ArcGIS Pro: Scripting with Python

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Target Audience

- Experienced ArcGIS Desktop Users
- Experienced with Python Scripting
- Curious about ArcGIS Pro

Python

- Scripting language of choice introduced at ArcGIS 9.0 as the arcgisscripting module
- Since 10.0 – the ArcPy site-package
- Esri fully embraces it for:
    - Data Analysis
    - Data Conversion
    - Data Management
    - Map Automation

Python Migration: ArcGIS for Desktop and ArcGIS Pro

- Considerations
  - What is Pro?

- Changes to Scripting
  - Functionality and Appearance
  - Arcpy Module names and content
  - Supported Formats
  - Licensing

ArcGIS Pro - Listening to user community

- Changes to the Application – Faster
  - Multiple Layouts
  - 64-bit Processing
  - Multi-threaded
  - Simpler and more Modern UI (Ribbon Interface)
  - Multiple Tasks
- 2D and 3D in one App
- Same Powerful Geoprocessing Framework - reorganized

The Next Generation of Desktop for all GIS Users

Not a replacement, but part of the Desktop App Suite

ArcMap and ArcGIS Pro run side by side

Fusion of the most used functionality in

- ArcMap
- ArcCatalog
- ArcScene

Considerations

How are you going to use Python?

Geoprocessing Window – Copy as Python snippets
Model Builder - Export as Python scripts
Python Window
Script tool
Stand-alone

- Do you want your script to run in ArcGIS Desktop 10.x, Pro…or Both?

Installation

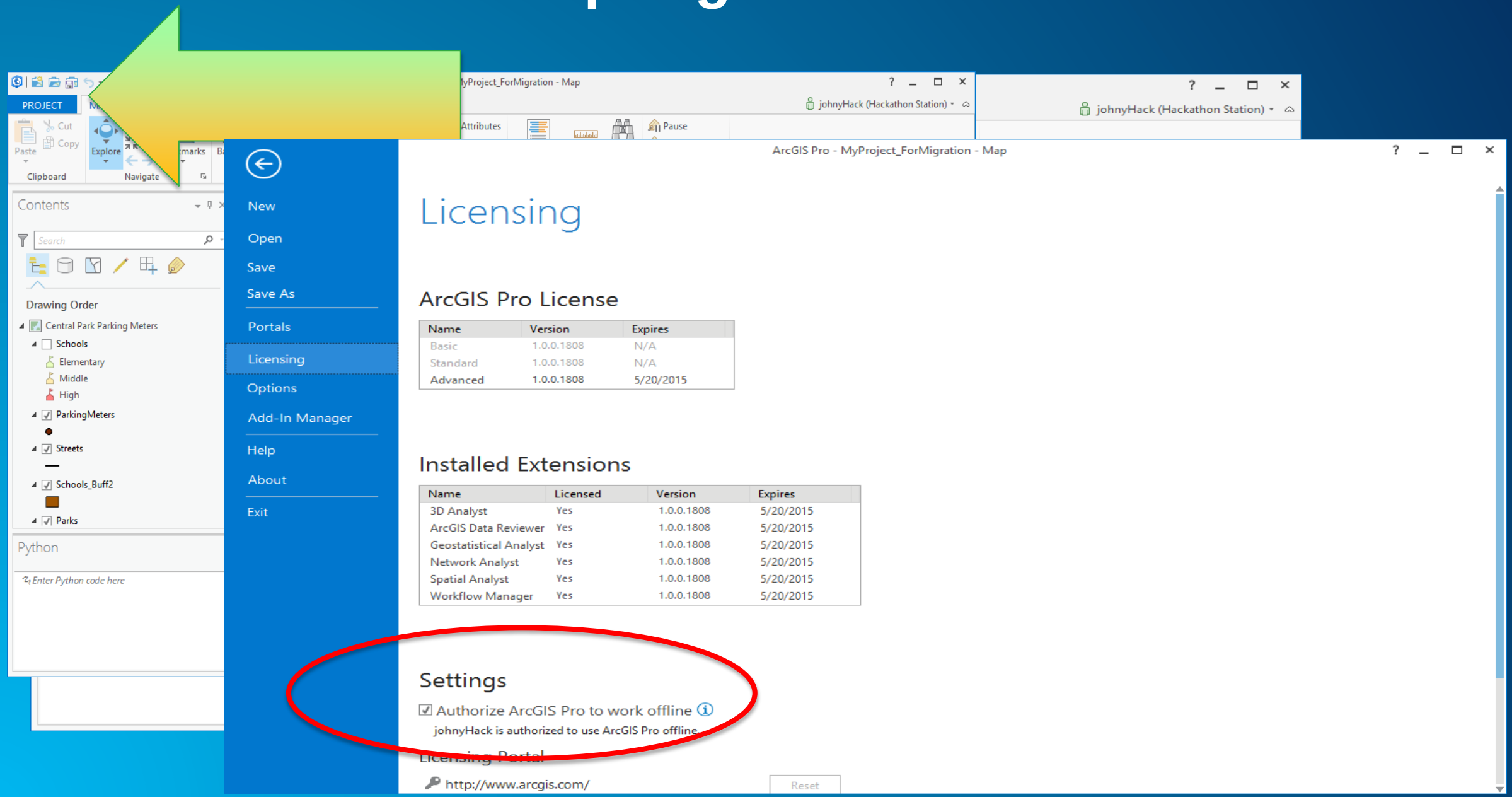
Script Tools and Python Window

- Embedded Python installed with ArcGIS Pro

Stand Alone Scripts

- Python for ArcGIS Pro Install: 64-bit Python 3.4.1
- All ArcGIS Pro Dependencies
- ArcGISPro.pth (Lib < site-packages)

Stand-Alone Scripting: IDEs or Command Line



Stand-Alone Scripting: IDEs or Command Line

- **If True:**
  - **ArcGIS Pro is open**
  - **Sign-In Automatically checked on sign in dialog**
  - **ArcGIS Pro authorized to work offline**

