

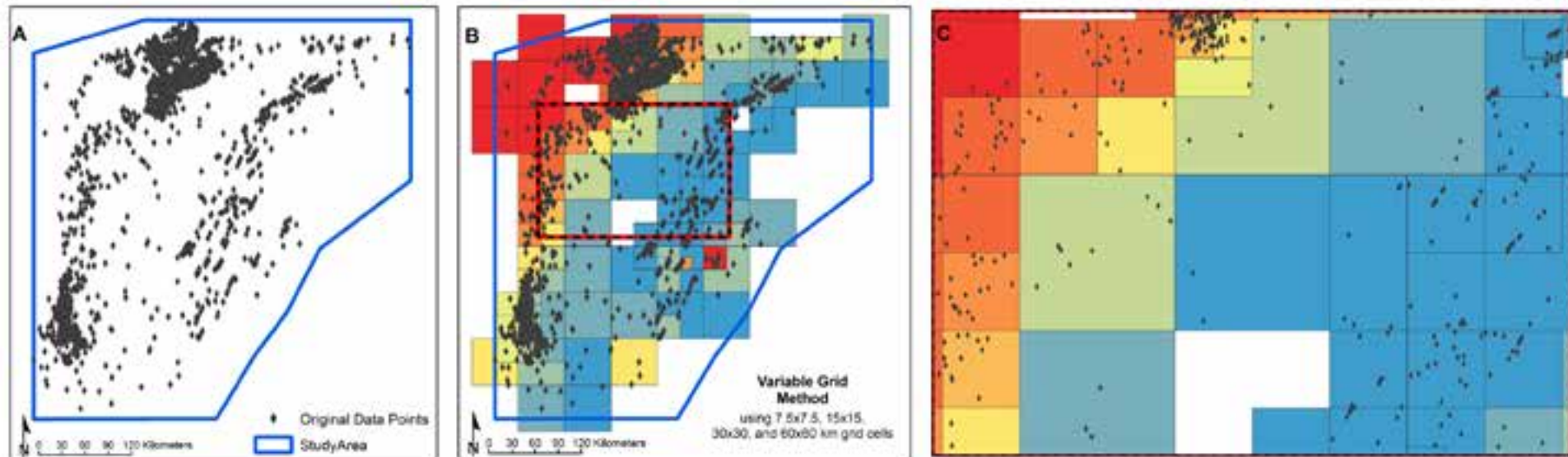
Using wxPython in Desktop Python Add-in for Variable Grid Method Tool

```
class VGMButtonClass(object):
    _pApp = None
    _dlg = None
    """Implementation for VGM_Plotting addin.button (Button)"""
    def __init__(self):
        self.enabled = True
        self.checked = False
    def onClick(self):
        if self._dlg:
            from wxPython.wx import wxMessageBox
            self._dlg.ShowModal()
            self._dlg.Destroy()
            self._dlg = None
class VGMExtensionClass(wxPython.wx.Extension):
    """Implementation for VGM_Plotting extension (Extension)"""
    _wxApp = None
    def __init__(self):
        self.enabled = True
    def startup(self):
        try:
            from wxPython.wx import wxPythonApp, wxPythonFrame
            self._wxApp = wxPythonApp()
            self._wxApp.Main()
        except:
            sMsg = "Error loading extension:\n" + traceback.format_exc()
            pythoned = wxPythonFrame(sMsg, "VGMAddin")
            pythoned.ShowModal()
            pythoned.Destroy()
    def itemAdded(self, new_item):
        pub.sendMessage('item.added', new_item=new_item)
    def itemDeleted(self, deleted_item):
        pub.sendMessage('item.deleted', deleted_item=deleted_item)]
```

Variable Grid Method

Addressing the Technical Issue

The NETL Variable Grid Method (VGM) helps communicate data and uncertainty *simultaneously* by providing a single layer that represents both the data values (colors) and uncertainty (grid cell size) while still preserving broad spatial trends and patterns



