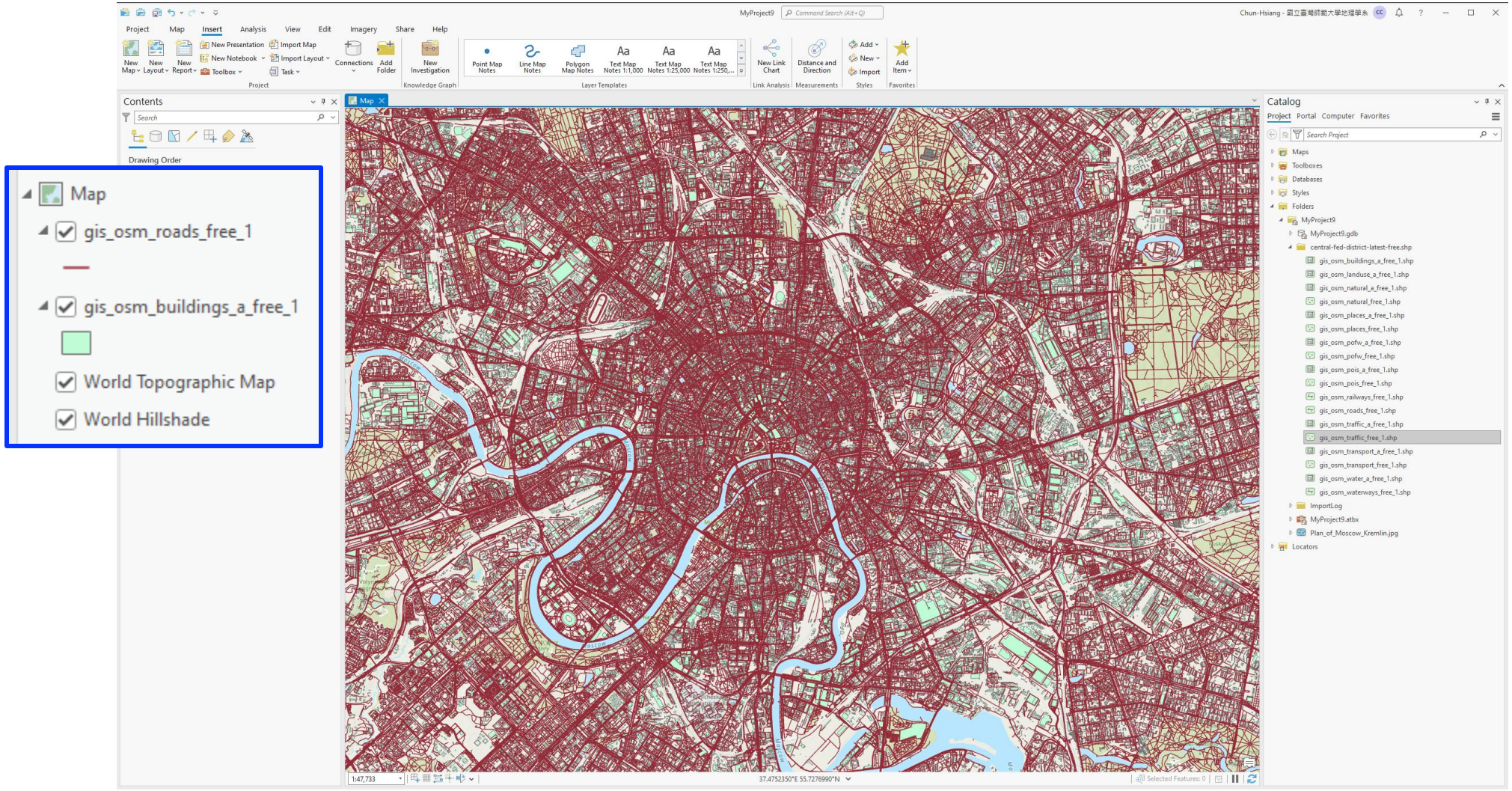
PCS Settings for Moscow



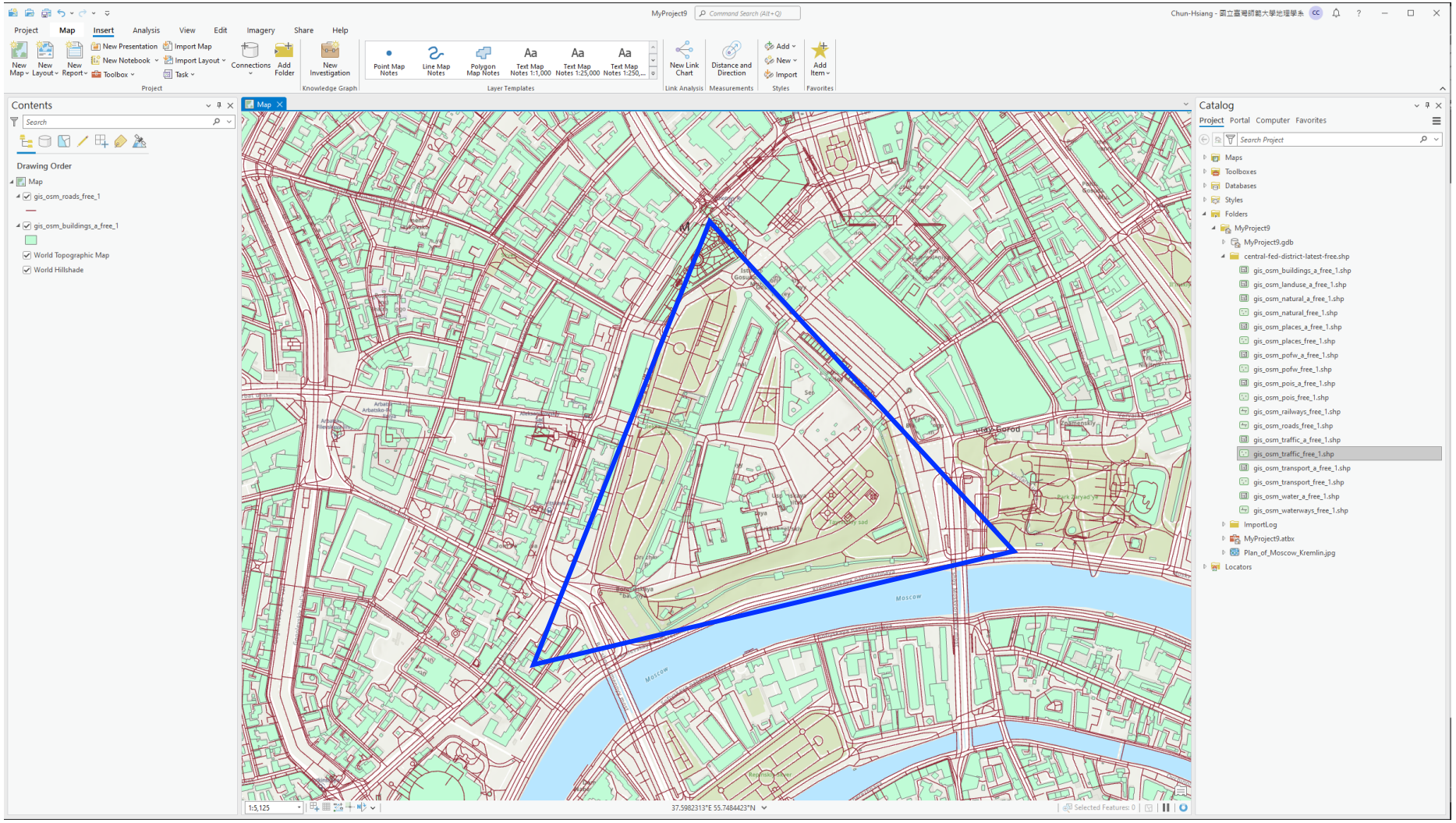
PCS Settings for Moscow



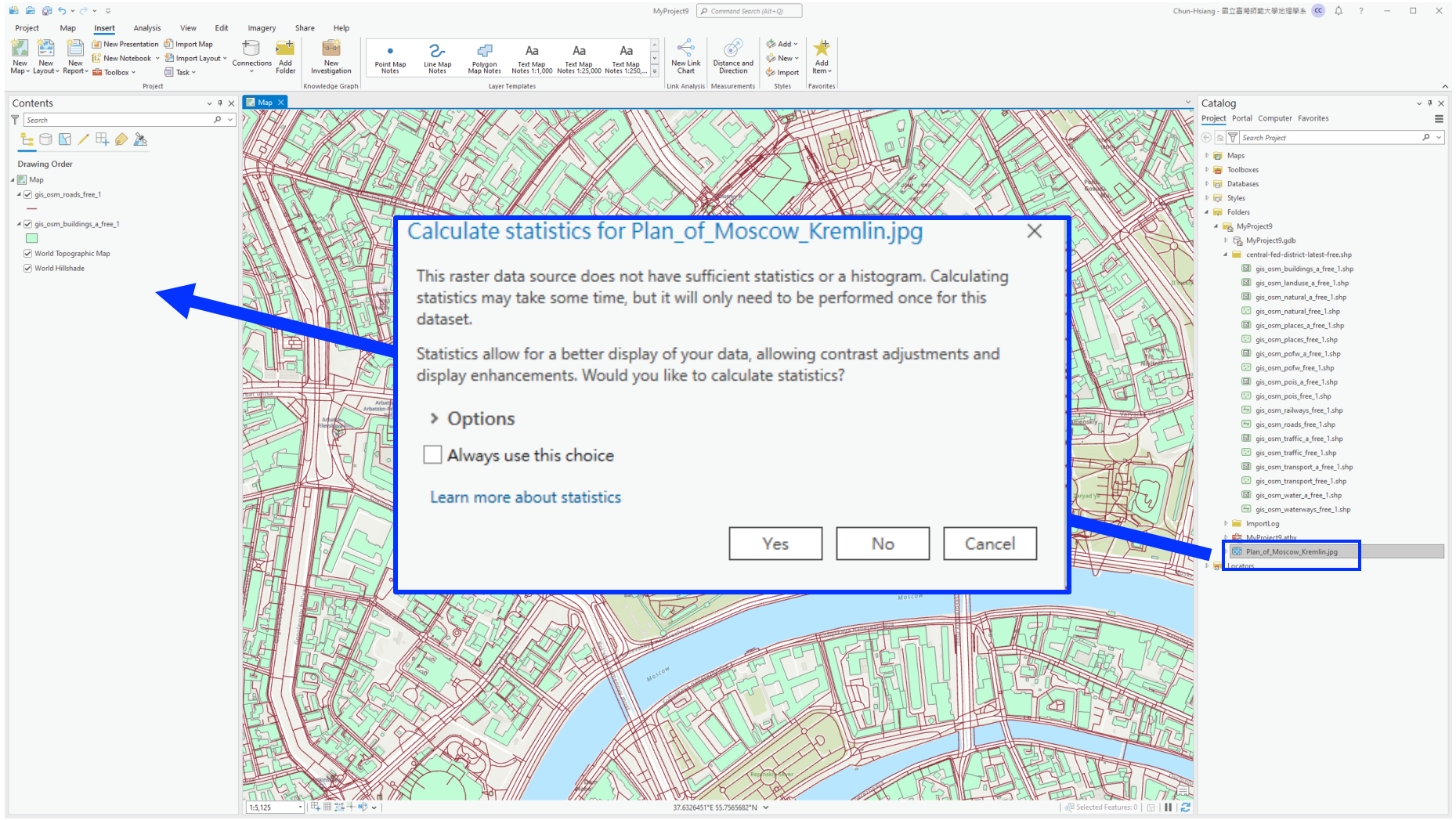
OSM Datasets



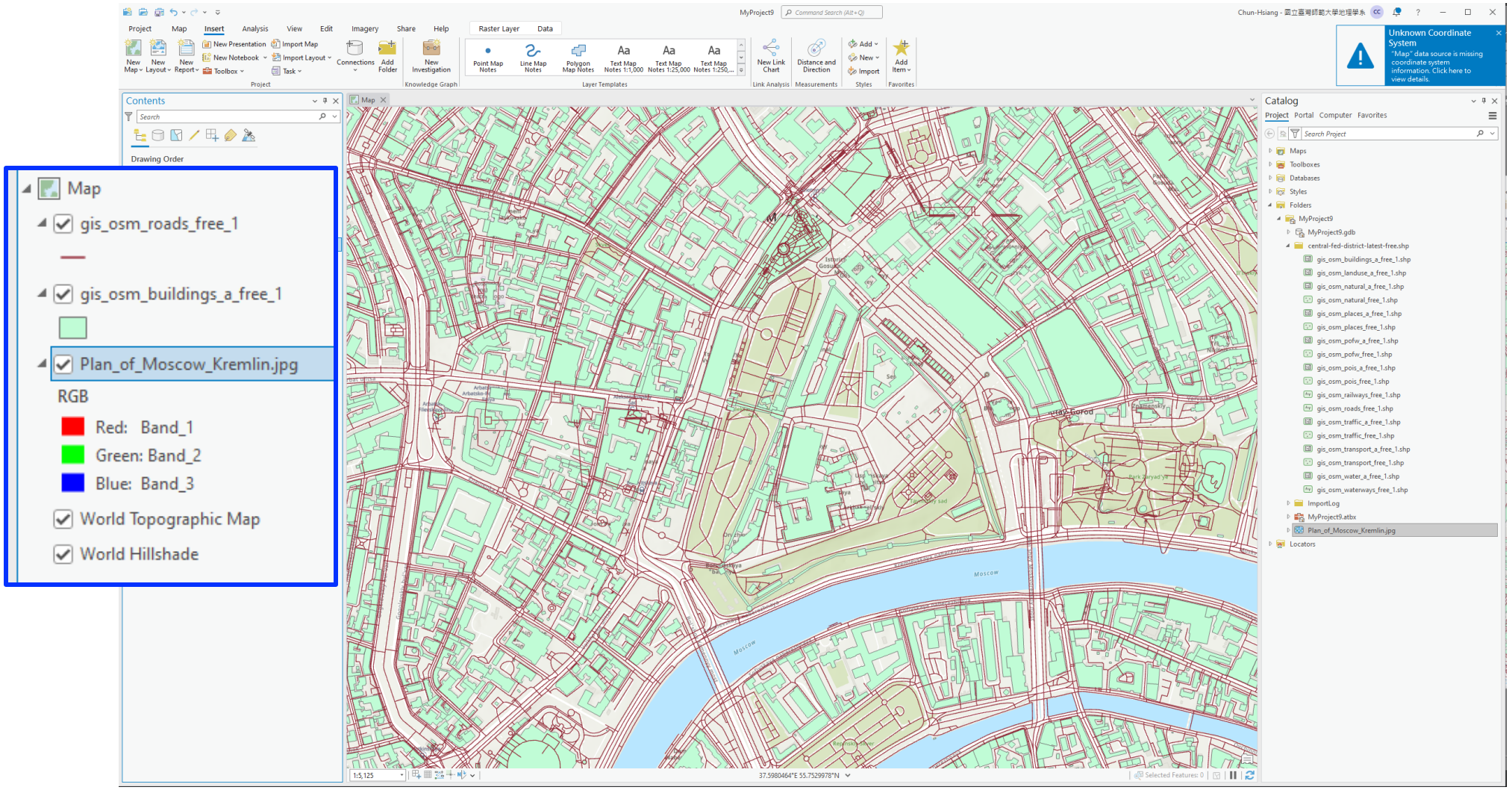
Zoom to Kremlin



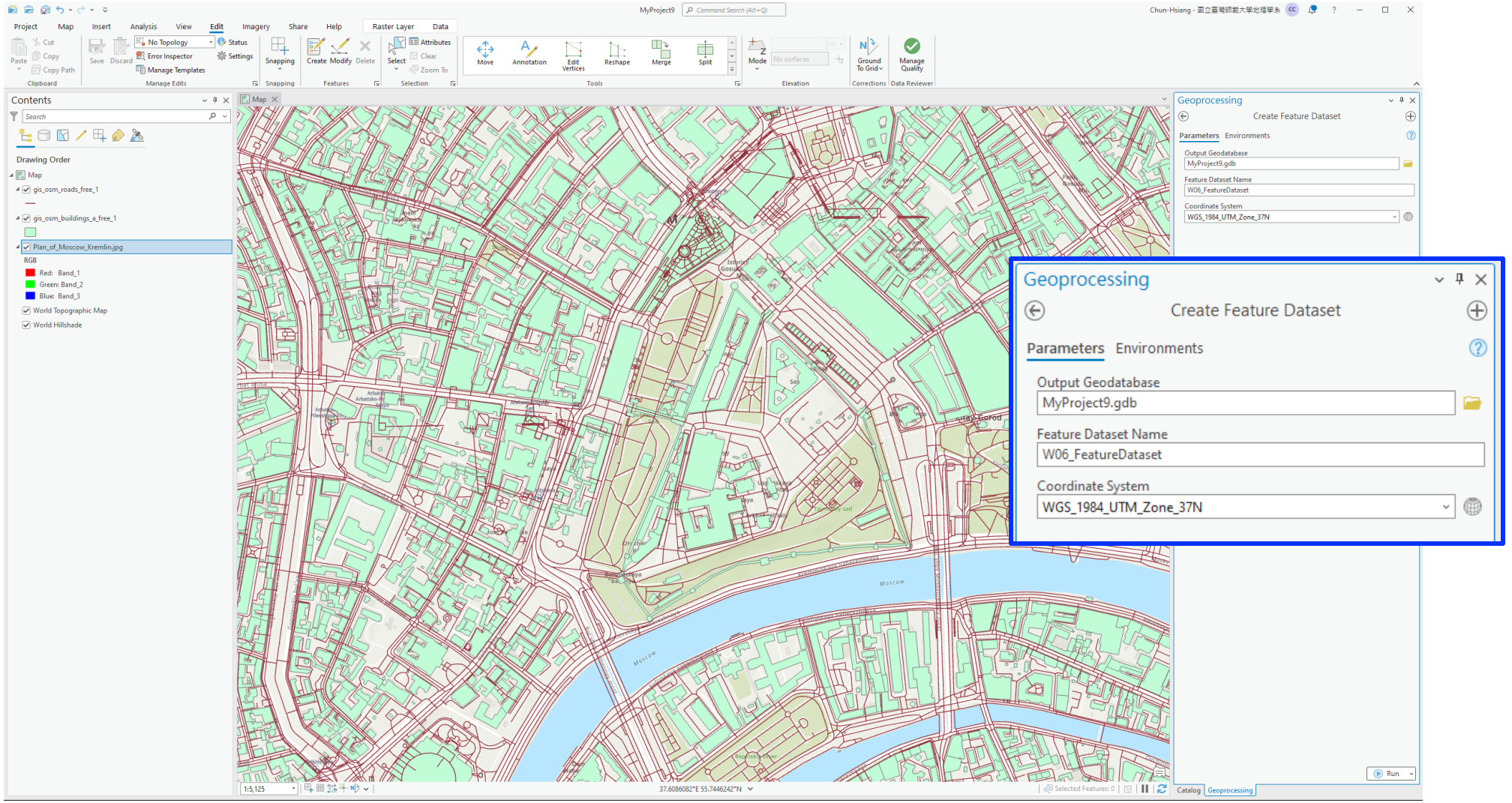
Load the Ancient Map



Loaded the Ancient Map