Analysis and Geoprocessing

- **Analysis tab: All things Analysis**
  Analysis gallery, Find Tools, Network Analysis, Raster Functions, ModelBuilder, Python Window
- **Geoprocessing pane location to find and run tools**
  http://pro.arcgis.com/en/pro-app/help/analysis/geoprocessing/the-basics/what-is-geoprocessing-.htm
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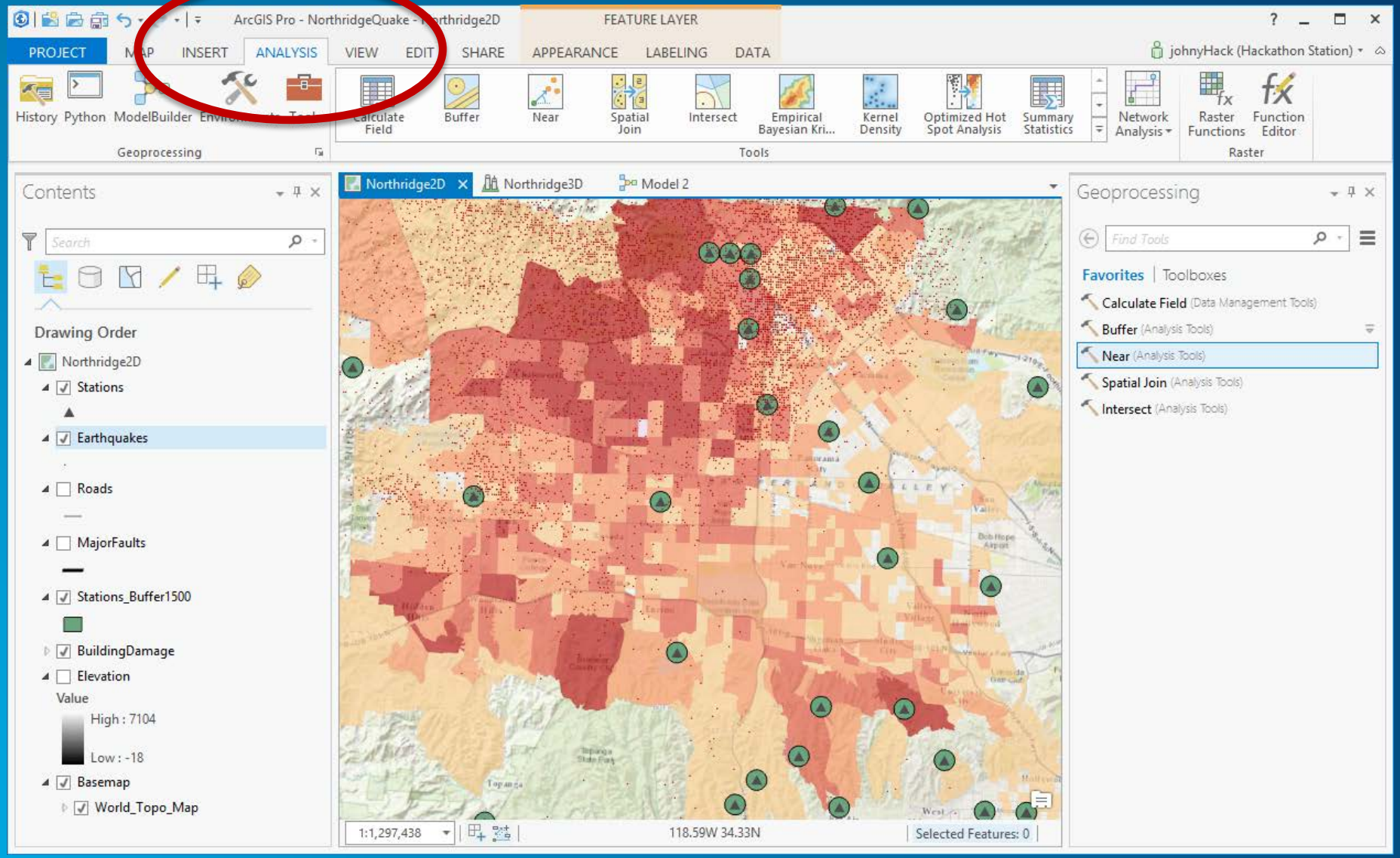
ArcGIS Pro: The Analysis Tab



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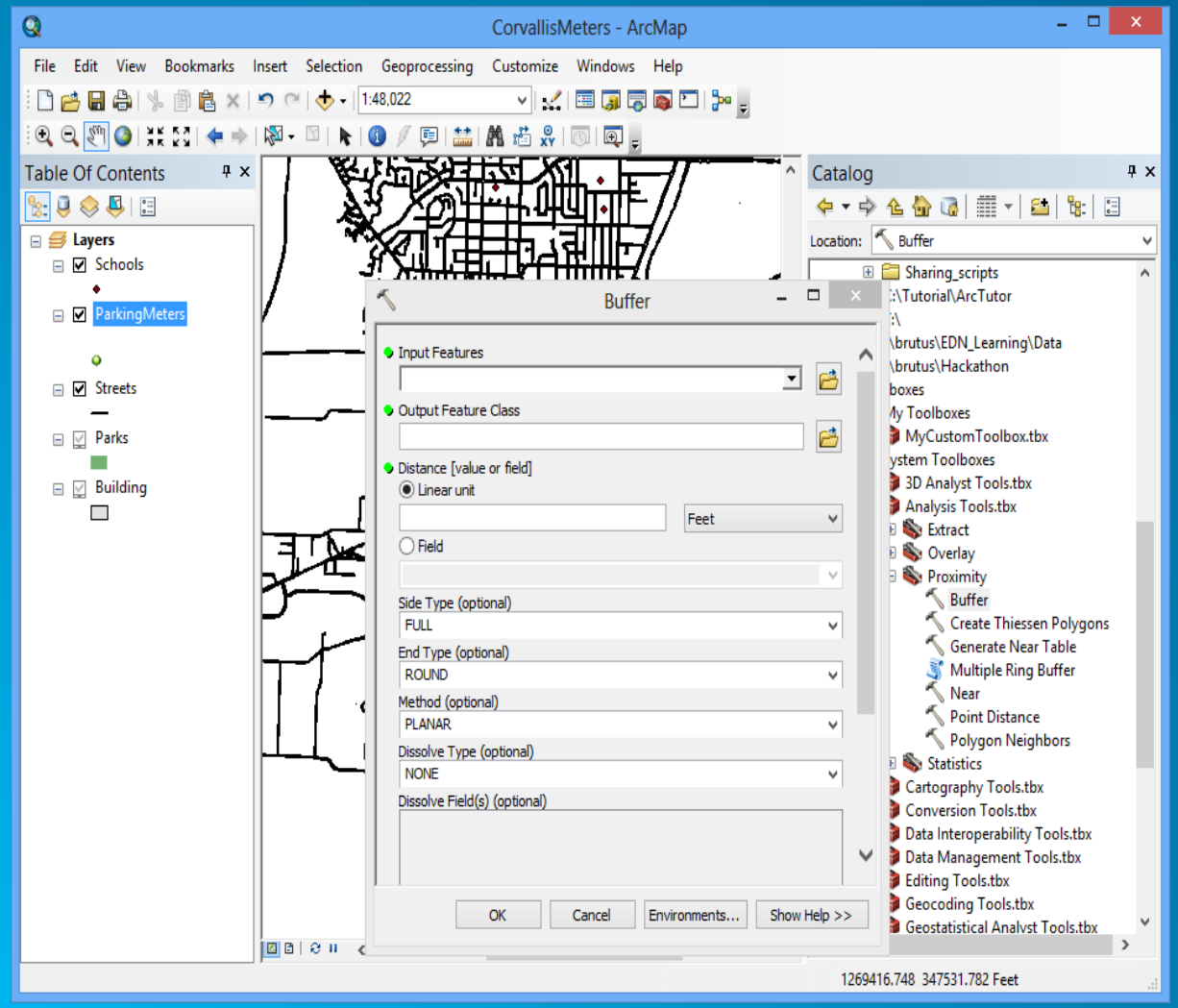
Some Key Differences

Use in_memory only for intermediate outputs in scripts and models
    If in Geoprocessing Pane output copied to project gdb

