Objective 1: Hot Spot Methodology

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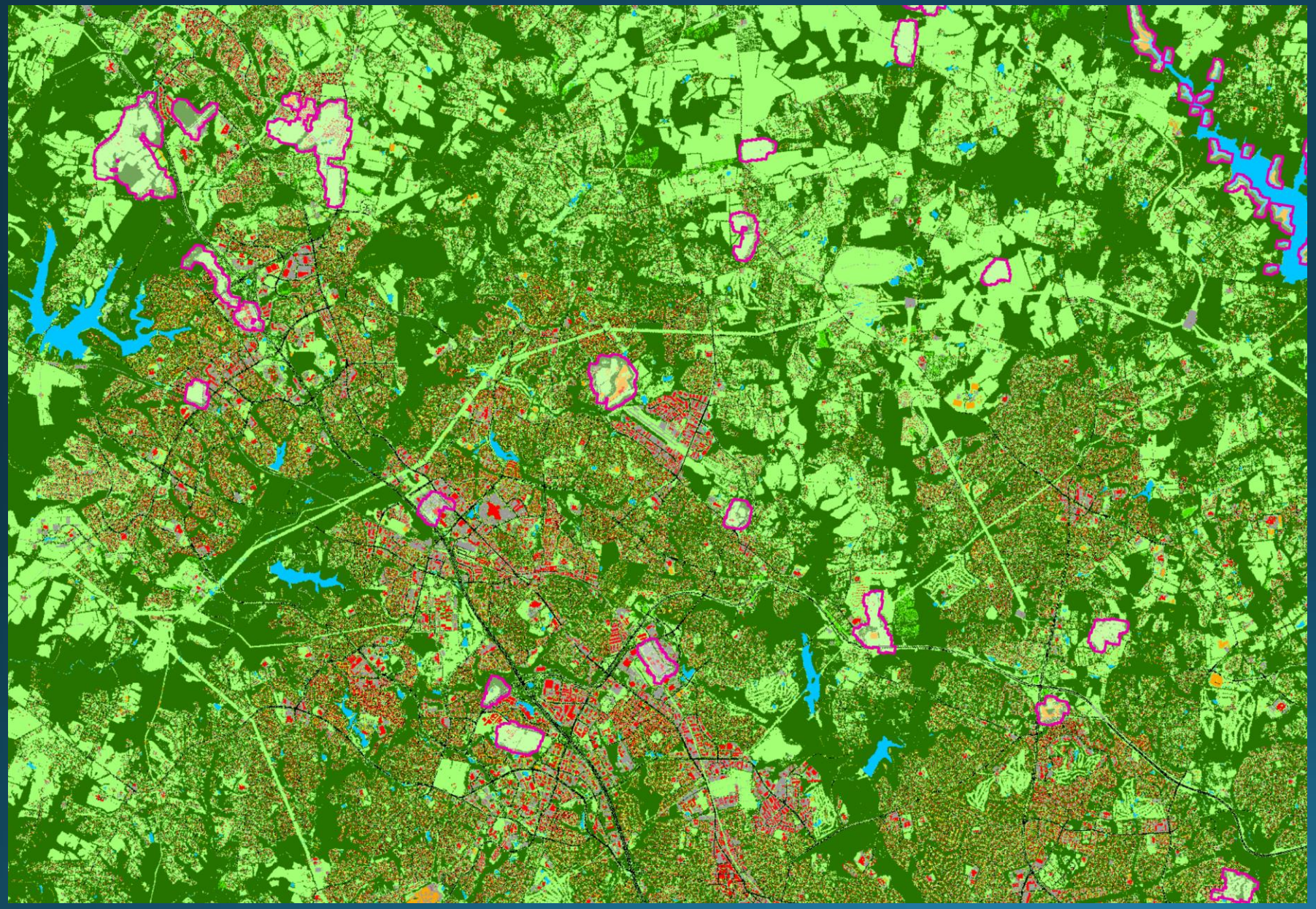
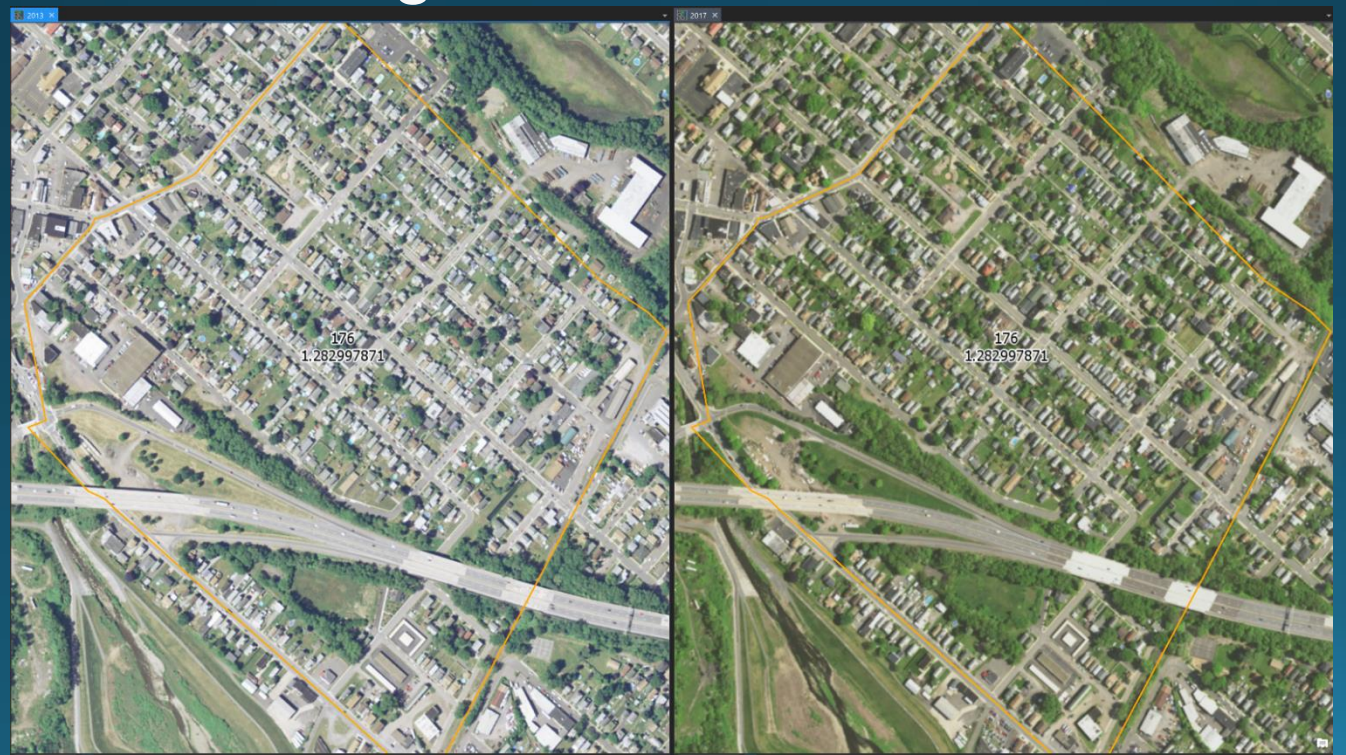
Land Cover Hotspots