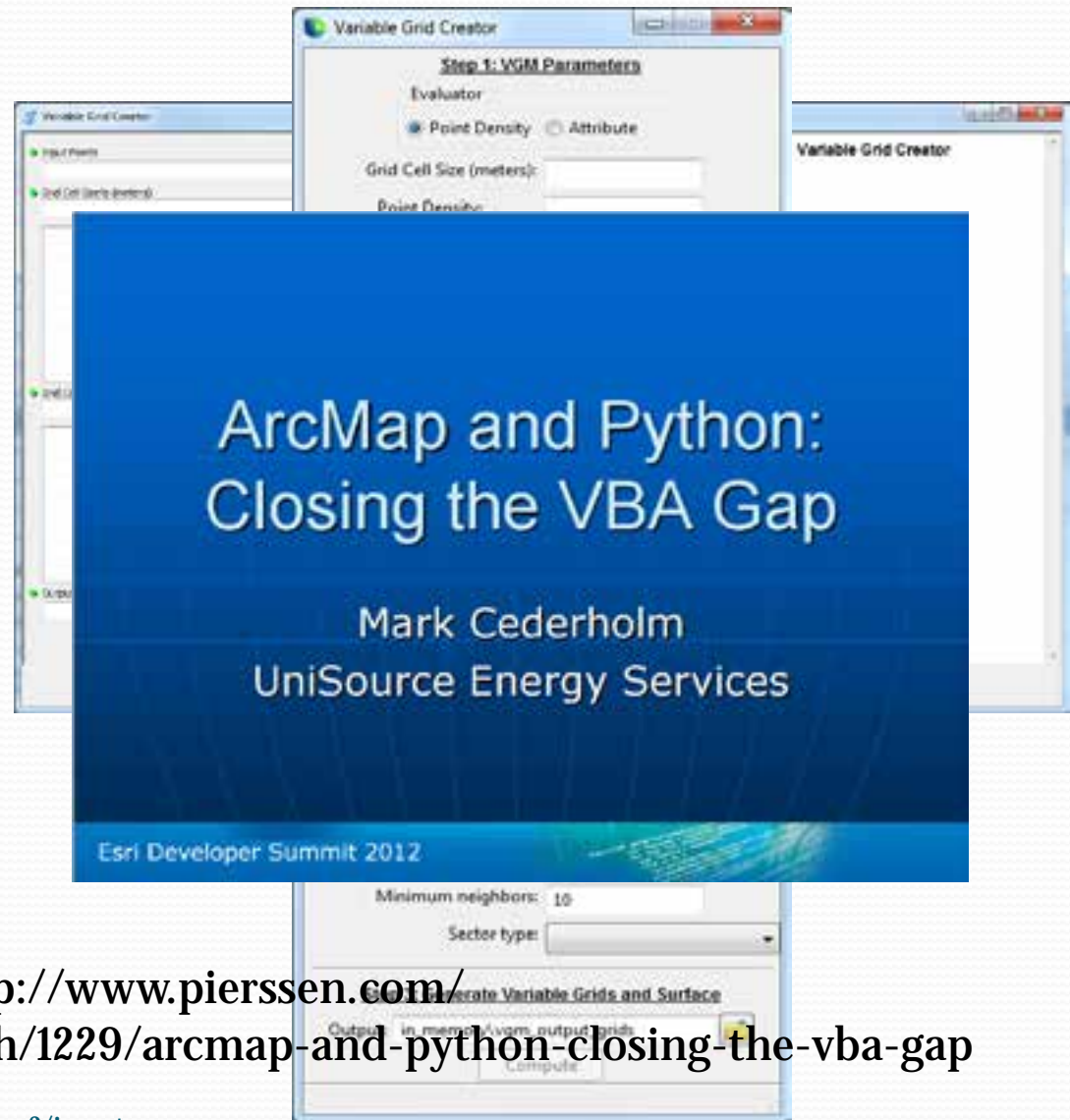
Example of a variable grid (B, C) created from point data (A) where both the data values that need to be communicated (shown in colors) and the uncertainty associated with the interpolation (based off grid cell size, where smaller grid cells have less uncertainty and larger grid cells have more uncertainty) are shown simultaneously

Why an add-in?

- VGM tool started as an ArcGIS script tool
- Need for custom functionality and UI
- Easily distributed as batch file with dependencies and .esriaddin

Why wxPython?

- Quicker development and faster deployment
- Easily readable code
- It just worked for us!