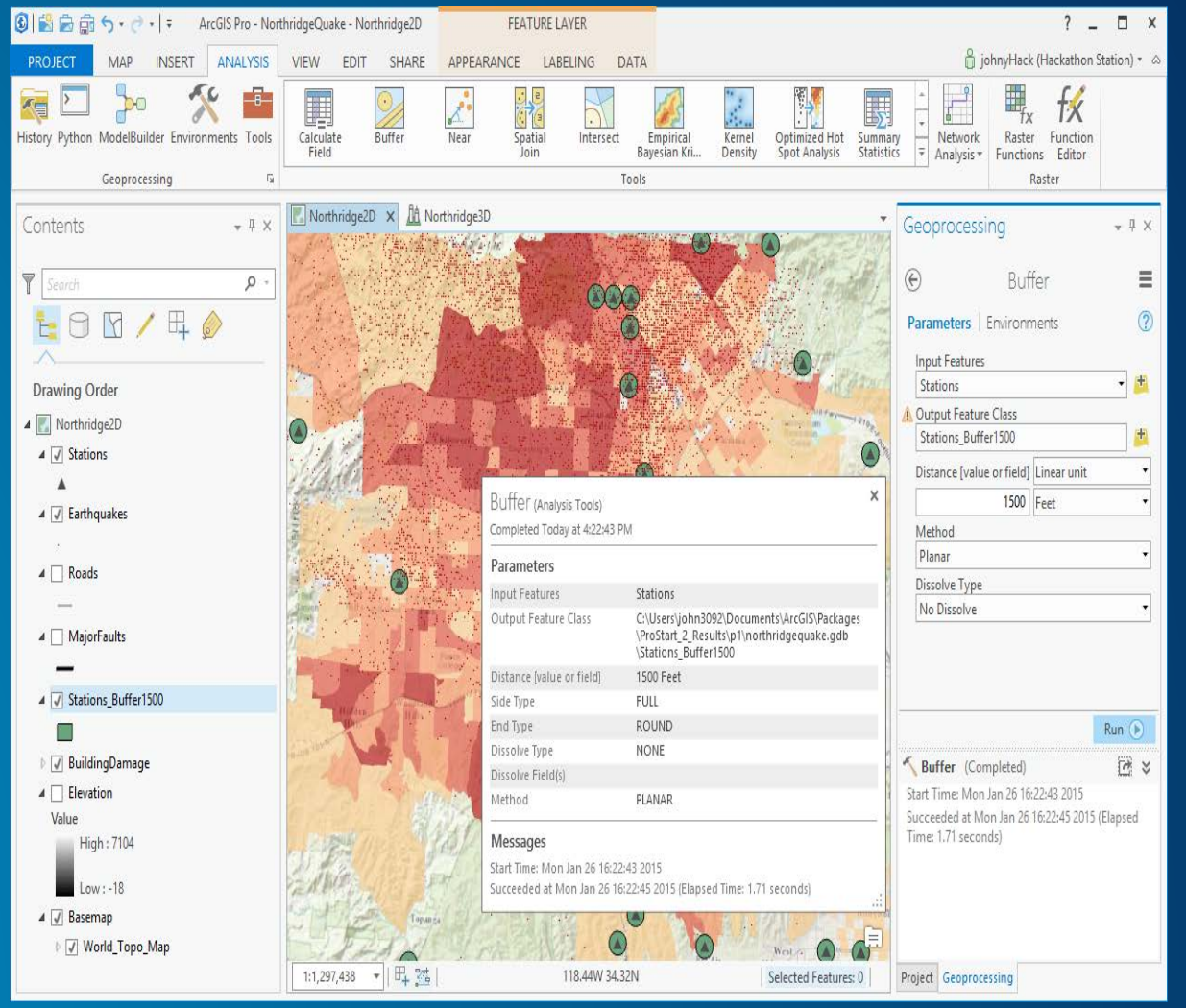
Use Geoprocessing Pane menu to open and activate multiple tools
    Tools open side-by-side in ModelBuilder not Geoprocessing Pane

Do not support COM tools (.NET, Java, c++)
    Custom tools developed with Python