Create a Feature Dataset



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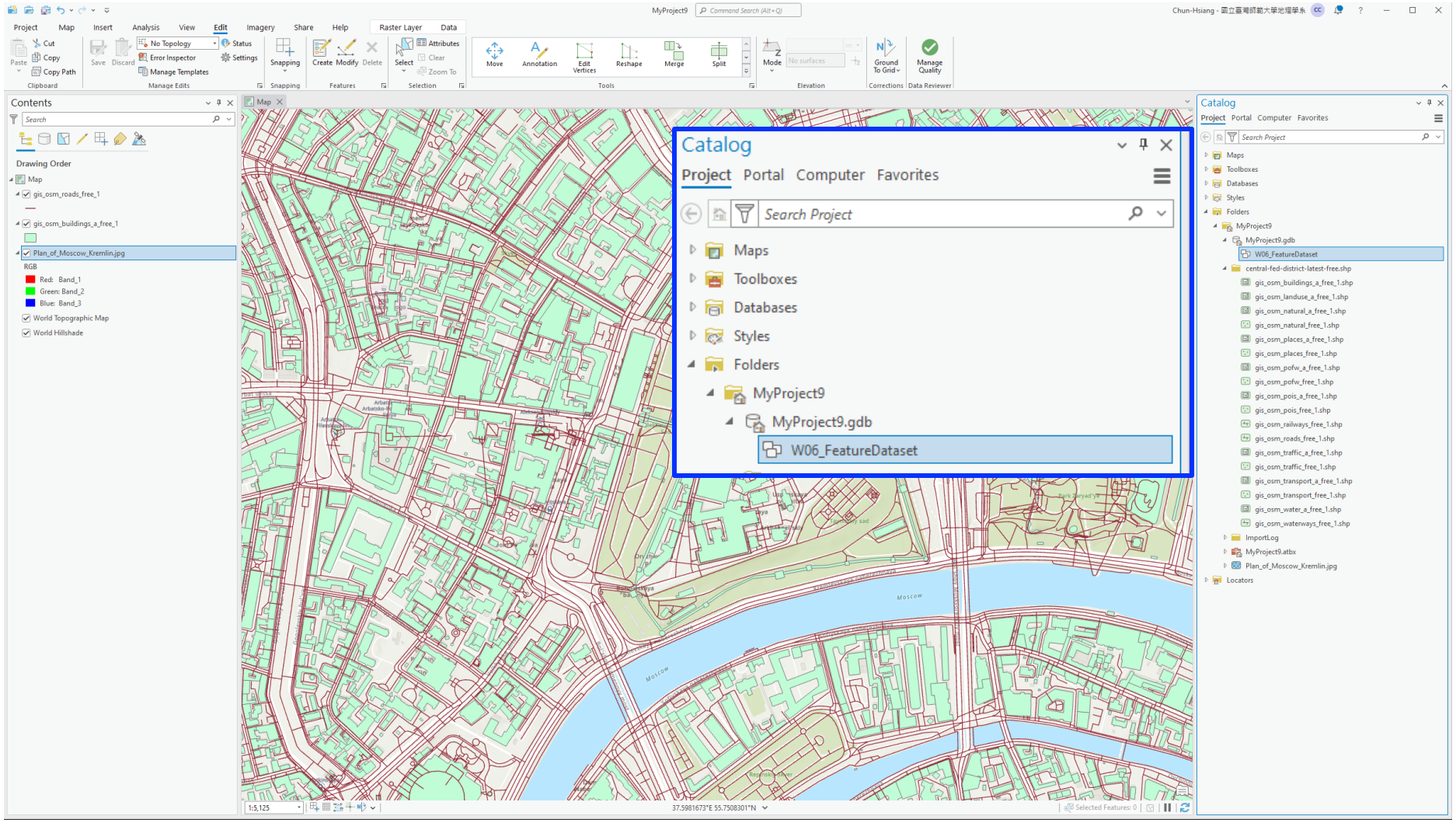
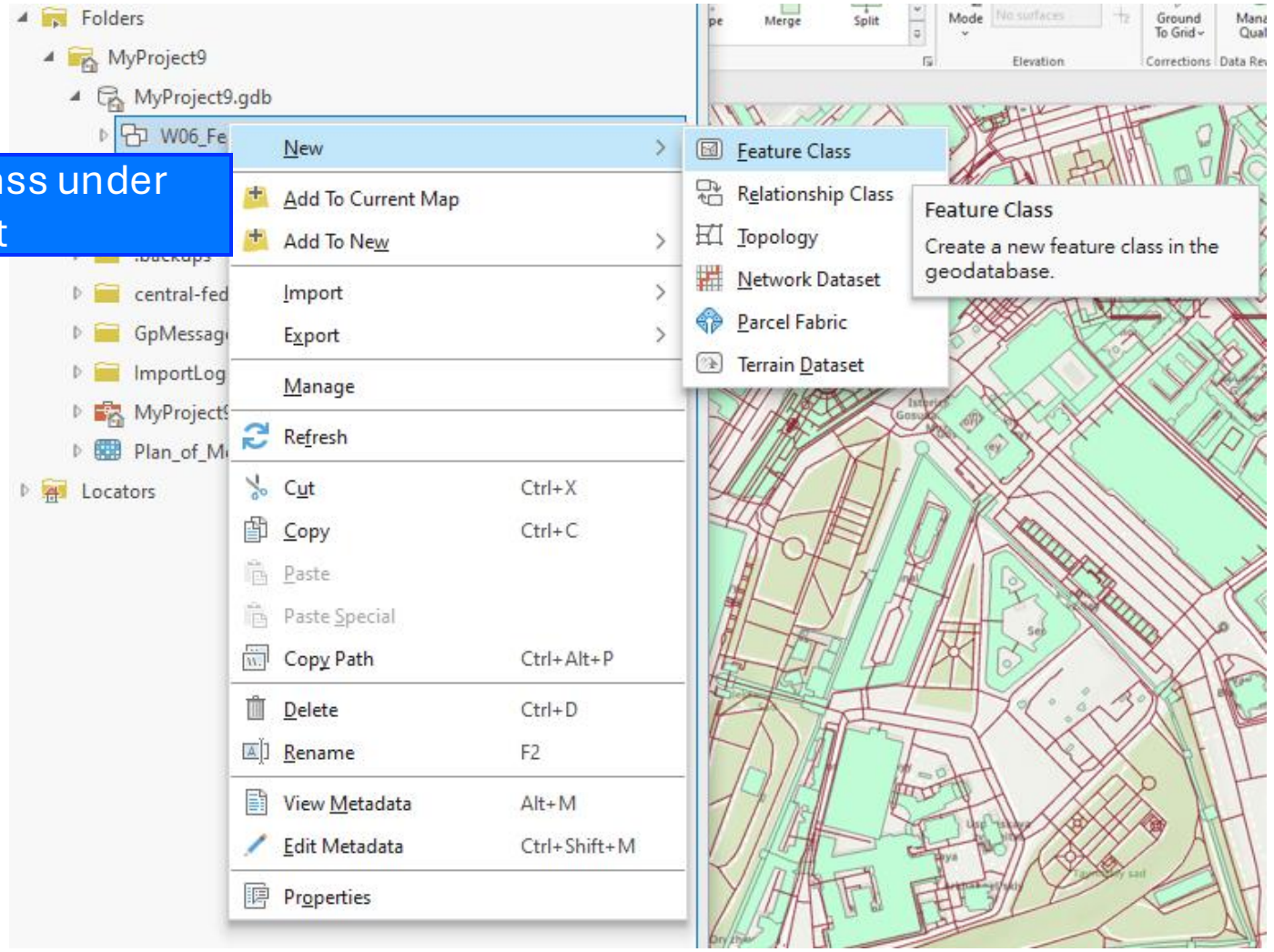


Create a Feature Class for Digitalization

Create a feature class under the Feature Dataset



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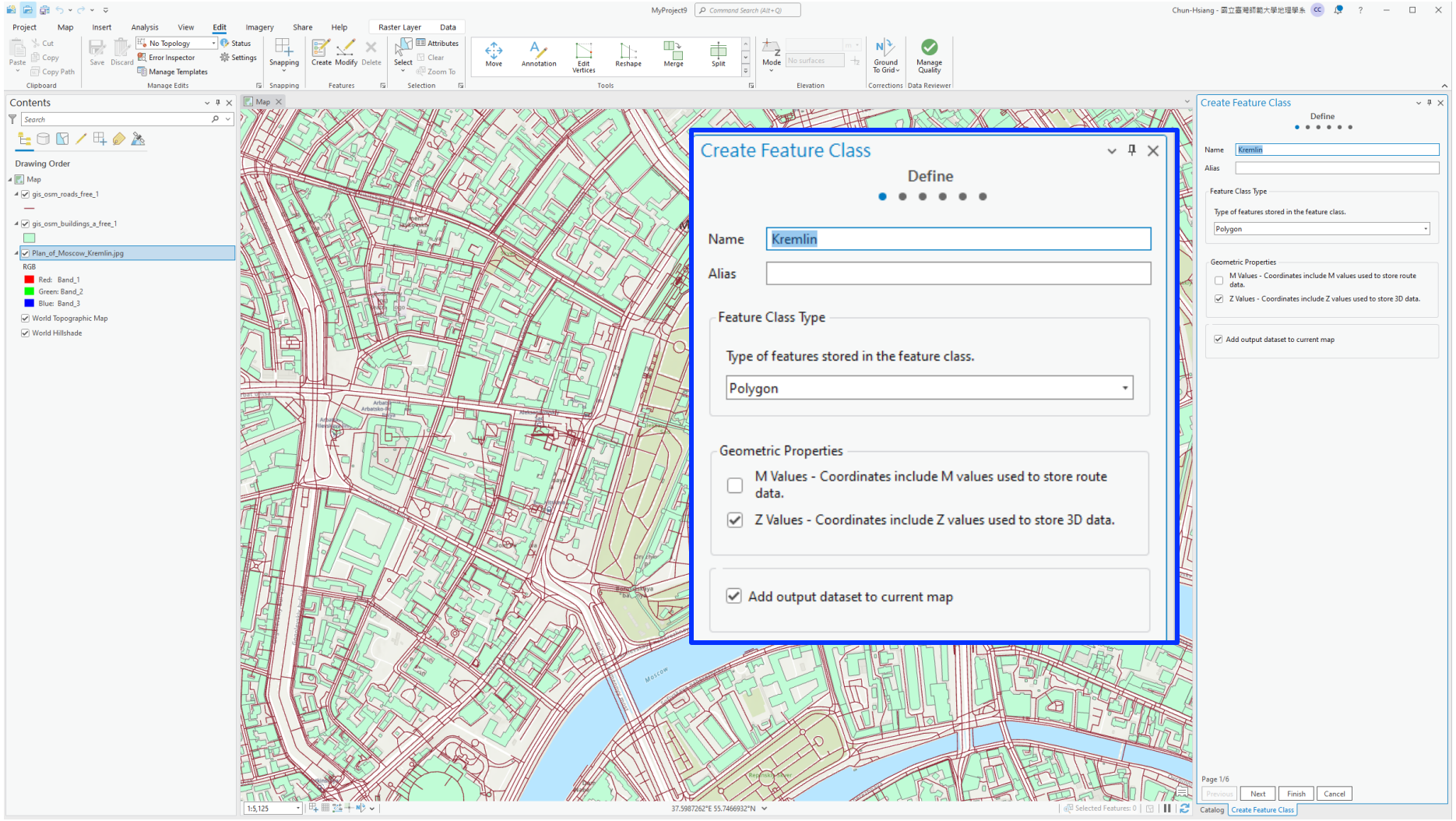