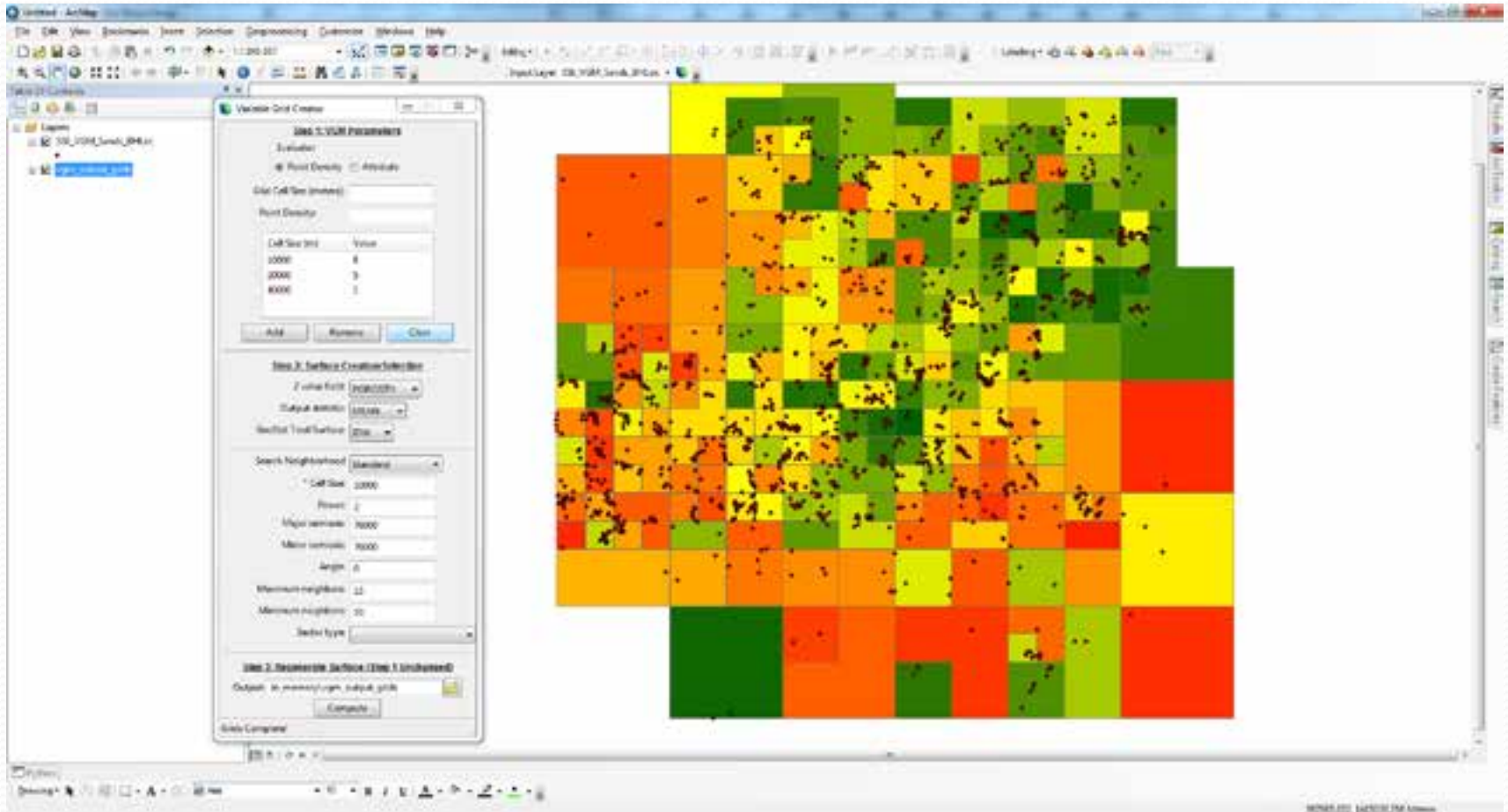
<http://www.pierssen.com/>

<http://video.arcgis.com/watch/1229/arcmap-and-python-closing-the-vba-gap>

<http://onlinelibrary.wiley.com/doi/10.1111/tgis.2015.19.issue-3/issuetoc>

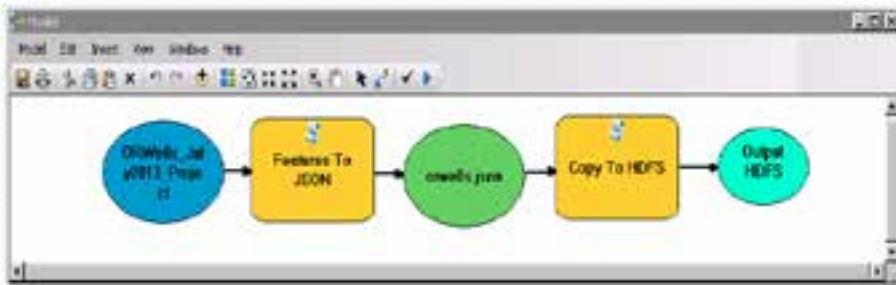
Bauer, J., and Rose, K., 2015, Variable Grid Method: an Intuitive Approach for Simultaneously Quantifying and Visualizing Spatial Data and Uncertainty, Transactions in GIS. 19(3), p. 377-397

Demo...