Geoprocessing Dialog

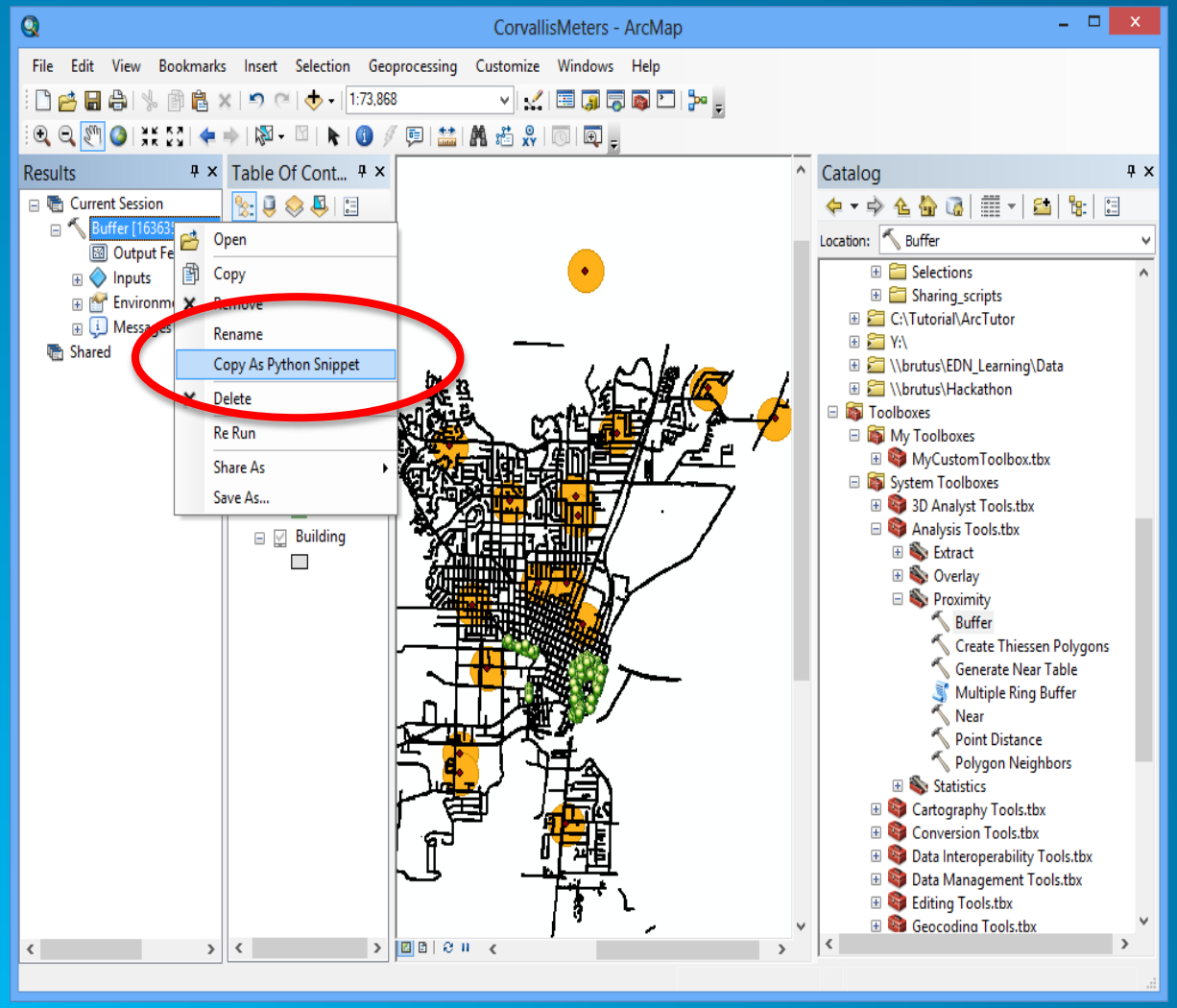


Geoprocessing Pane



Python Code Snippets after Geoprocessing

ArcGIS Desktop



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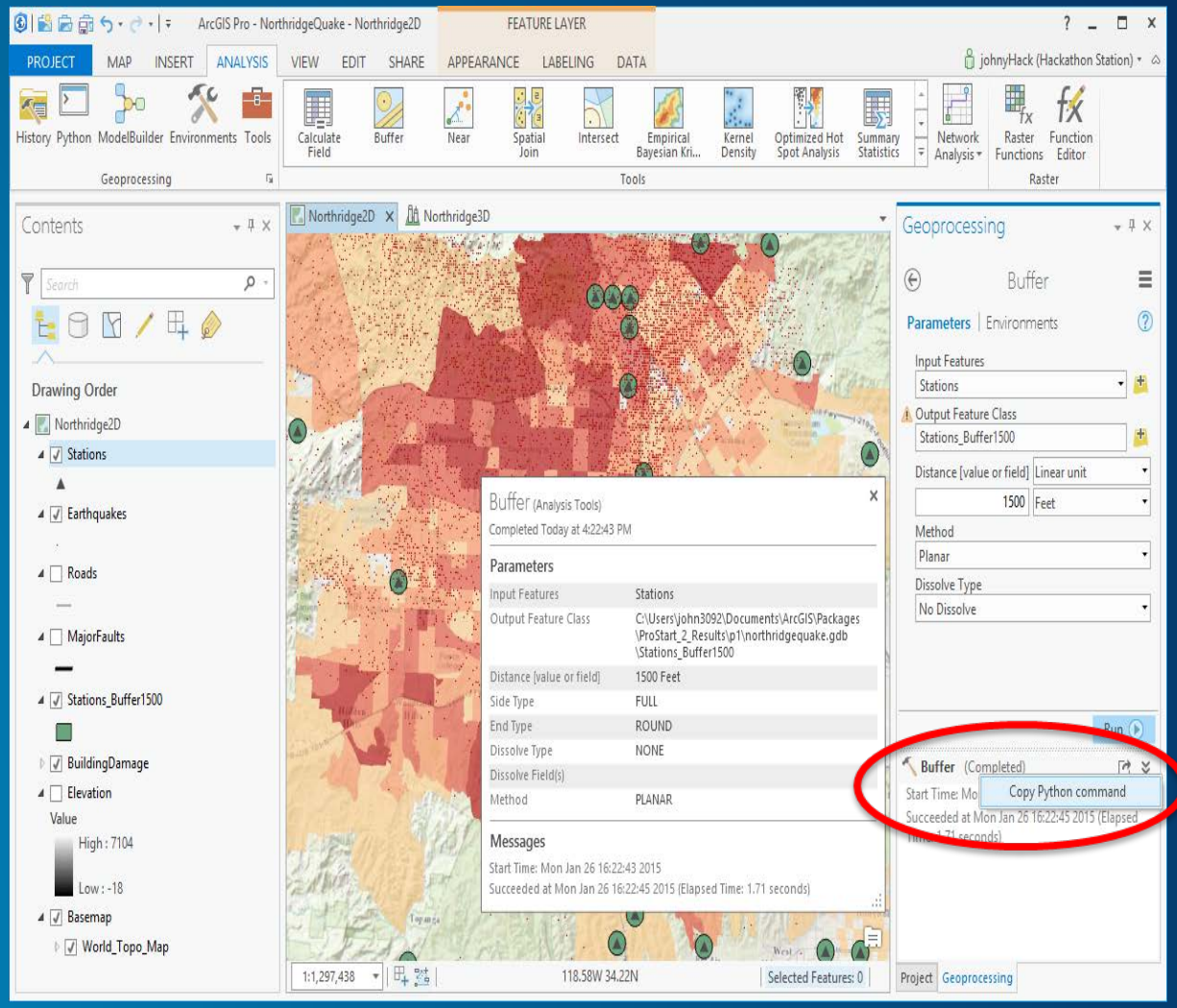