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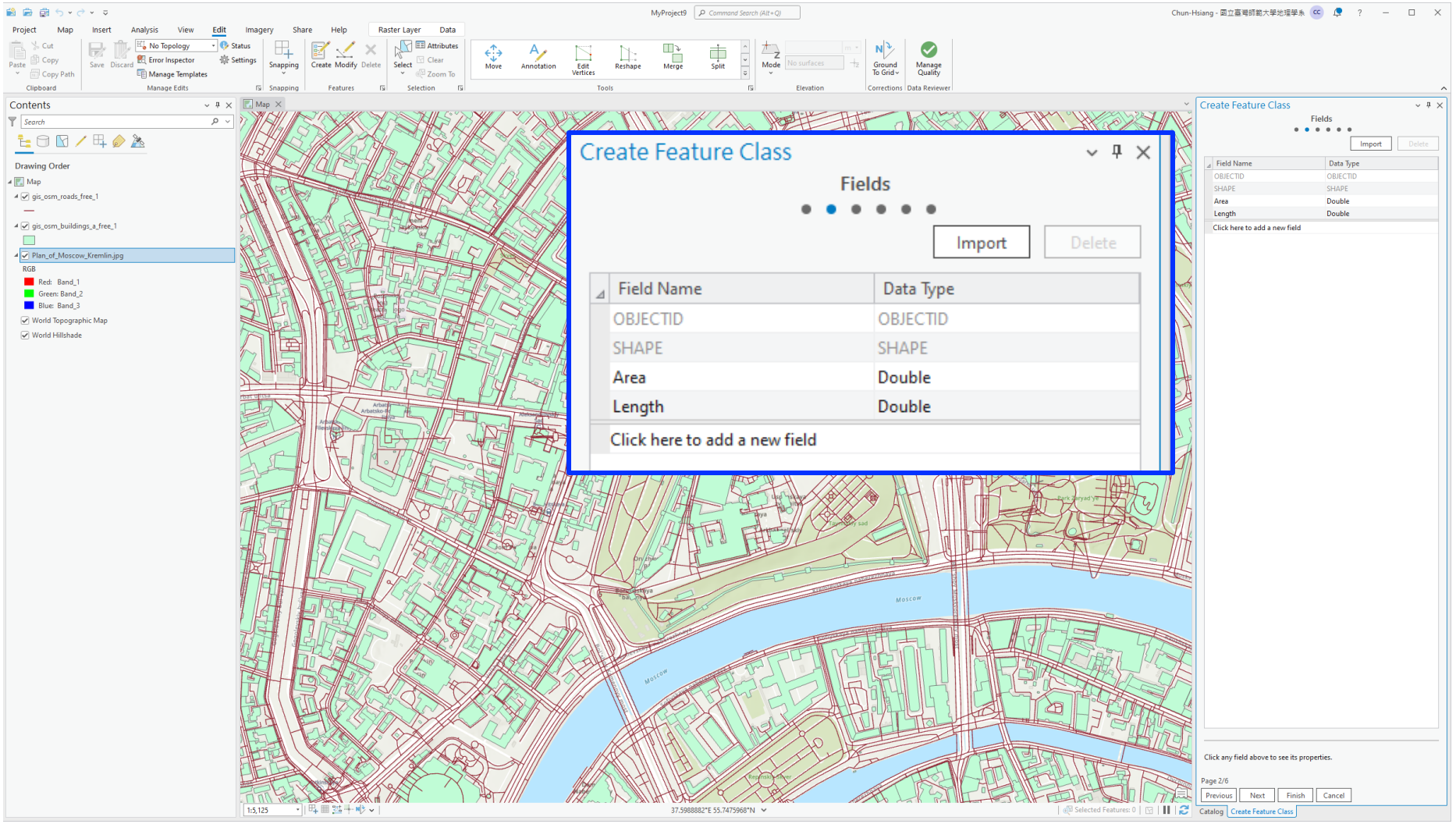

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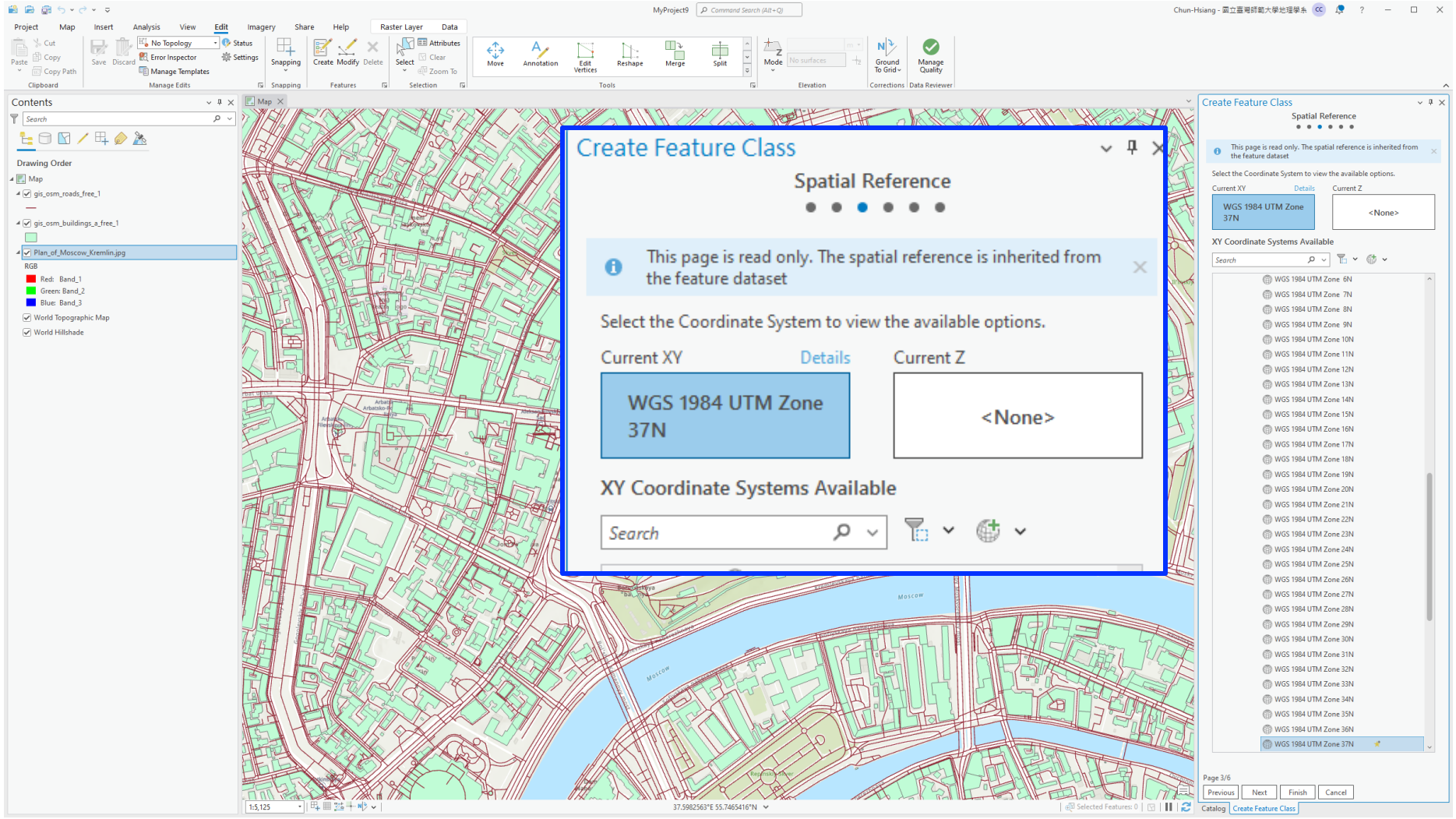

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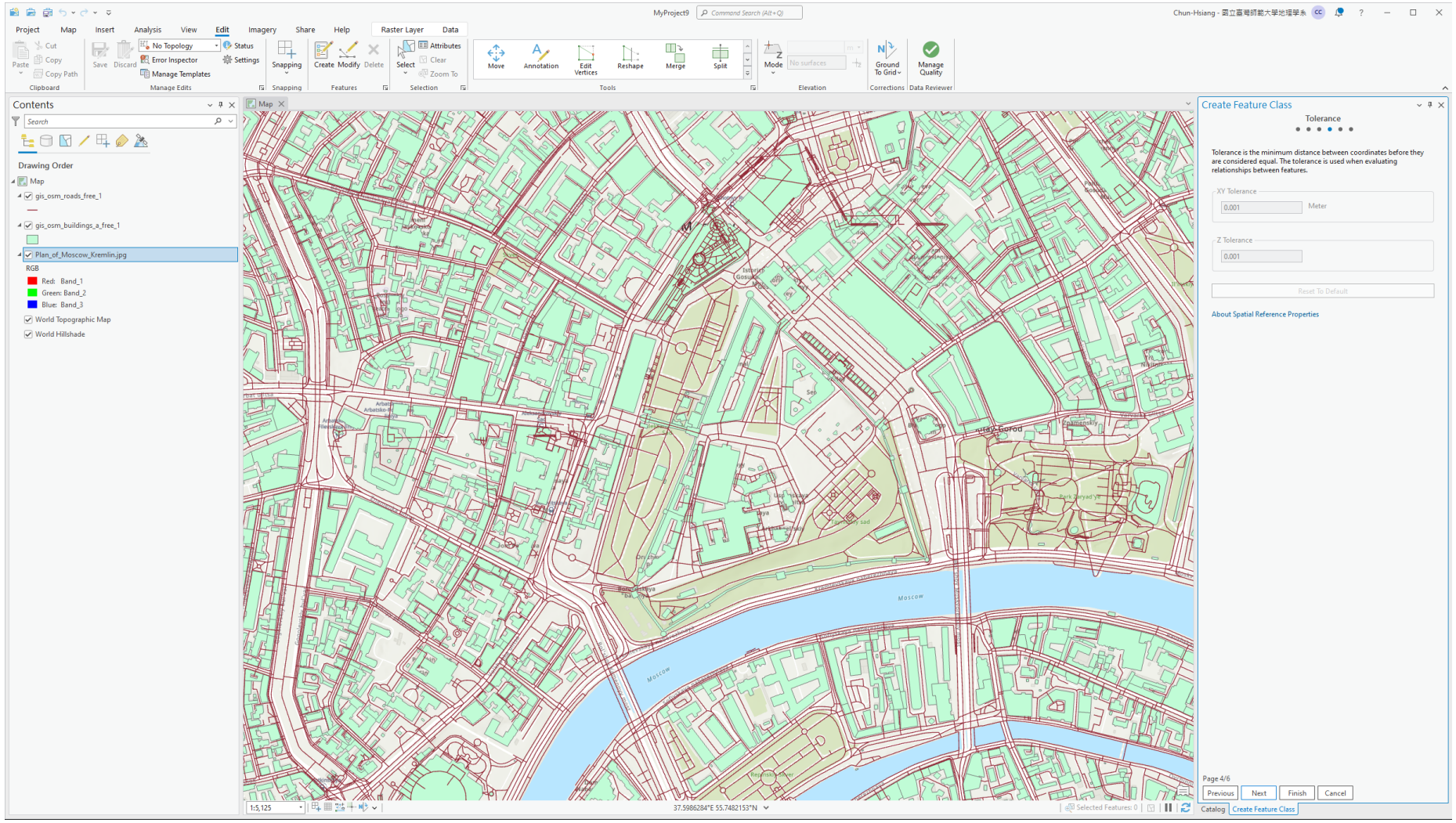

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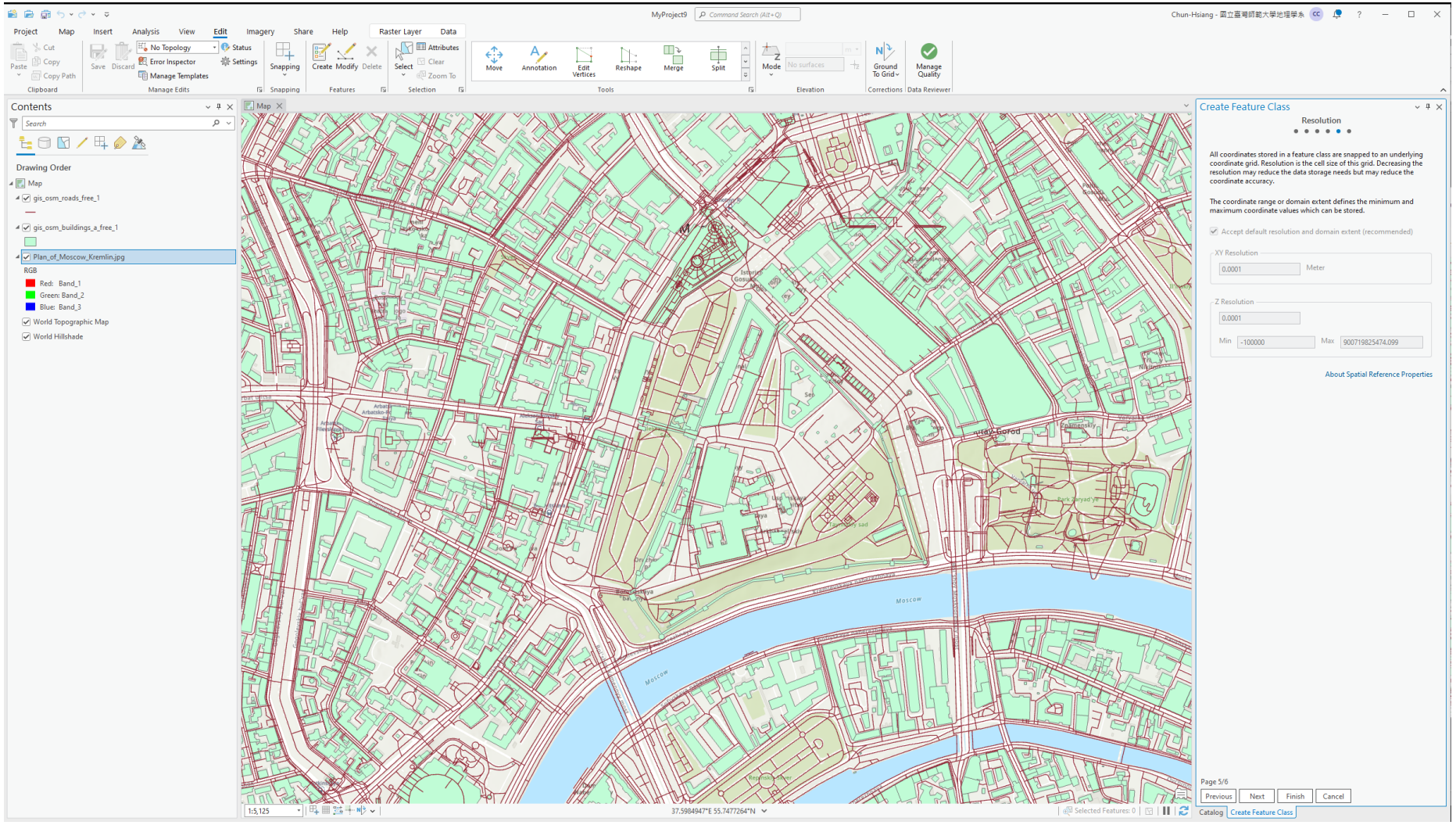

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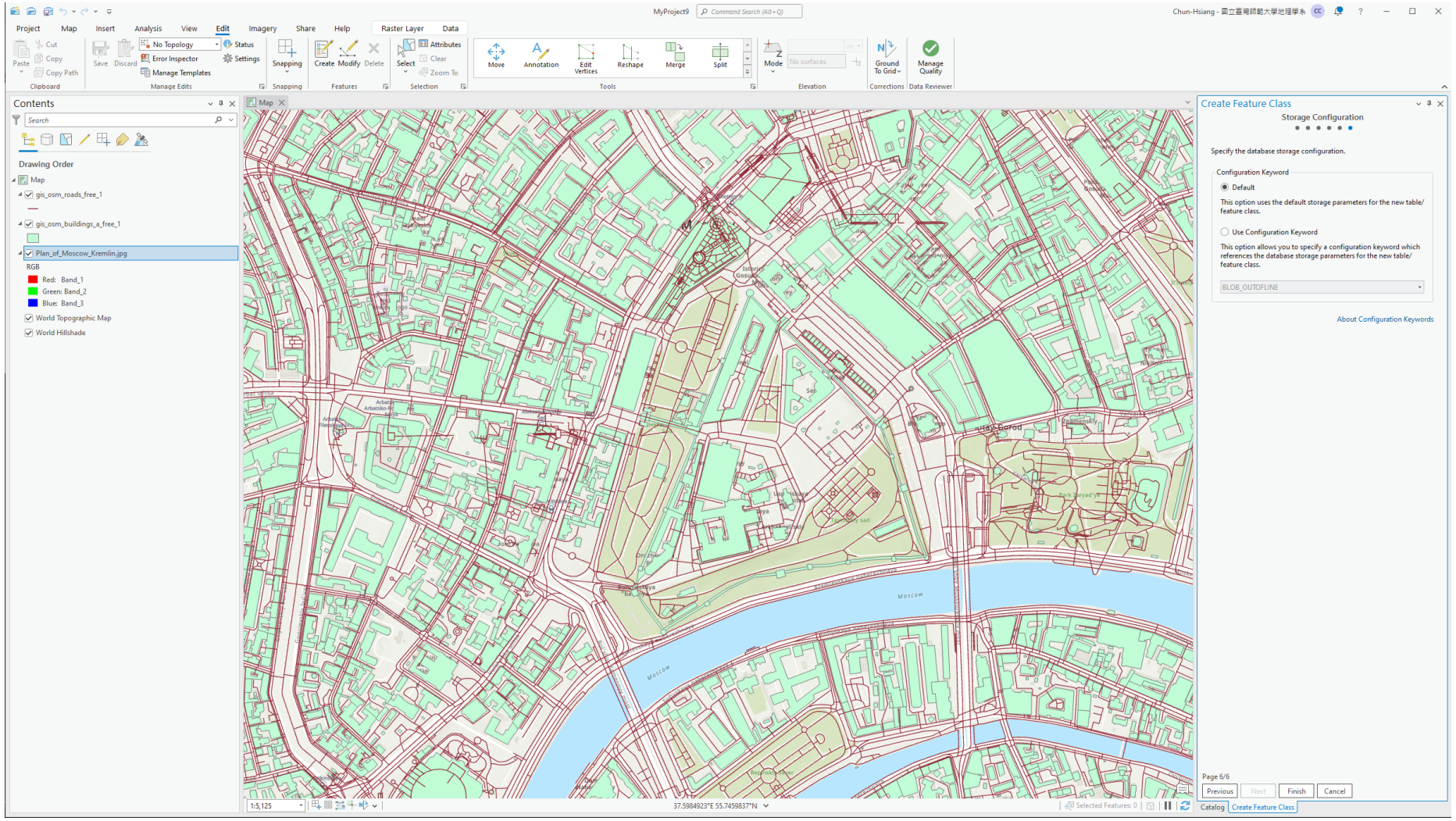