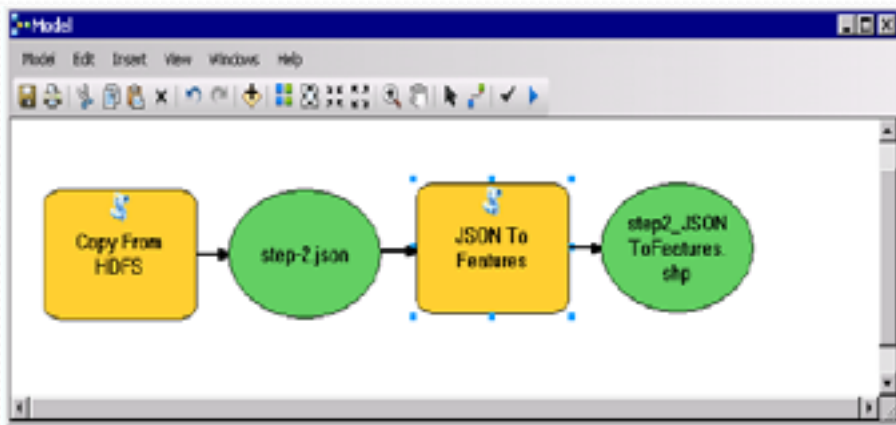


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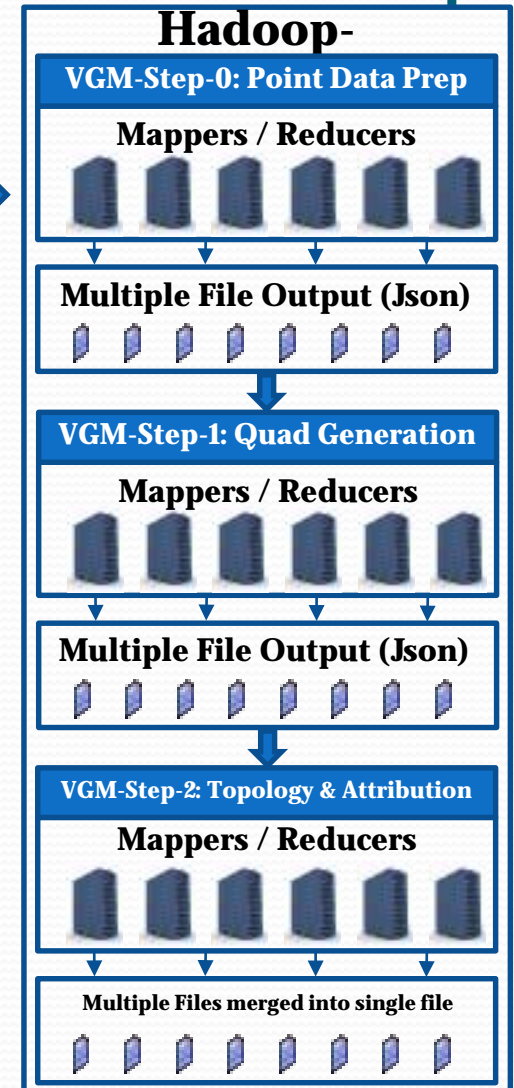
Hadoop-VGM: ArcMap to Hadoop



Model to copy ORWells point data from ArcMap to Hadoop



Model to copy results from Hadoop into ArcMap



Next steps

- comtypes library
 - Integrate with ArcObjects
 - e.g. add results to Results Panel
- Build UI for NETL web applications
 - i.e. Geocube (<https://edx.netl.doe.gov/gom-geocube/>)
- User options for multiple variations of VGM outputs
- Provide as public download from Energy Data eXchange (EDX) - <https://edx.netl.doe.gov/>

Thank you!

This is where my mind has been the whole time!



Aaron Barkhurst
MATRIC

aaron.barkhurst@matricinnovates.com

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