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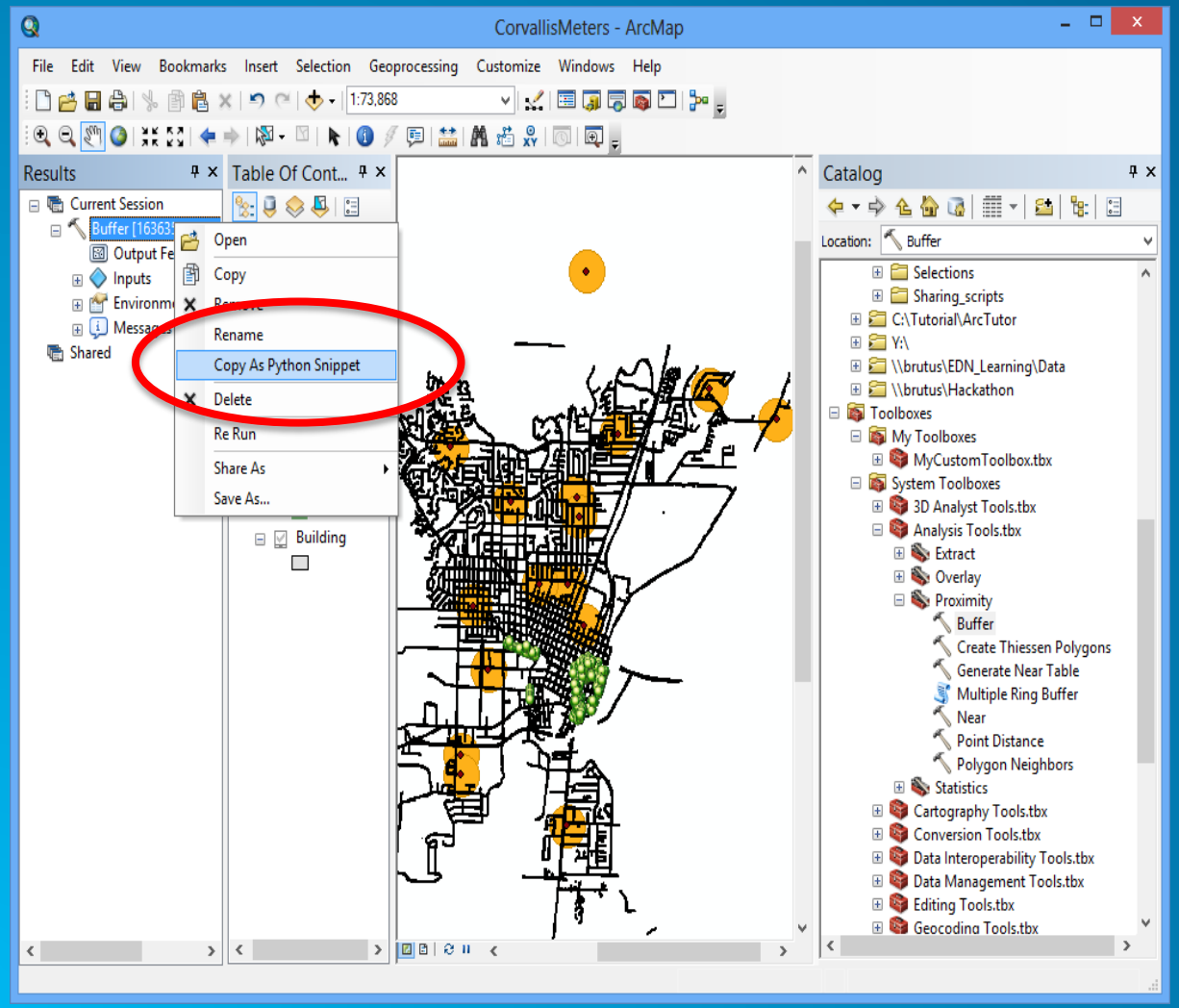
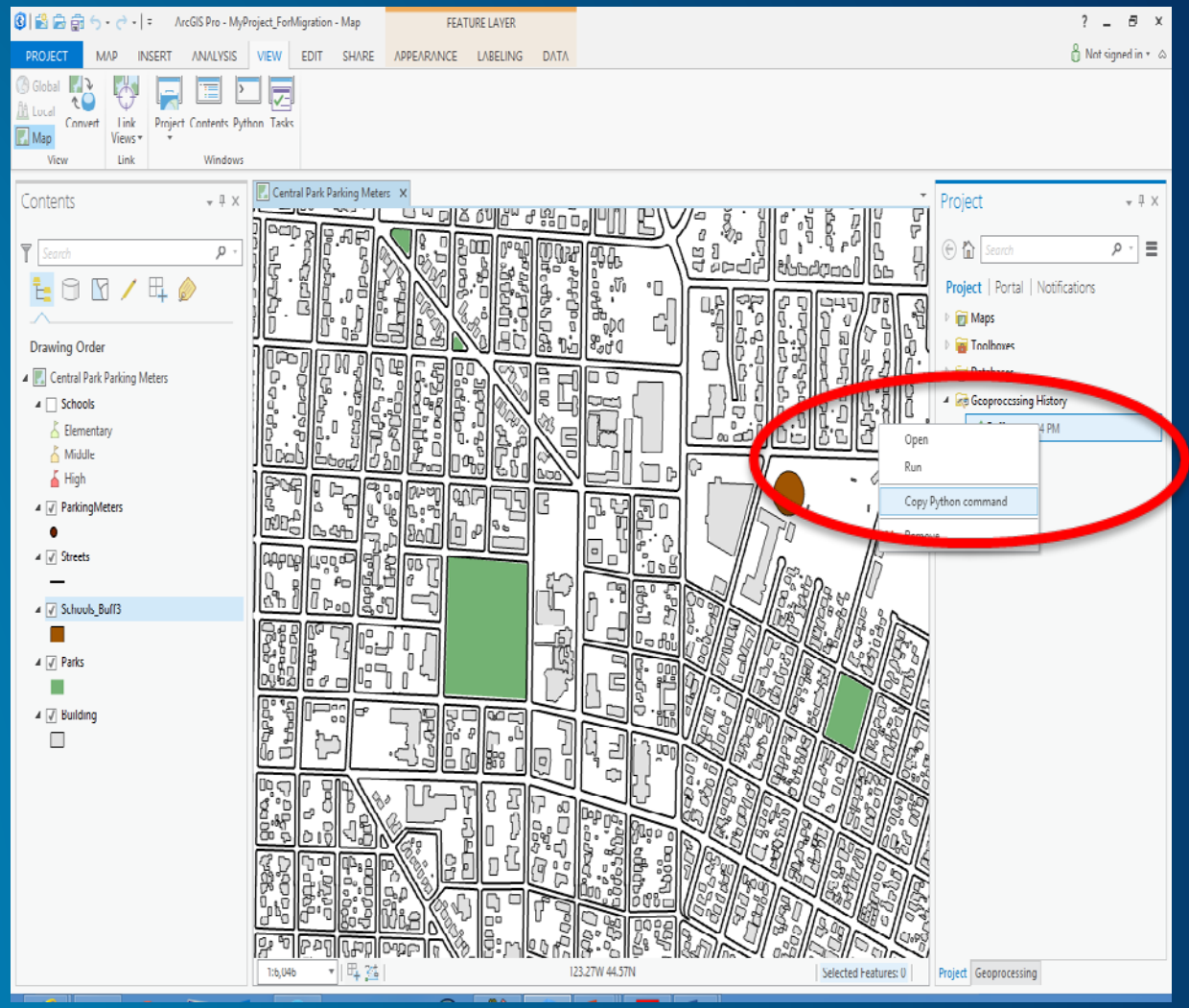
Python Code Snippets