- What: Full wall-to-wall 2013/14 land cover with hot spots updated for 2017/18, hot spot (filtered LCMAP) boundaries
- Missing full leaf-on 2018 NAIP for VA and part of WV

Removed from Current Methodology

- Microsoft 1m- slow creation & clean up, had to wait for current NAIP. Benefits didn't outweigh the negatives (LCMAP already pointed to large spots of change)
- American Community Survey- after reviewing margin of error, found block groups that showed increase in Housing Units, none passed the straight face test



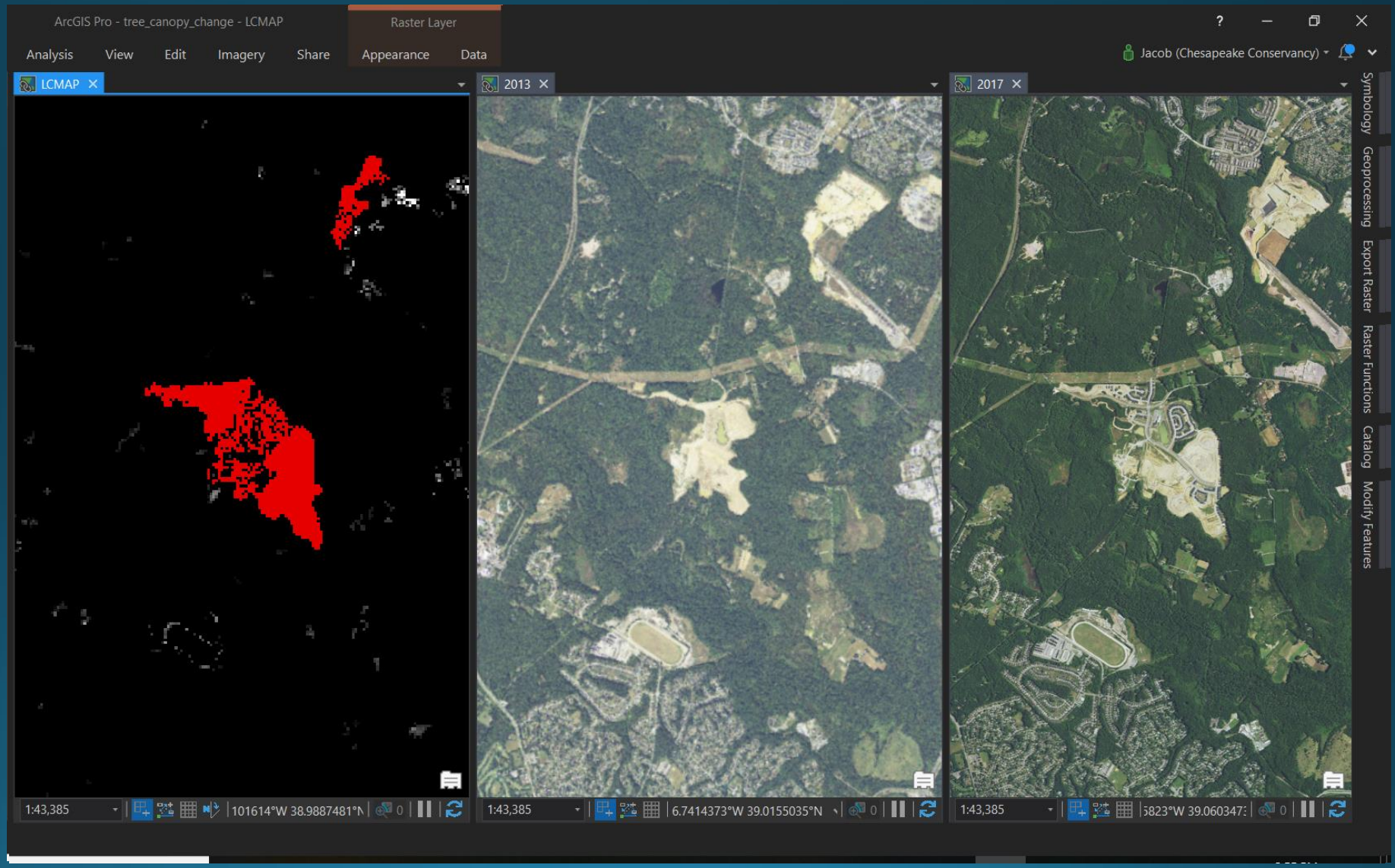
Estimated increase of housing units
Z-score

LCMAP

- Land Change Monitoring, Assessment, and Projection by USGS
  - Continuous Change Detection and Classification (CCDC) algorithm
    - Zhu, Z., & Woodcock, C. E. (2014). Continuous change detection and classification of land cover using all available Landsat data. *Remote sensing of Environment*, *144*, 152-171.
  - Pixel based time series data
  - Part of Landsat Analysis Ready Data (ARD)
    - 10 data products including land cover and spectral change
  - Project data used “pilot” LCMAP data products
    - LCMAP official release in early 2020
  - This project used the **Change Magnitude** Product
    - a measure of the magnitude of spectral change found within a given timeframe

Methodology

- Change Magnitude rasters were summed
- Areas where non-zero change magnitude overlaps with 2013 1m LC Impervious and Water classes were removed
- Remaining areas that showed non-zero change magnitude were region grouped
- Any contiguous regions less than 100 pixels were removed