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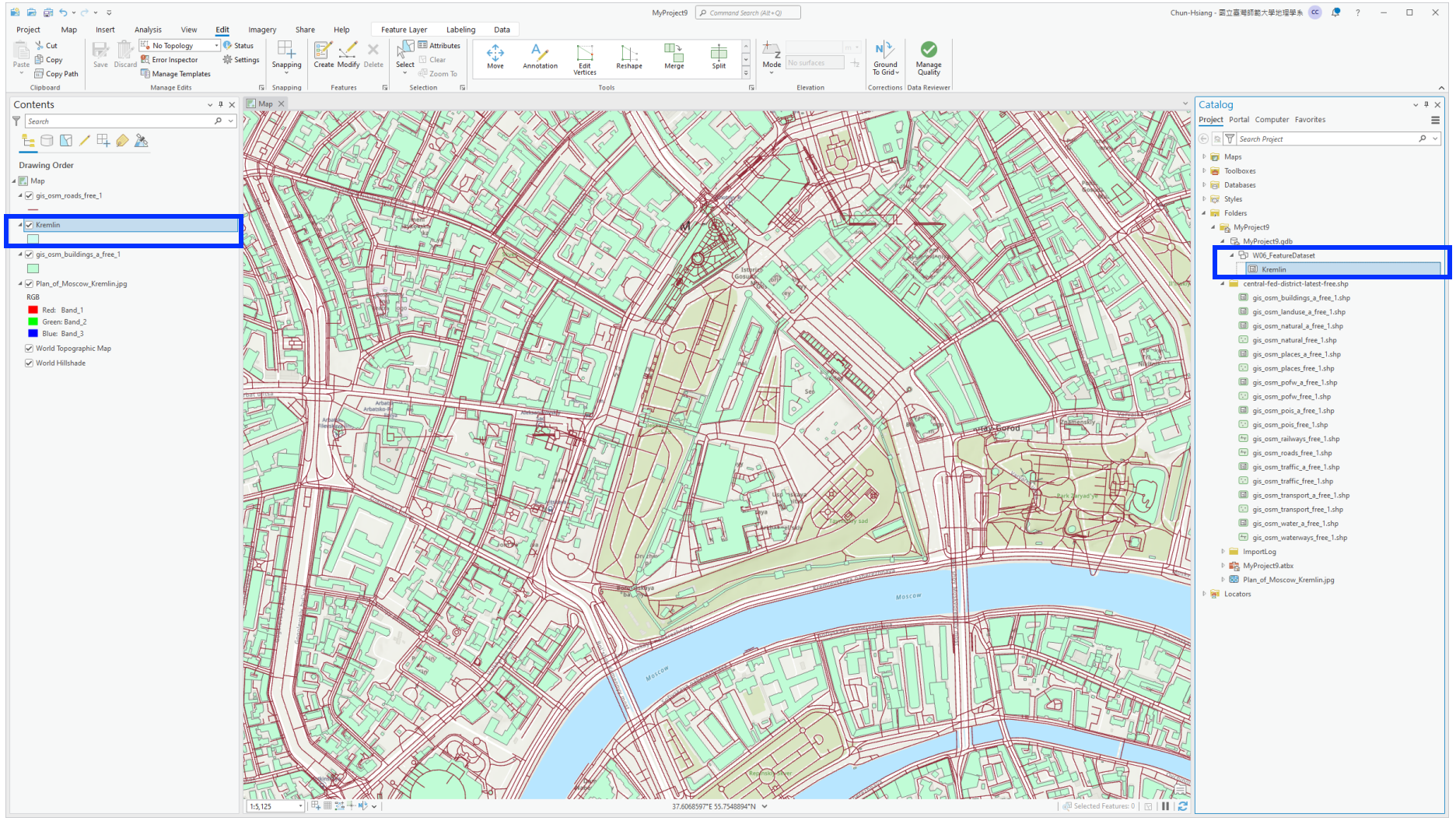
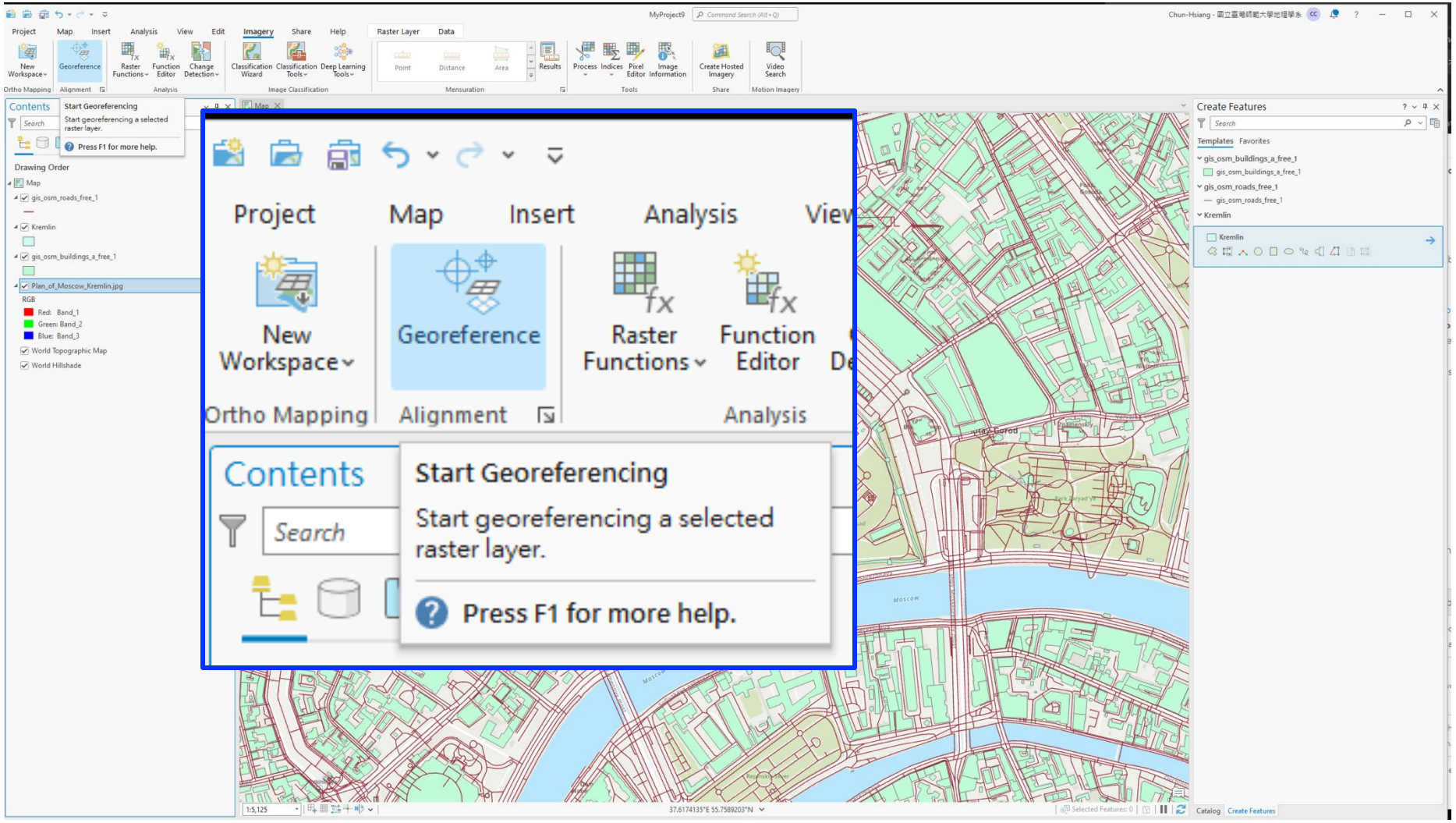


Georeferencing



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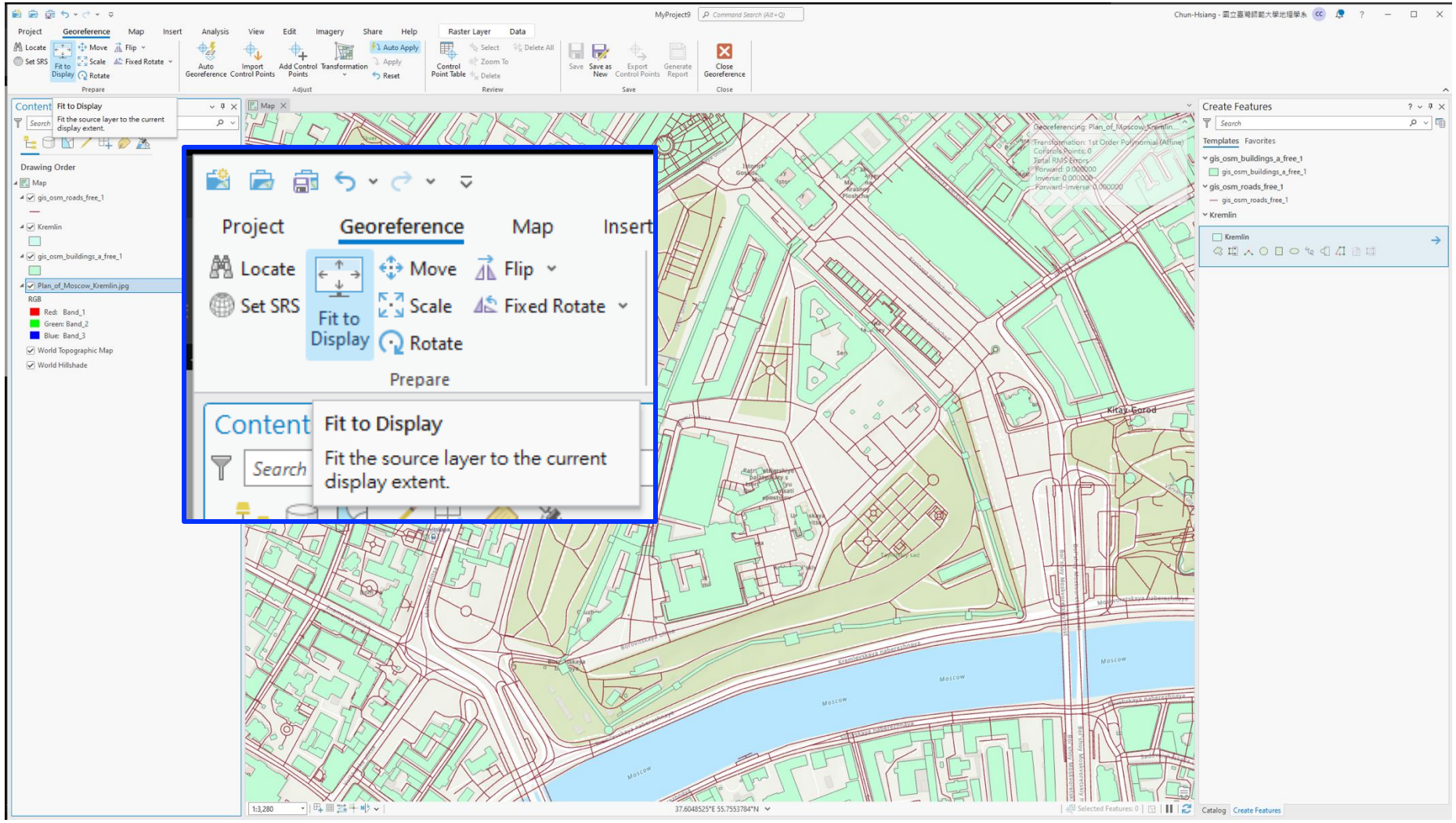

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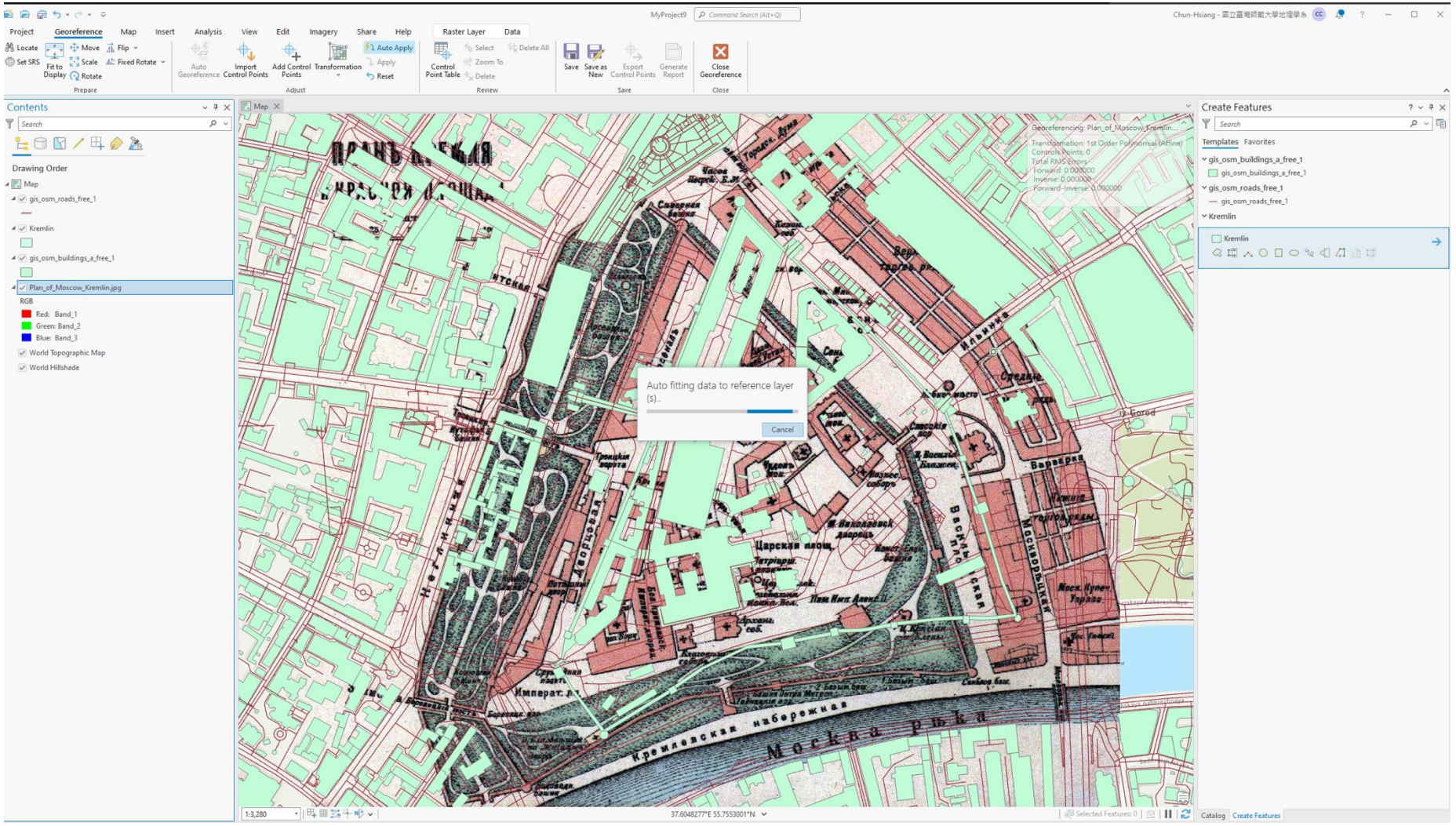