GP Results
ArcGIS Desktop



GP History
ArcGIS Pro



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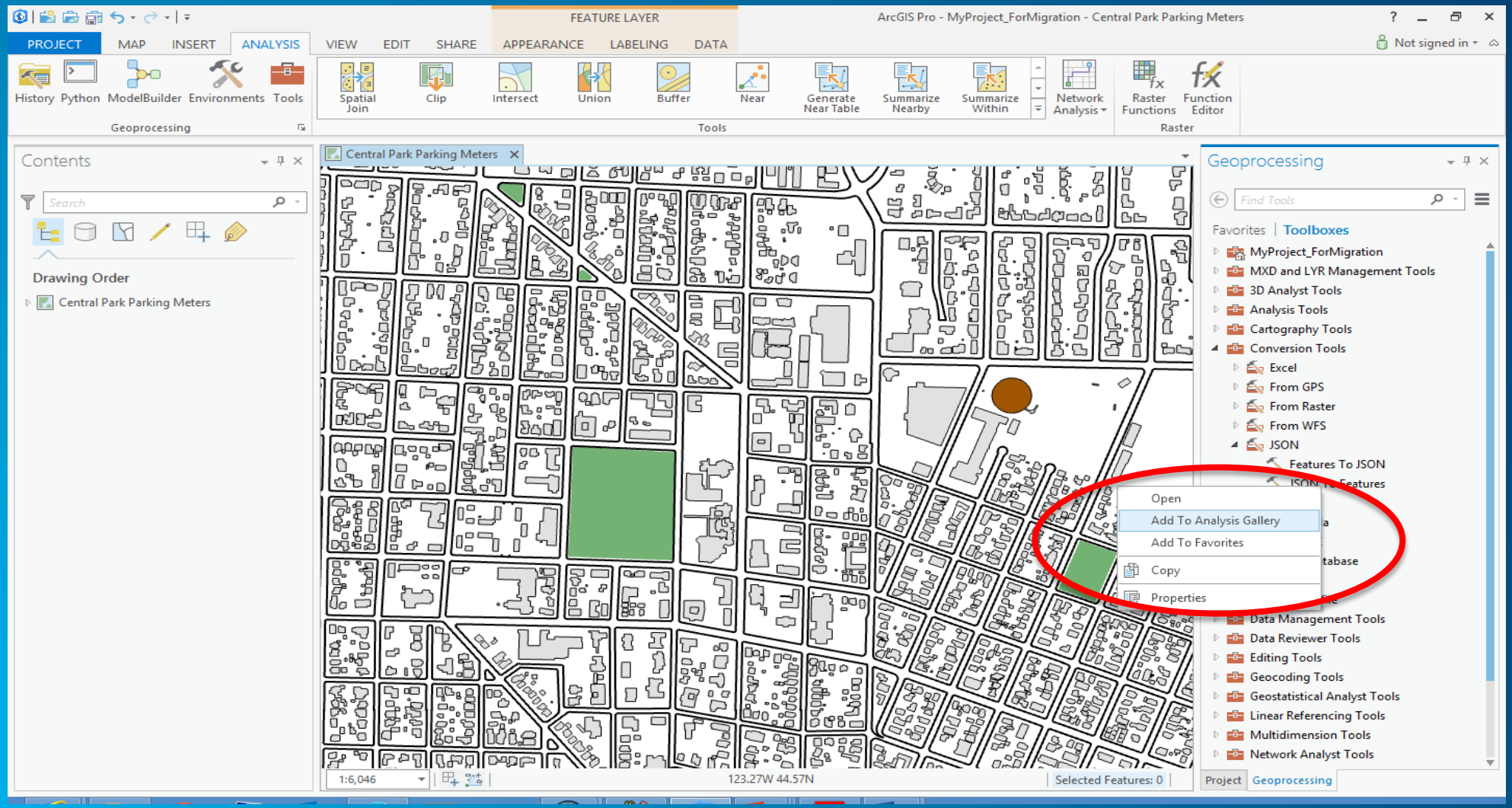
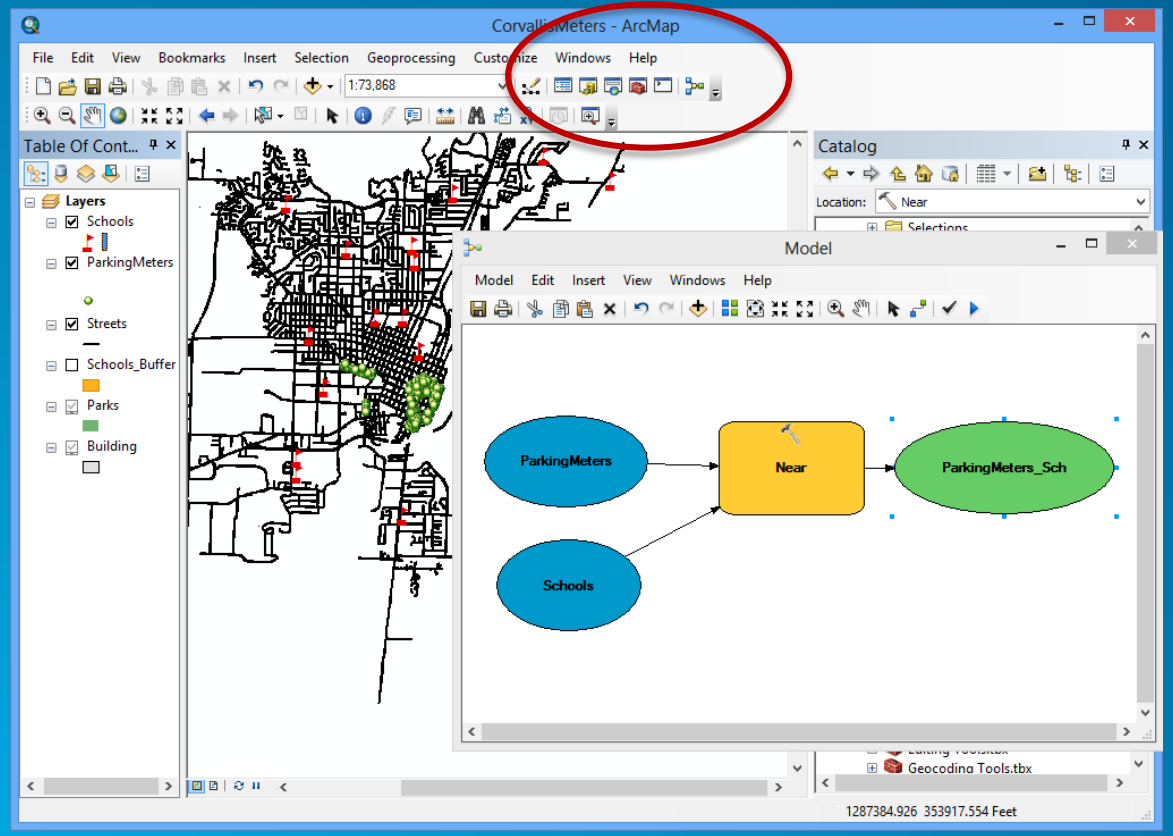
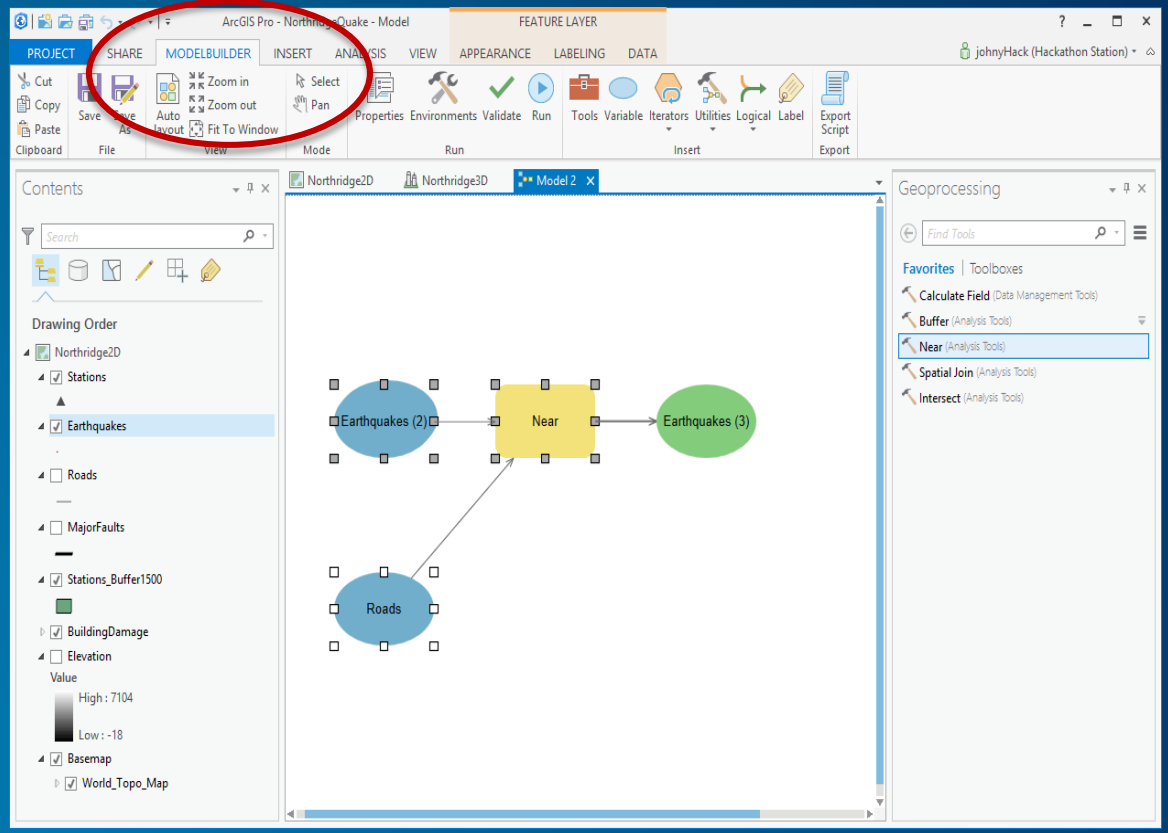
Customizing Analysis Gallery and Favorites