Methodology

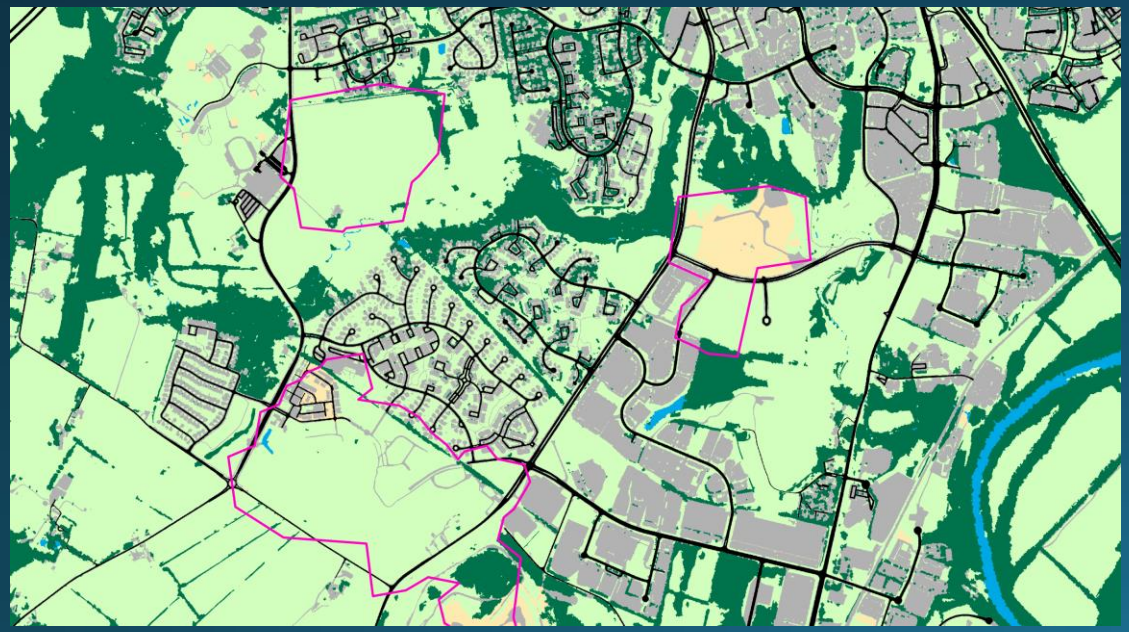
- Raster to polygon, expand by 2 pixels and handed to UVM
- UVM:

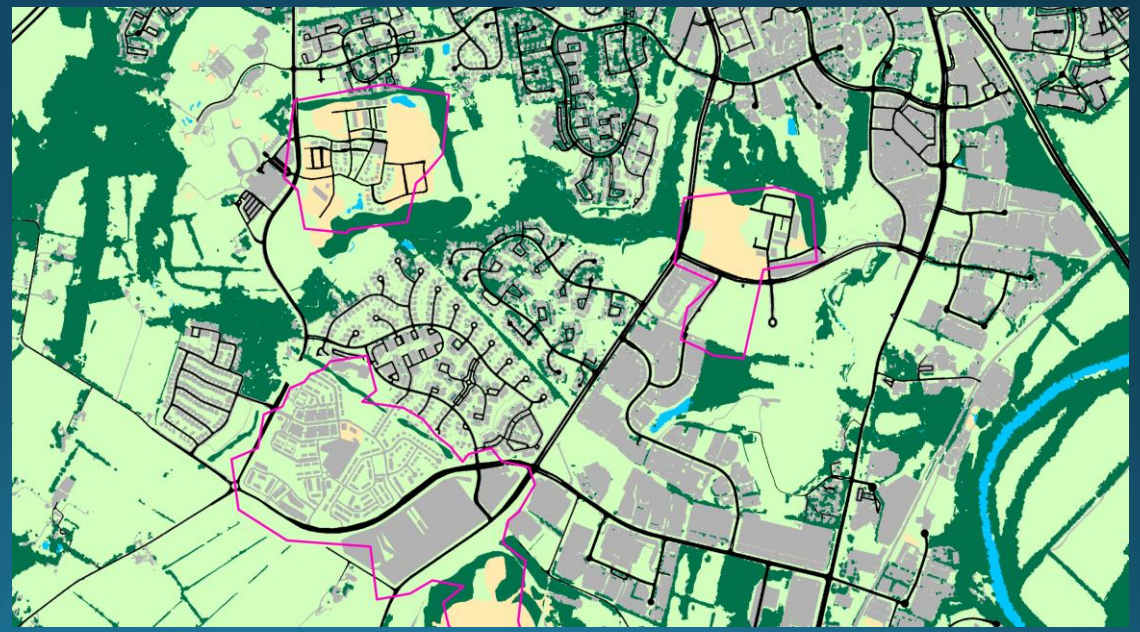
OBJECTID	Shape	FROM_CLASS	TO_CLASS	Shape_Length	Shape_Area
17358	Polygon	Barren	Paved/Other Impervious	71.38822	305.364959
17359	Polygon	Barren	Paved/Other Impervious	488.497842	12820.215935
17360	Polygon	Barren	Paved/Other Impervious	122.844543	514.173523
17361	Polygon	Barren	Roads	274.818769	1069.722119
17362	Polygon	Barren	Roads	1829.770562	11976.79501
17363	Polygon	Barren	Roads	55.398914	166.360454

  - Hotspot polygons to identify areas of interest (did not constrain edits to the hot spot boundaries exactly)
  - Compared the existing land cover to the current imagery
  - Digitized polygons with a “from” and “to” class
  - Polygons integrated with the current land cover in a customized script
  - Edits:
    - focused on updates that were accurate from an **area summarization** perspective (i.e. capture the changes in a way that reflected the overall magnitude of area change)

2013

2017





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Questions?

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