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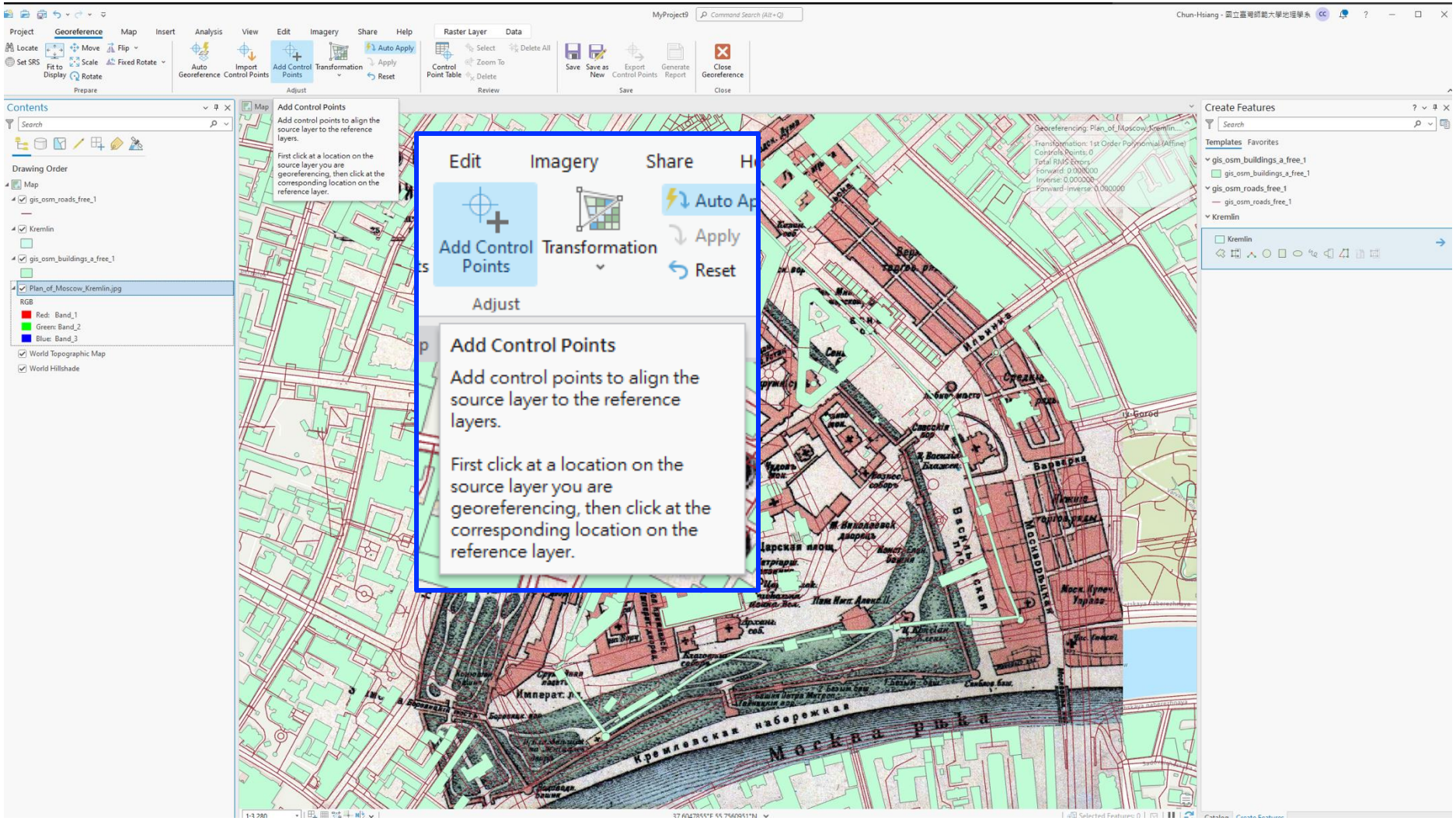

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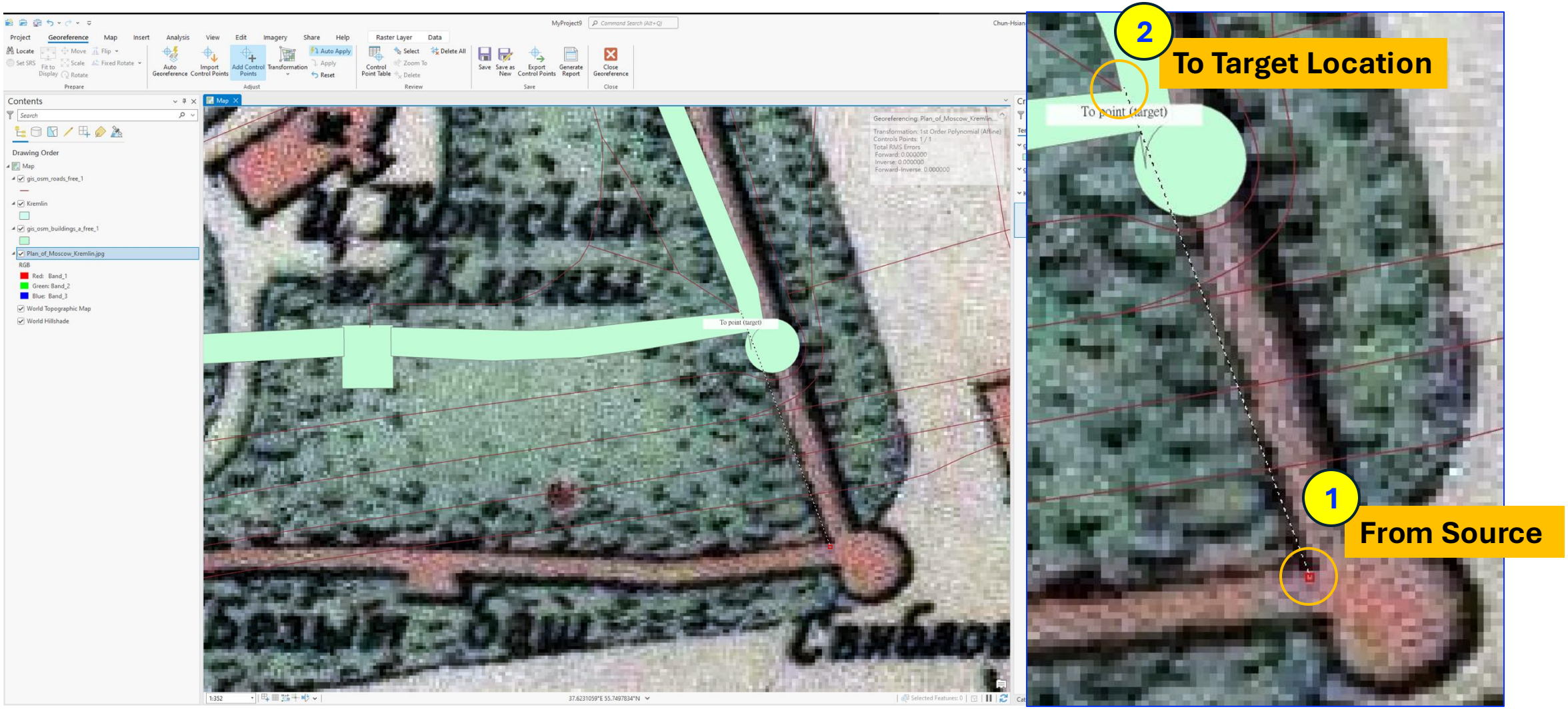

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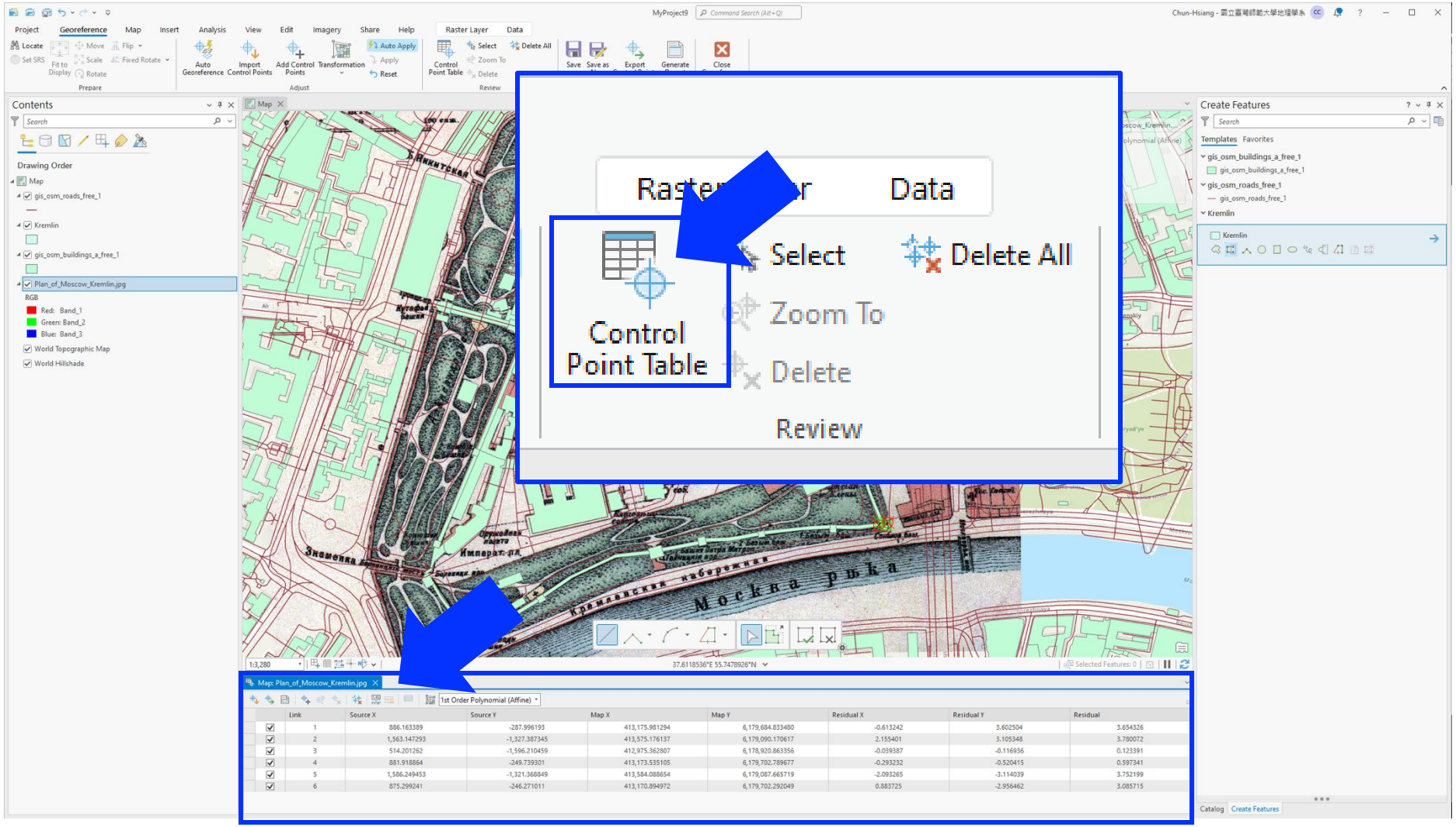

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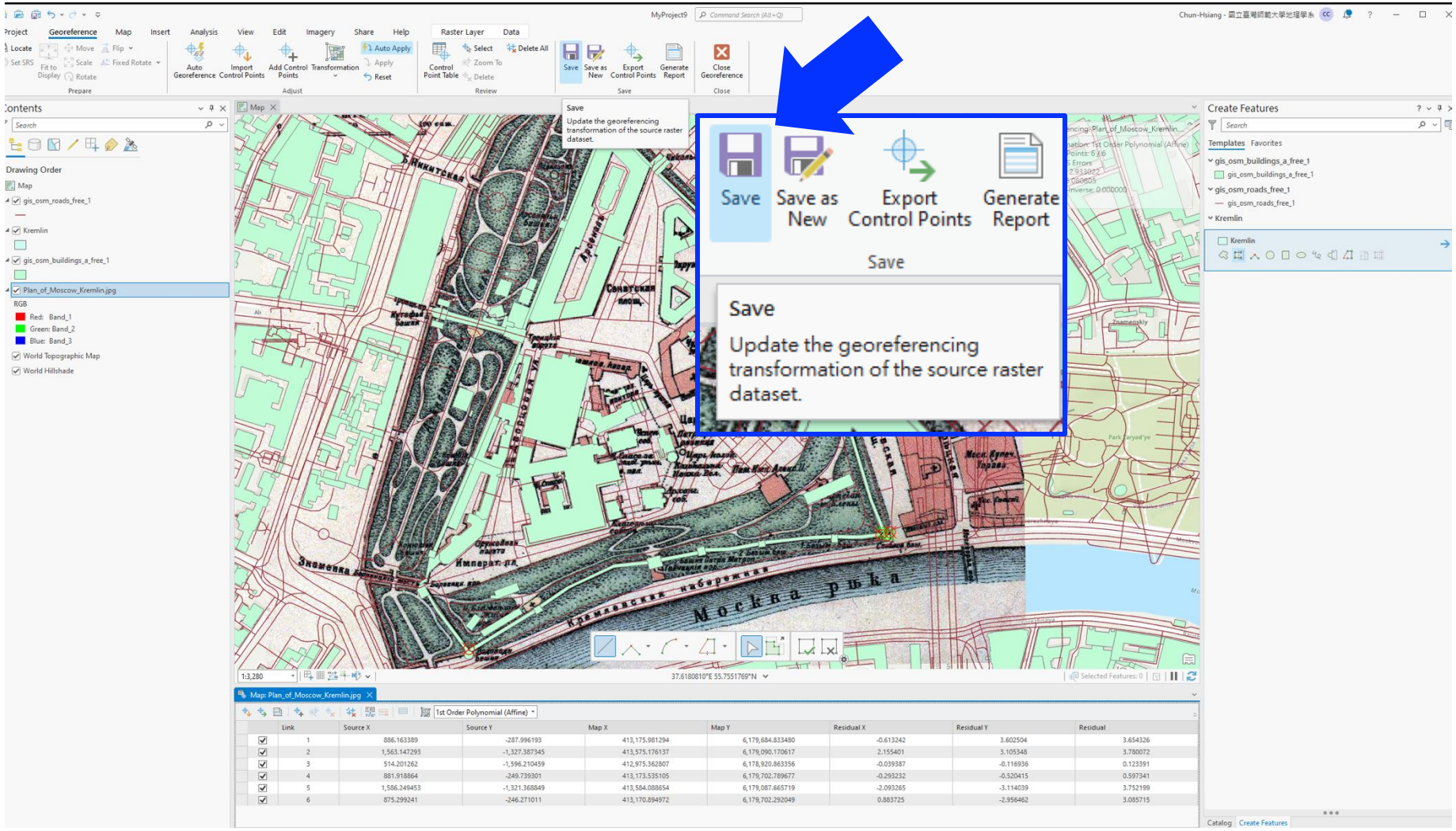
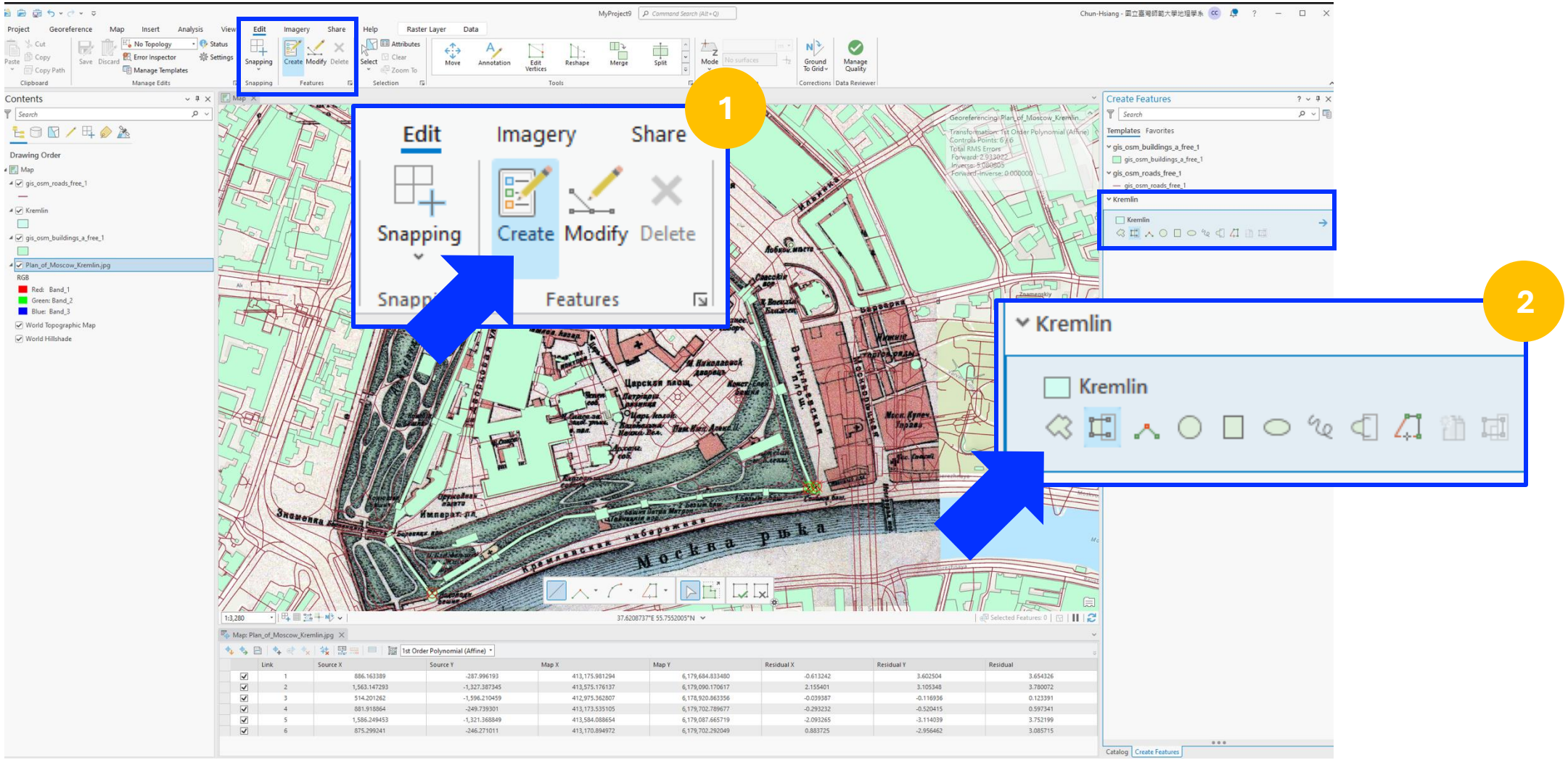