Model Builder

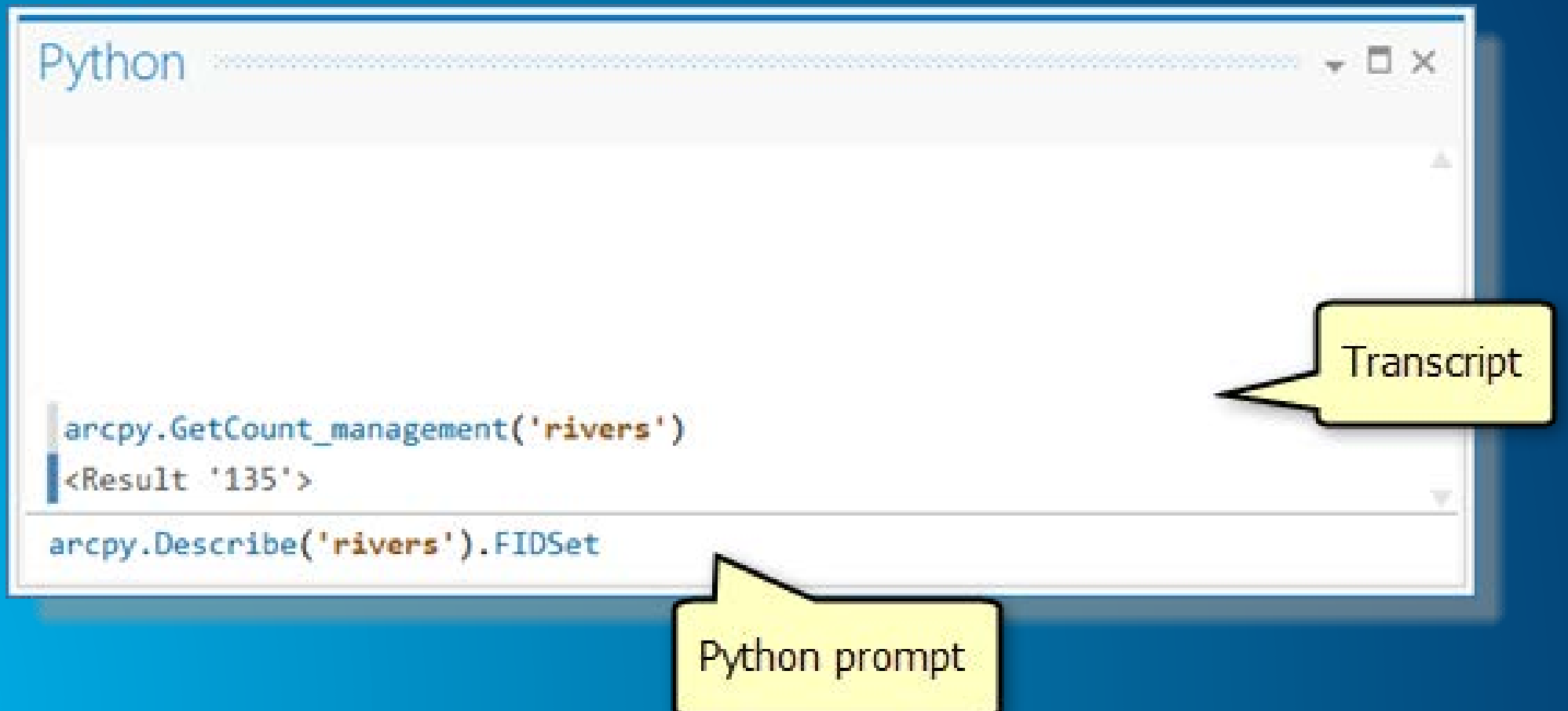




Not Backwards Compatible: Use Save As

The Python Window

ArcPy Café – The New Python Window in ArcGIS Pro
https://arcpy.wordpress.com/Arc



Demo - ArcGIS Pro Interface, Geoprocessing and Python

- Landing Page → http://pro.arcgis.com/en/pro-app/
- Terminology and User Interface Reference Guide → http://pro.arcgis.com/en/pro-app/get-started/arcgis-pro-terminology.htm
- Overview → http://pro.arcgis.com/en/pro-app/get-started/overview-of-arcgis-pro.htm
- User Interface → http://pro.arcgis.com/en/pro-app/get-started/arcgis-pro-user-interface.htm
- ArcPy Reference → http://pro.arcgis.com/en/pro-app/arcpy/main/arcgis-pro-arcpy-reference.htm
- Free and Cost Courses → http://training.esri.com/gateway/index.cfm?fa=search.results&searchterm=arcgispro
- Video http://geochannel.esri.com/index.cfm?event=video.view&channelId=38&videoId=4940

Demo

Python scripts outside the Mapping Module will most likely just run

Demonstration:

Showed a script deleting feature classes from a File System folder in Desktop, referencing ArcPy functions.

Discussed how this script would work the same in ArcGIS Pro since all functions are located on the same classes.