Editing :: Digitalization



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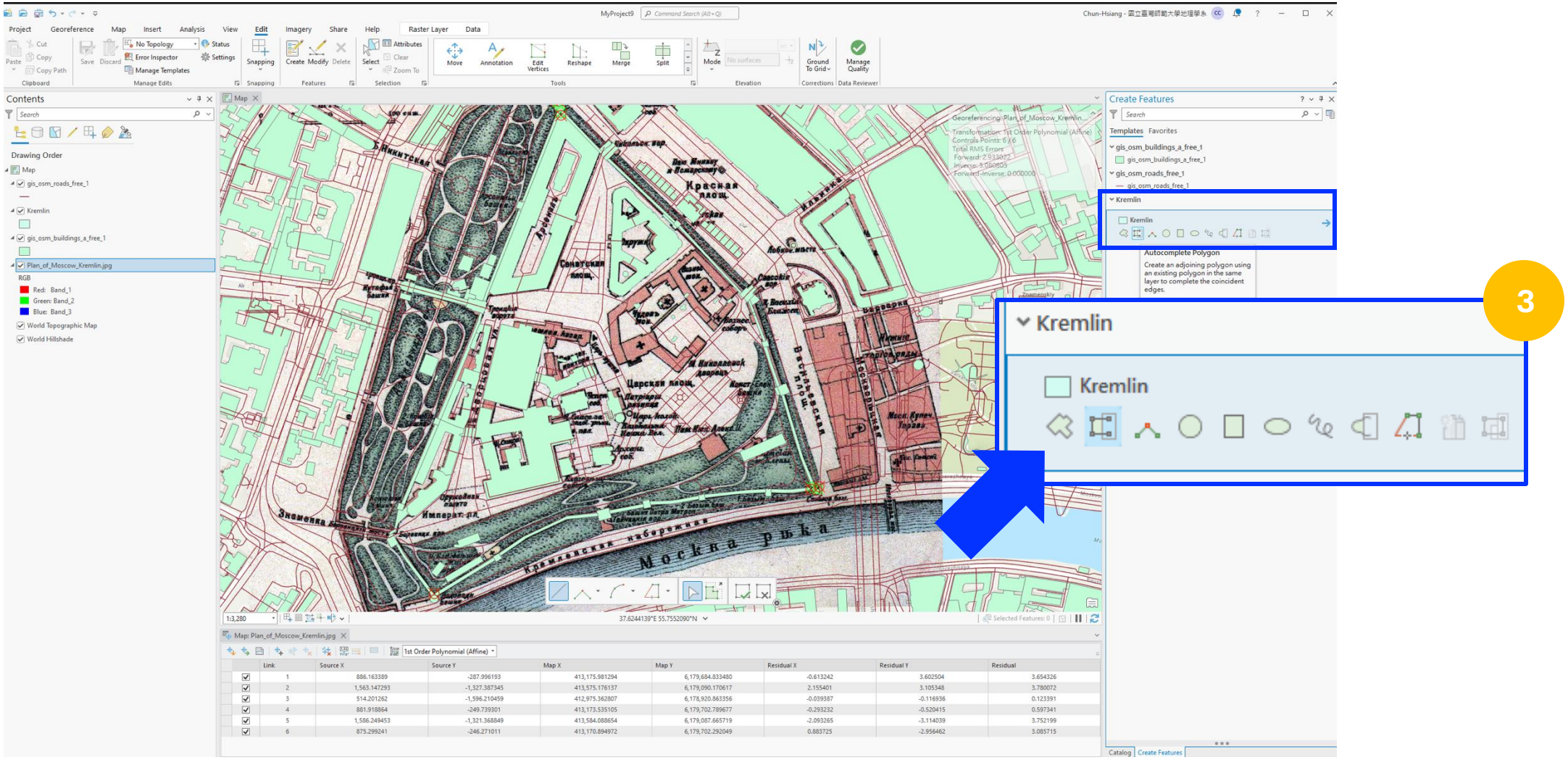

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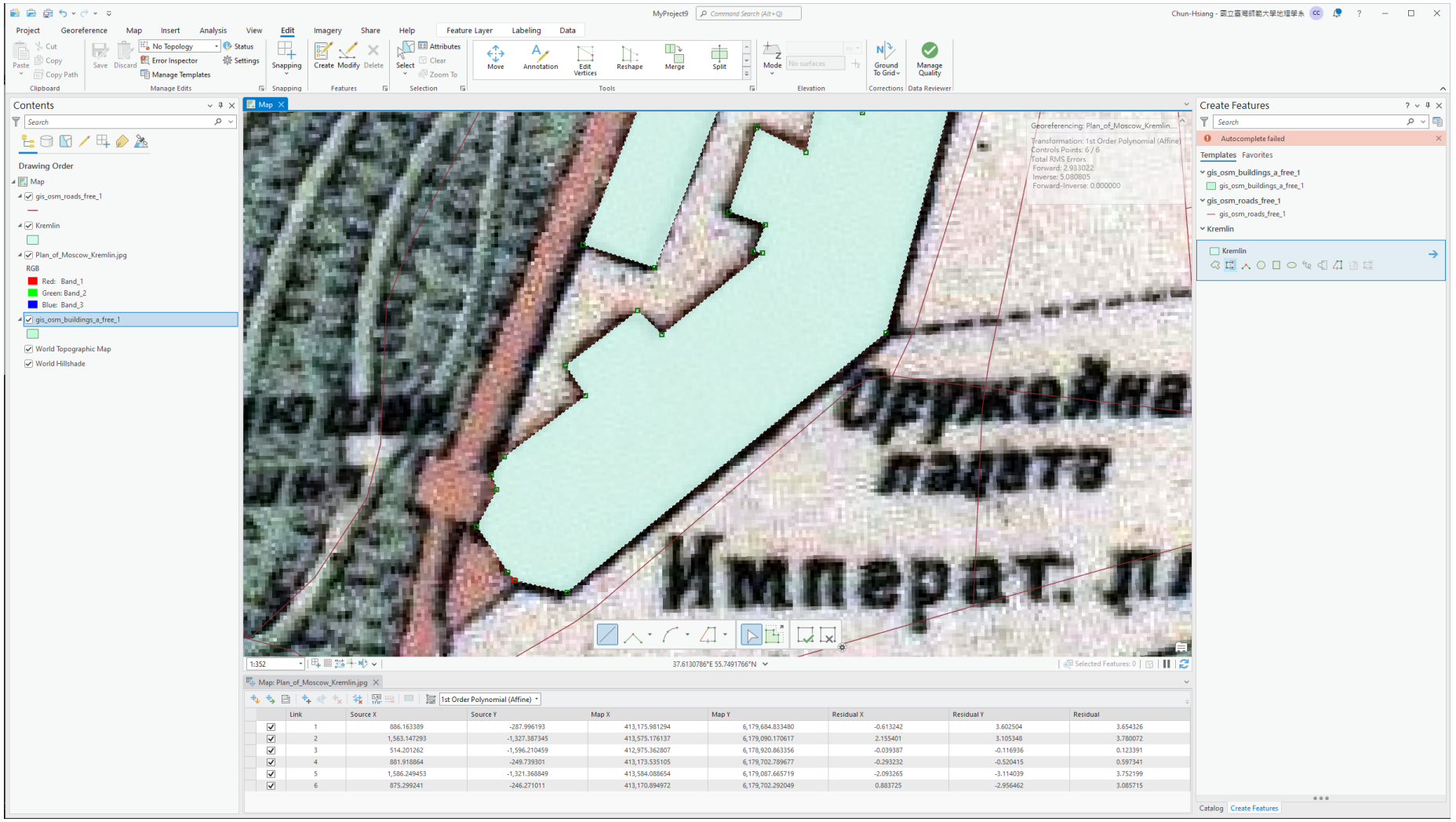

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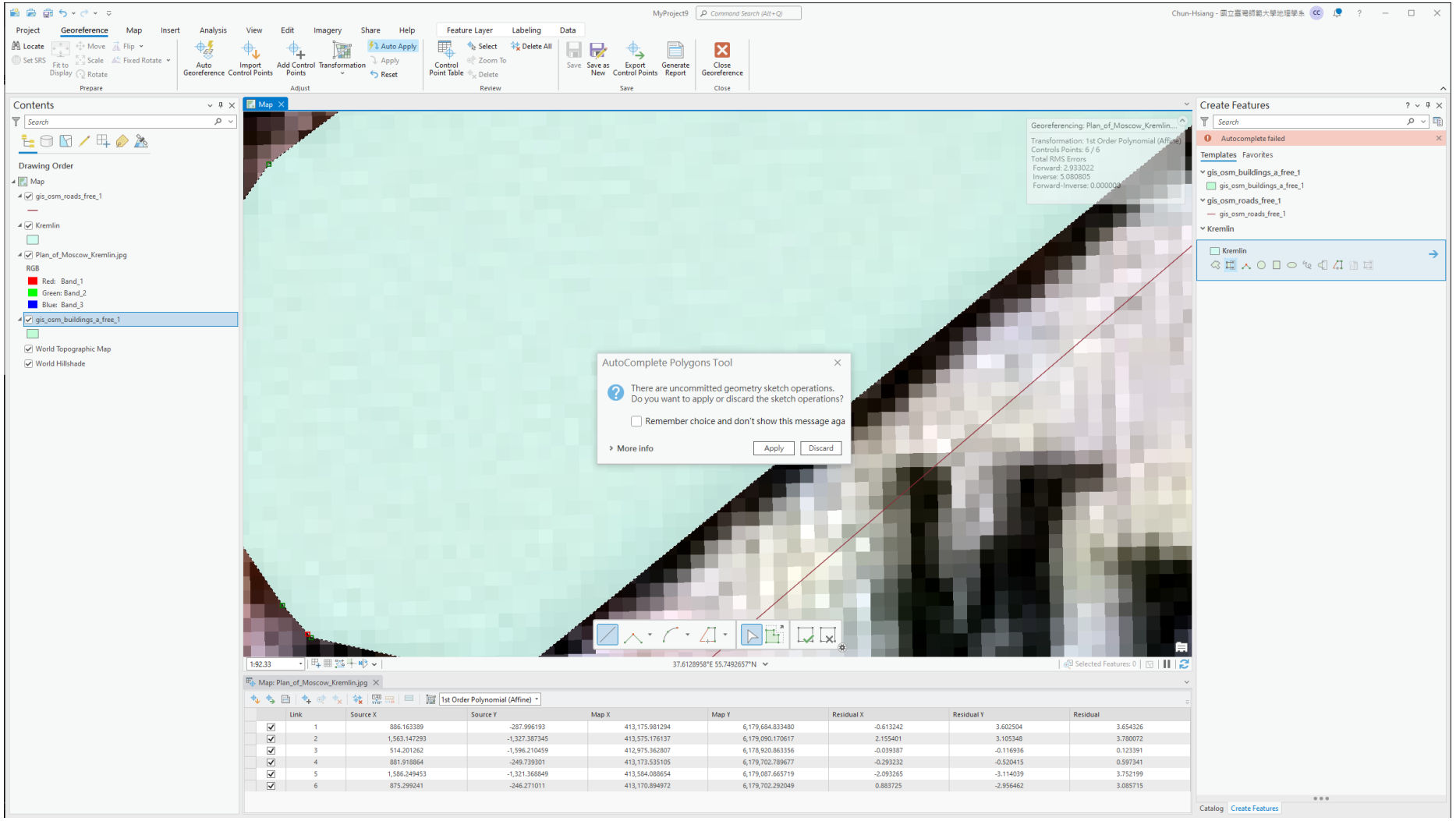

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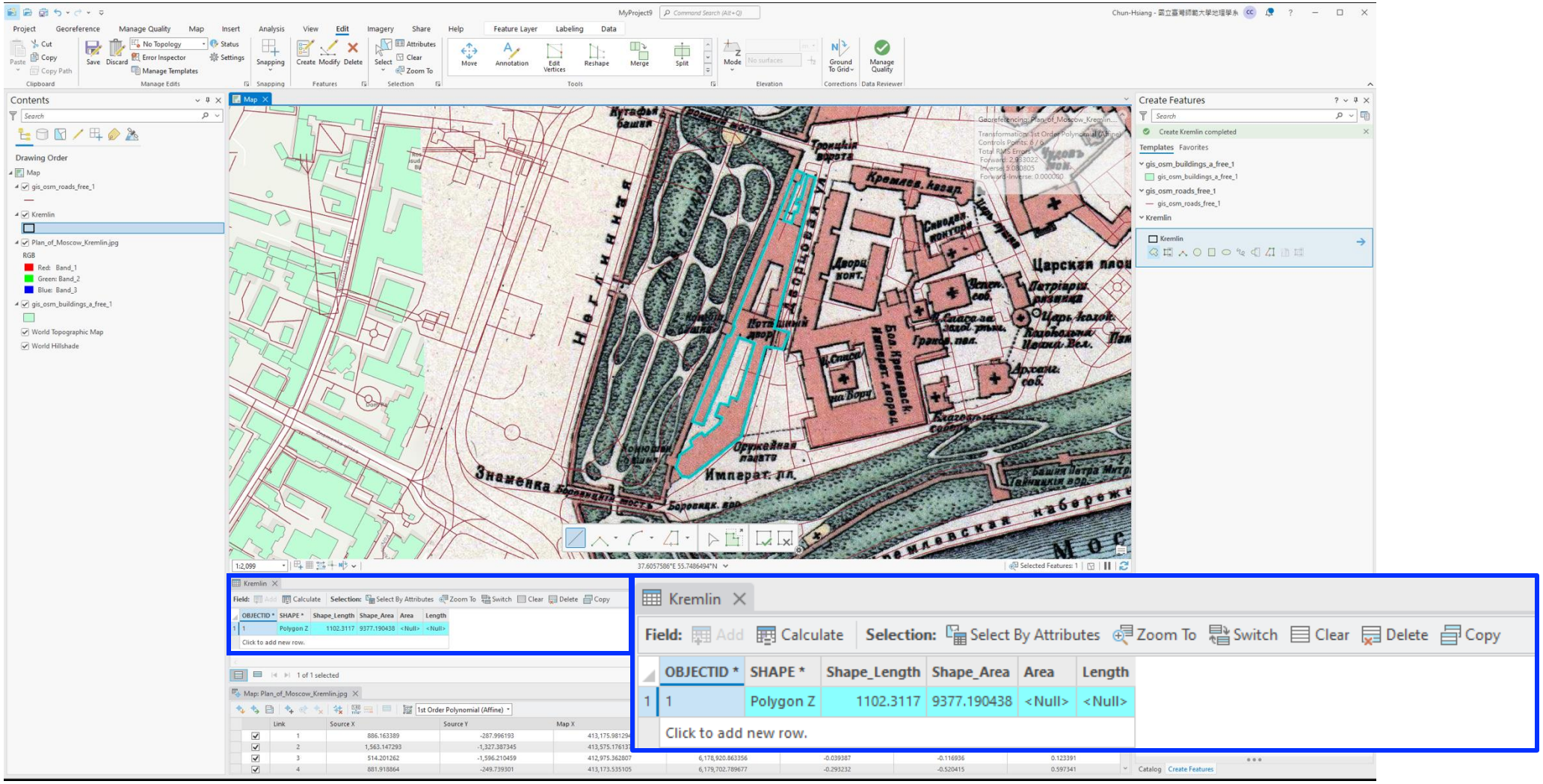
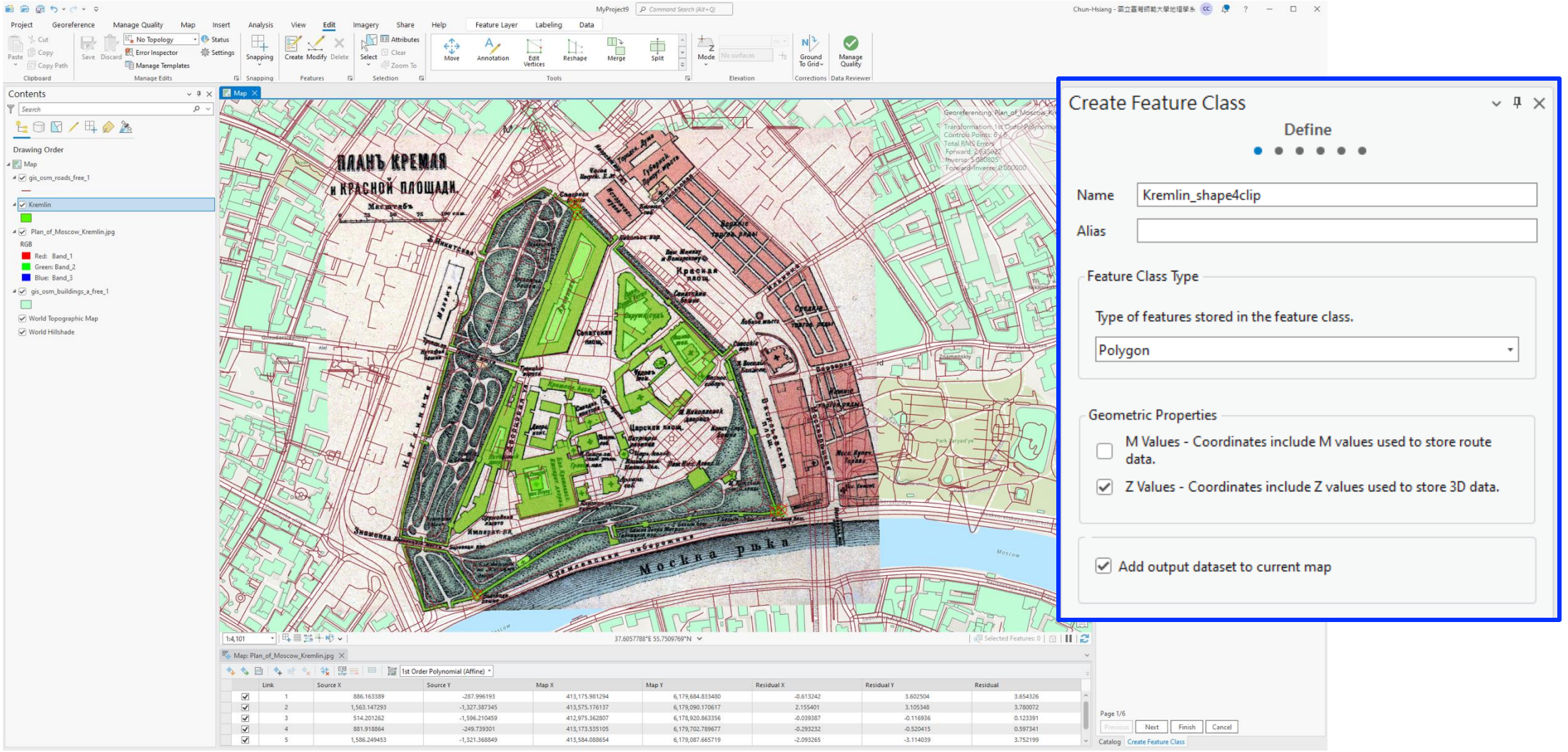
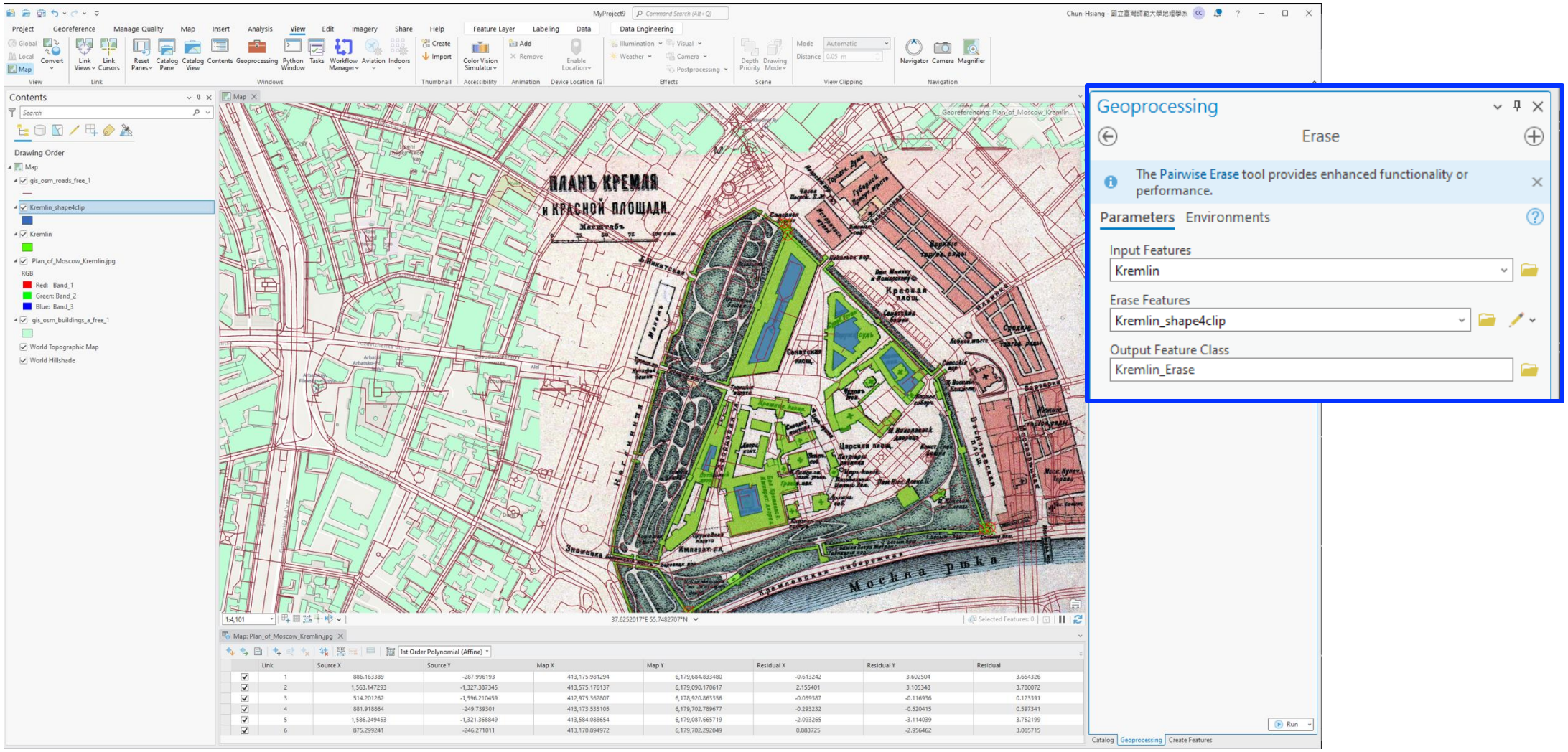


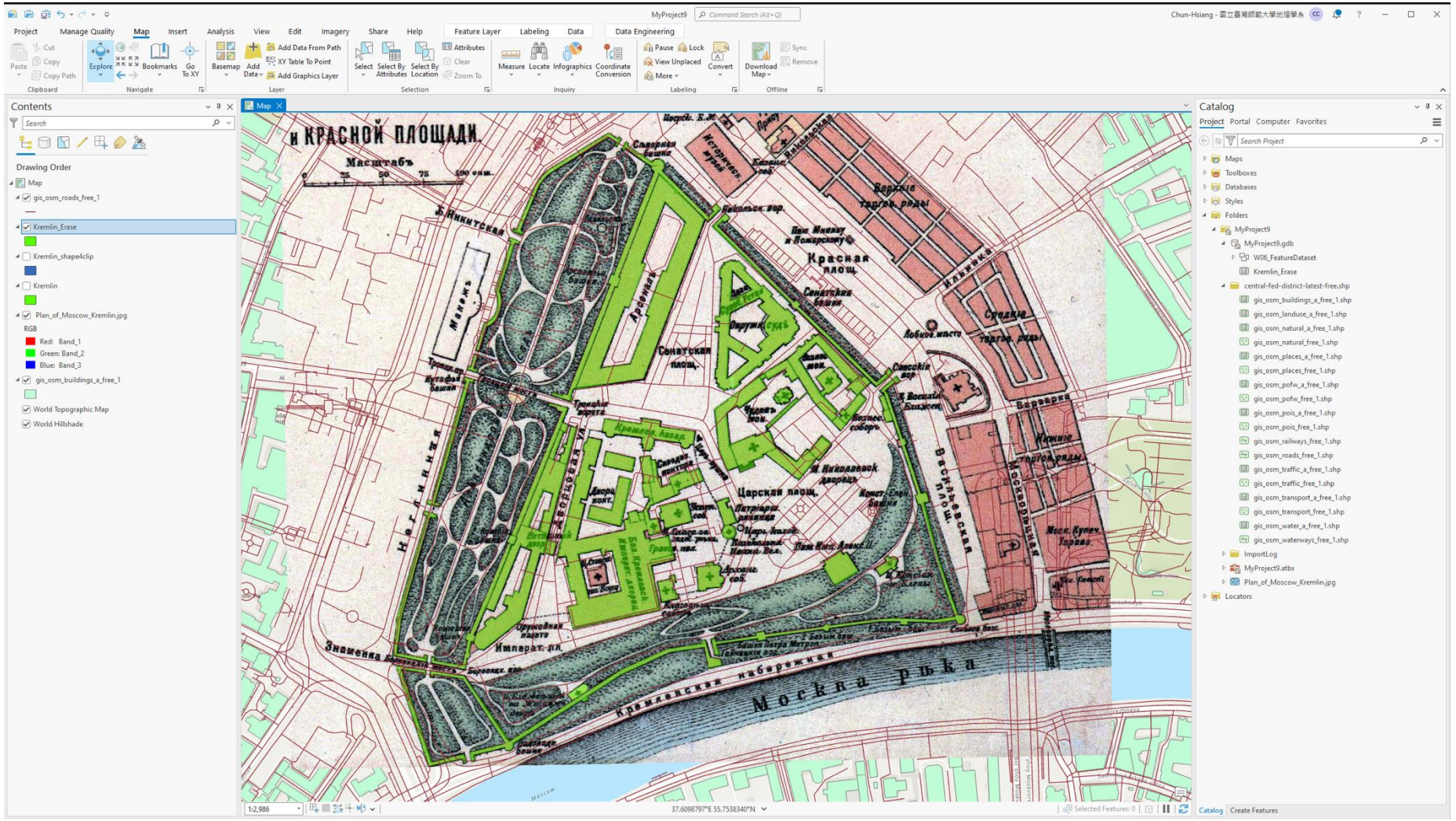
Create a Feature Class for Erase the Overlapped Areas