Migrating Scripts using Mapping module

ArcPy mapping – renamed:

Module in Pro: mp

Fundamental Difference:

Data Frame object branched into Map, MapFrame, Camera

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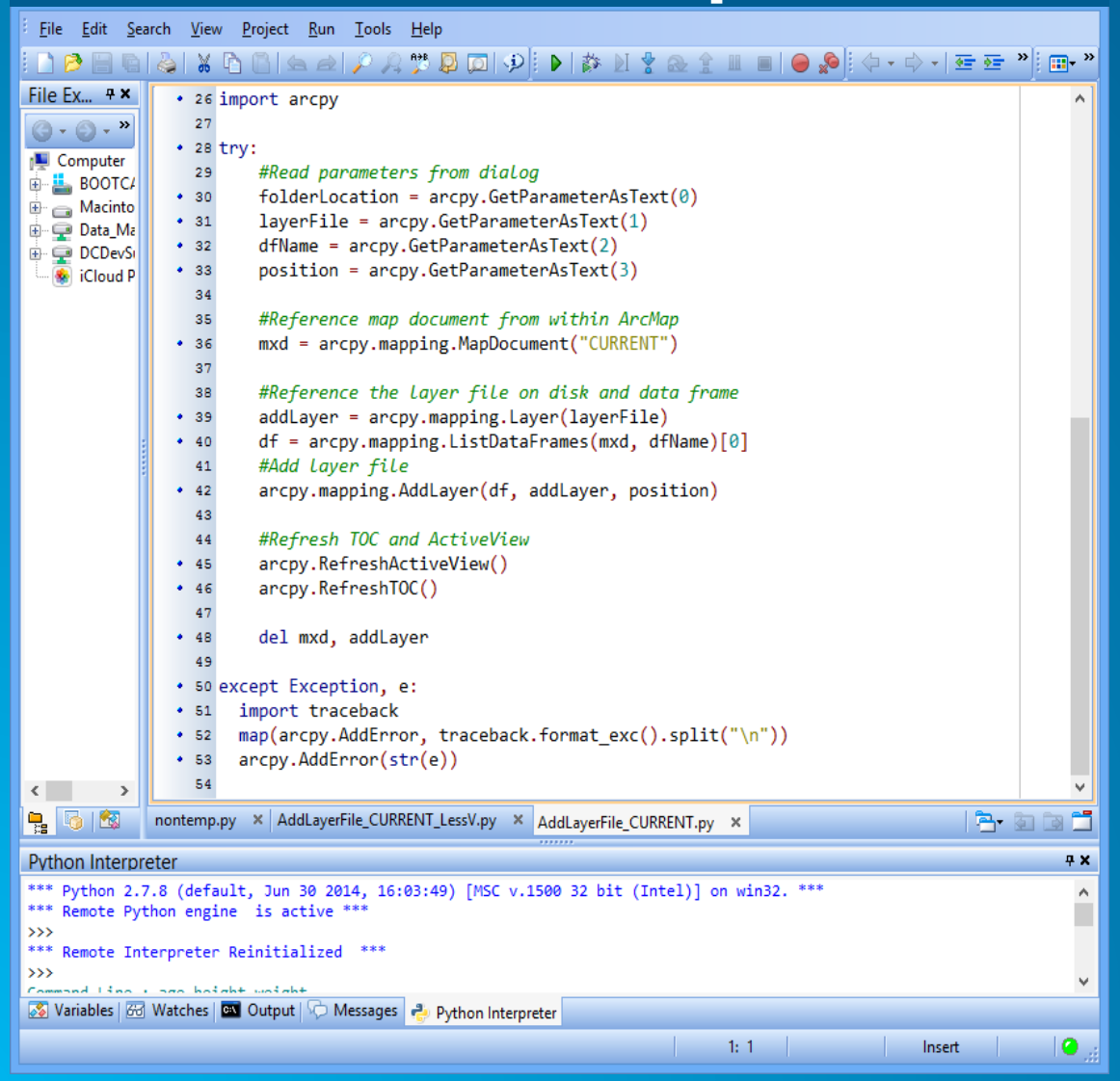
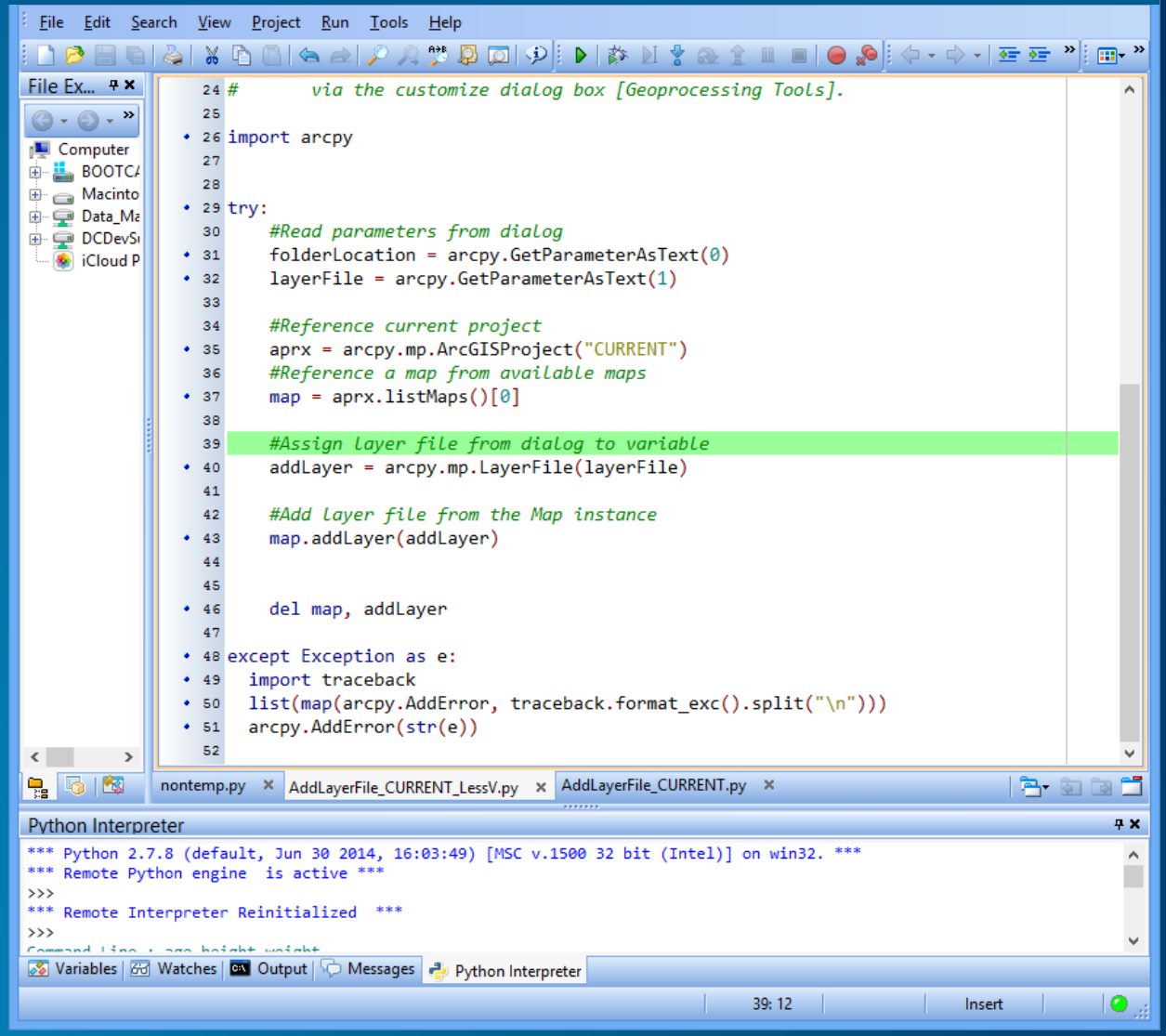
Demonstration of Mapping Code in Desktop and Modifying it to work in Pro

Desktop



Pro