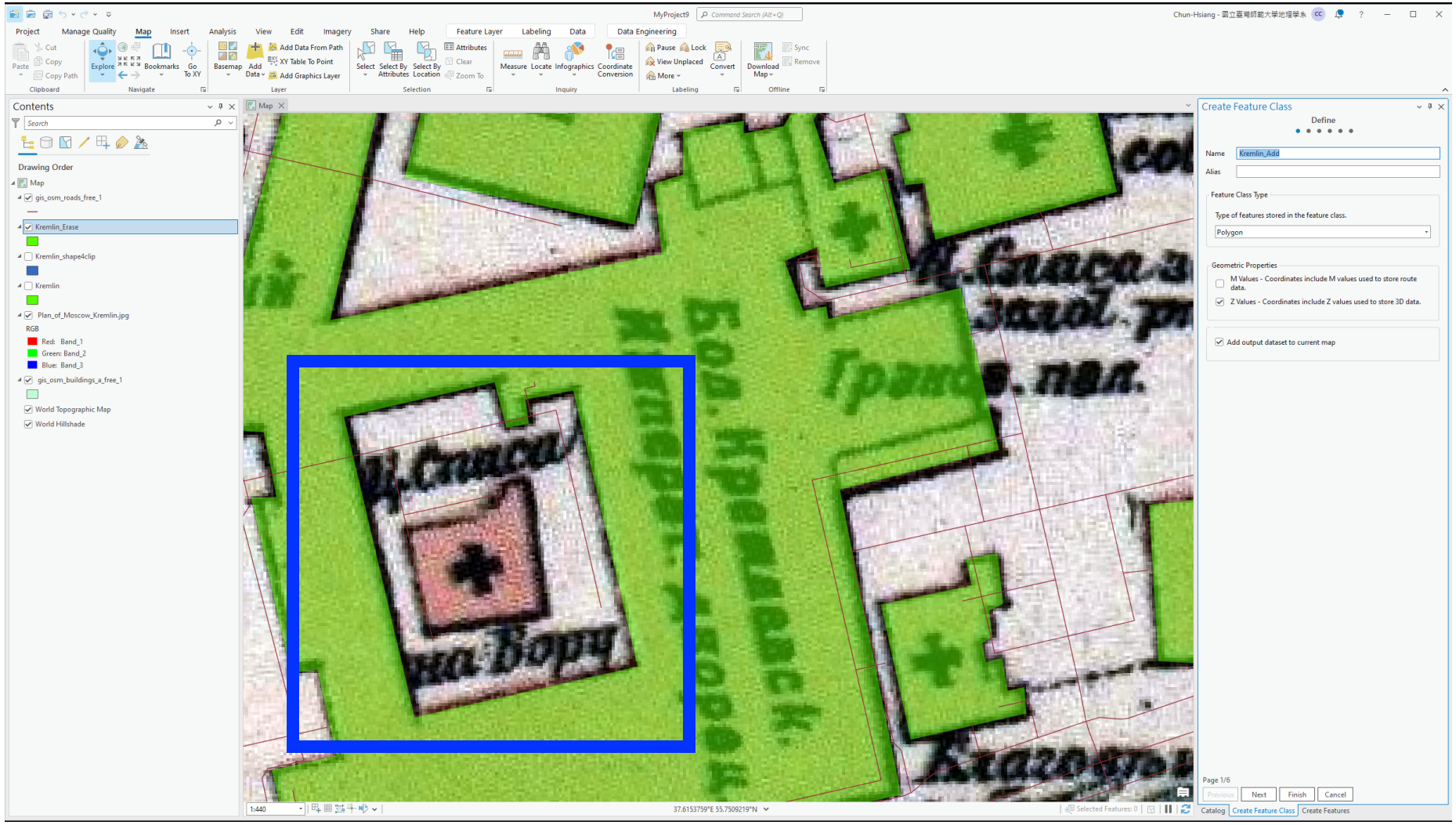
Erase the Overlapped Areas



Erased the Overlapped Areas



Create a Feature Class for Adding Polygon



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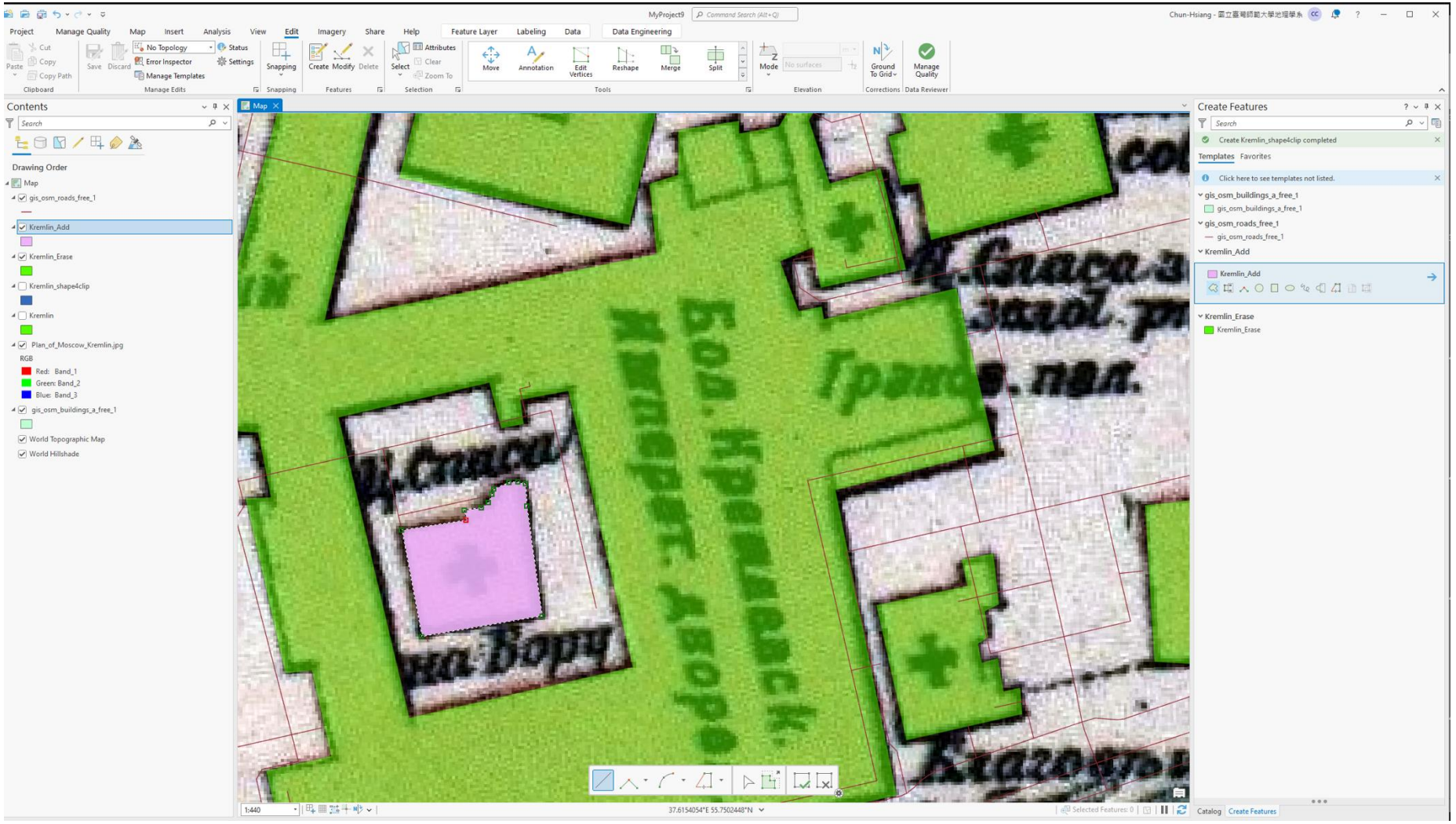
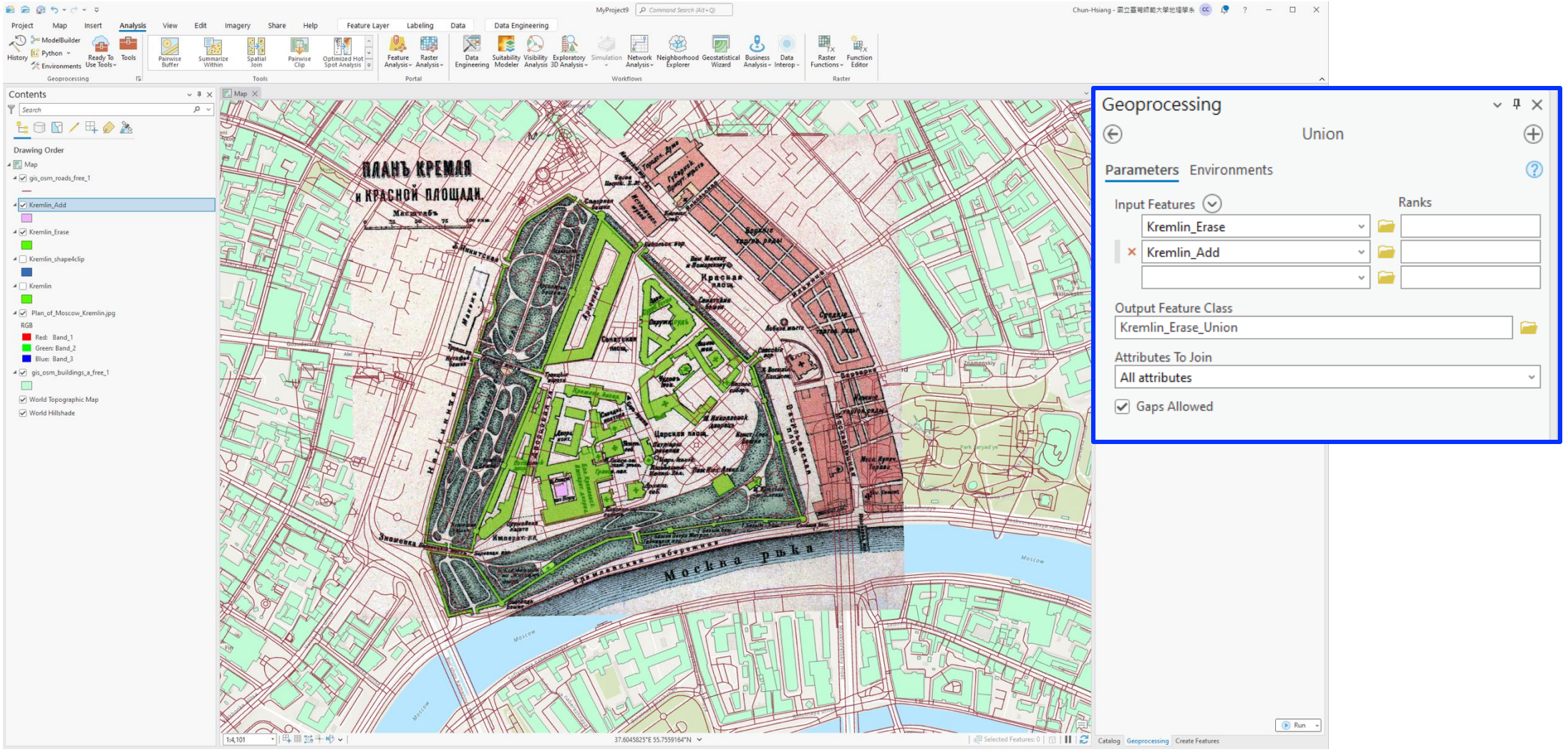
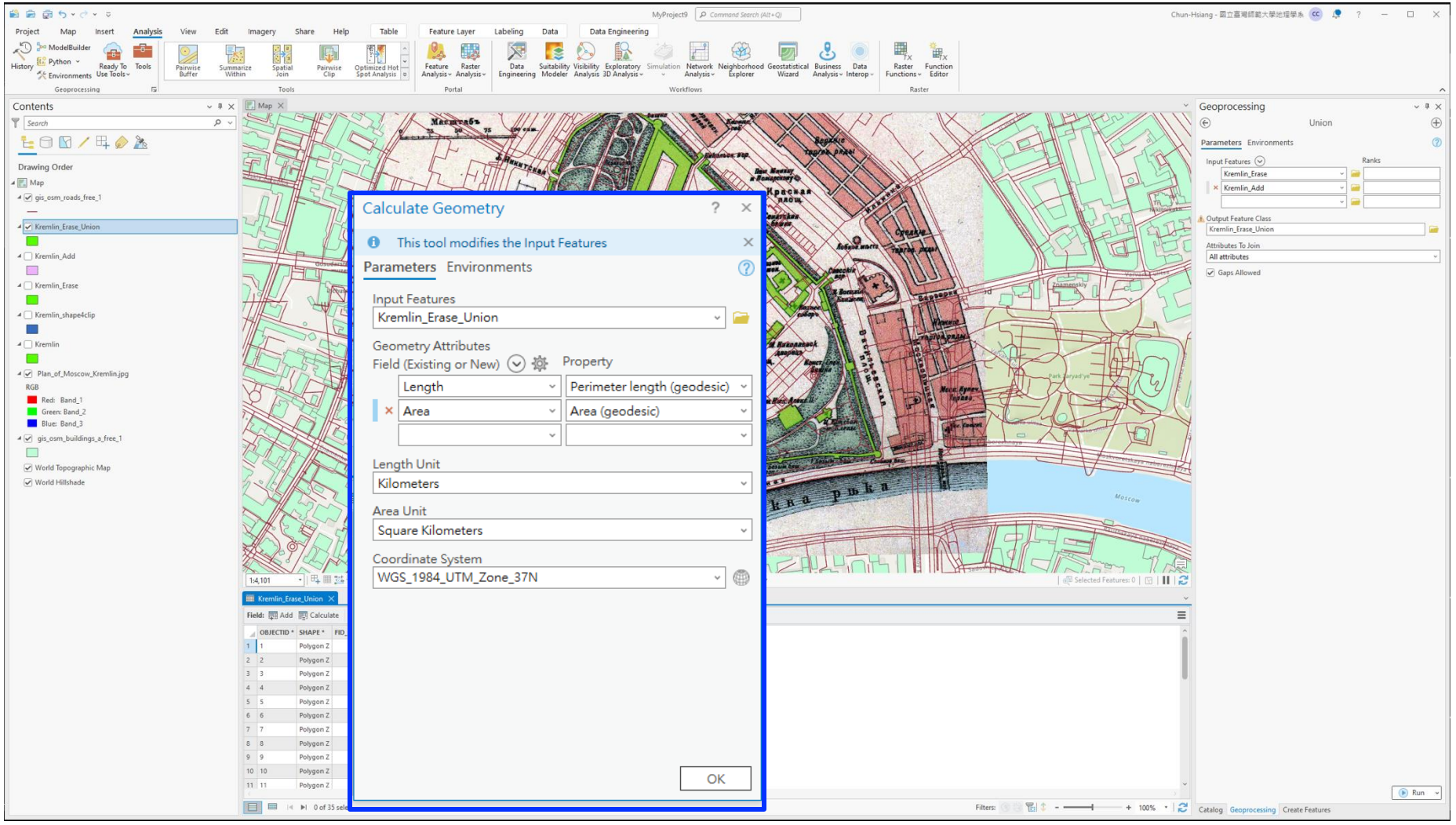


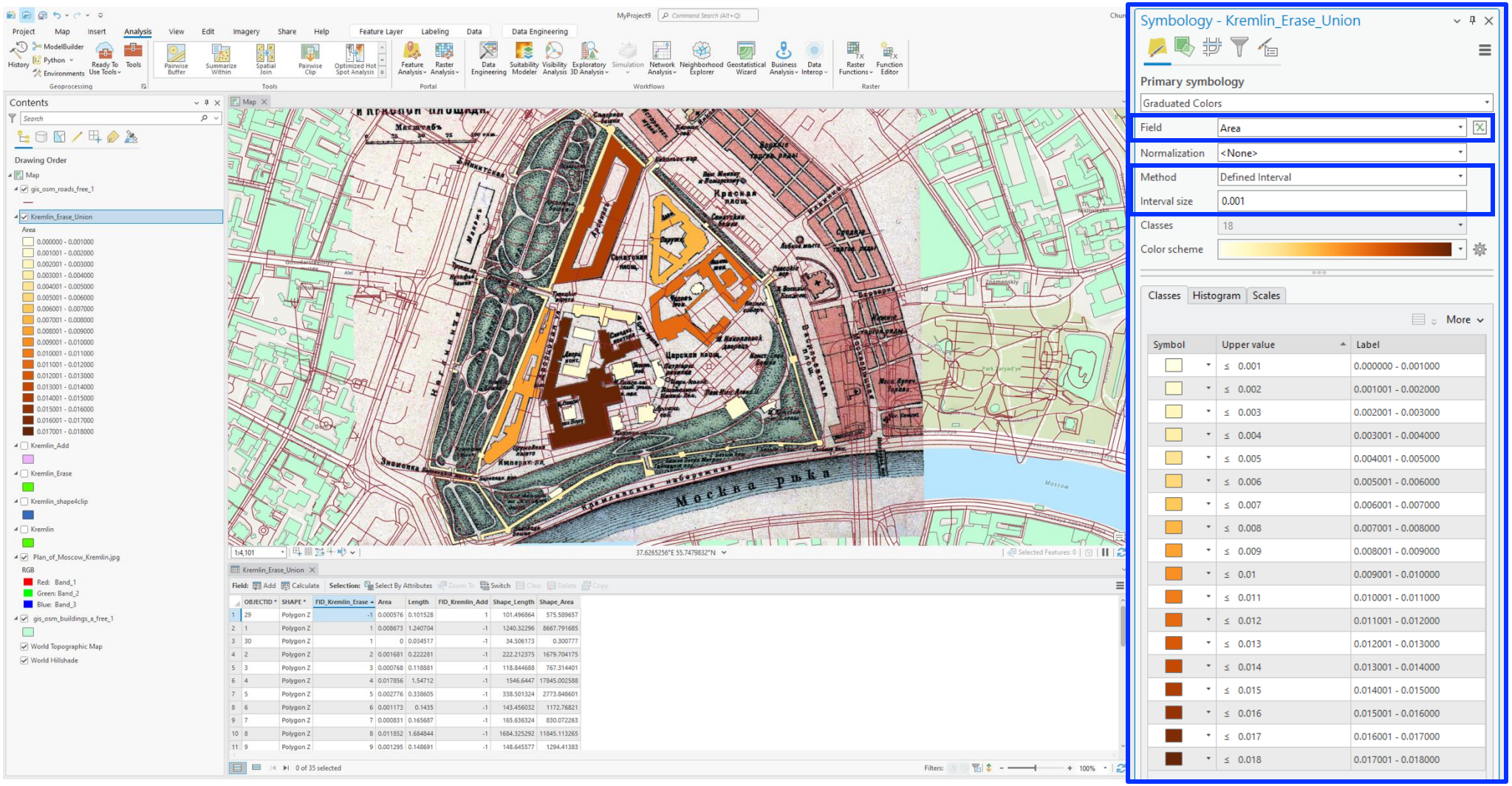
Union Two Shapefiles Together



Calculate Geometry



Symbology with Building Areas



The End

Thank you for your attention!

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Web: toodou.github.io