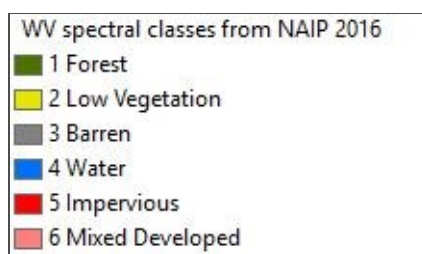


WV_Spectral_classes_NAIP_2016.tif

Raster Dataset



Tags

2016, land cover, spectrally derived, NAIP imagery

Summary

The creation of quality, large-area, high spatial resolution land cover mapping has proven to be a difficult task for a variety of reasons including large data volumes, complexity of developing training and validation datasets, data availability, and heterogeneity in data and landscape conditions. We created a statewide spectral classification for WV using geographic object-based image analysis (GEOBIA), random forest (RF) machine learning, and National Agriculture Imagery Program (NAIP) orthophotography for mapping general land cover across the entire state.

Description

We obtained an overall accuracy of 96.7% and a Kappa statistic of 0.886 using a combination of NAIP orthophotography and ancillary data. Despite the high overall classification accuracy, some classes were difficult to differentiate, as highlighted by the low user's and producer's accuracies for the barren, impervious, and mixed developed classes. In contrast, forest, low vegetation, and water were generally mapped with accuracy. The inclusion of ancillary data and first- and second-order textural measures generally improved classification accuracy whereas band indices and object geometric measures were less valuable. Including super-object attributes improved the classification slightly; however, this increased the computational time and complexity.

Credits

Maxwell, A. E., M. P. Strager, T. A. Warner, C. A. Ramezan, A. N. Morgan, C. E. Pauley. 2019. Large-Area, High Spatial Resolution Land Cover Mapping using Random Forests, GEOBIA, and NAIP Orthophotography: Findings and Recommendations. *Remote Sensing*, Vol. 11, 1409, 1-27, <https://doi.org/10.3390/rs11121409>.

Use limitations

There are no access and use limitations for this item.

Extent

West -82.753764 **East** -77.613351
North 40.691819 **South** 37.141044

Scale Range

Maximum (zoomed in) 1:5,000
Minimum (zoomed out) 1:50,000

ArcGIS Metadata ►

Topics and Keywords ►

* CONTENT TYPE Downloadable Data
EXPORT TO FGDC CSDGM XML FORMAT AS RESOURCE DESCRIPTION No

THEME KEYWORDS land cover

[Hide Topics and Keywords ▲](#)

Citation ►

* TITLE WV_Spectral_classes_NAIP_2016.tif
CREATION DATE 2020-01-15 00:00:00

PRESENTATION FORMATS * digital map

[Hide Citation ▲](#)

Citation Contacts ►

RESPONSIBLE PARTY

INDIVIDUAL'S NAME Mike Strager
ORGANIZATION'S NAME West Virginia University
CONTACT'S POSITION Professor
CONTACT'S ROLE principal investigator

CONTACT INFORMATION ►

PHONE
VOICE 3042936463

ADDRESS

TYPE
CITY Morgantown
ADMINISTRATIVE AREA WV
POSTAL CODE 26506
E-MAIL ADDRESS mstrager@wvu.edu

[Hide Contact information ▲](#)

RESPONSIBLE PARTY

INDIVIDUAL'S NAME Aaron Maxwell
ORGANIZATION'S NAME West Virginia University
CONTACT'S POSITION Professor
CONTACT'S ROLE resource provider

CONTACT INFORMATION ►

PHONE
VOICE 3042935603

ADDRESS

TYPE
CITY Morgantown
ADMINISTRATIVE AREA WV

POSTAL CODE 26506

[Hide Contact information ▲](#)

[Hide Citation Contacts ▲](#)

Resource Details ►

DATASET LANGUAGES * English (UNITED STATES)
 DATASET CHARACTER SET utf8 - 8 bit UCS Transfer Format

SPATIAL REPRESENTATION TYPE * grid

* PROCESSING ENVIRONMENT Version 6.2 (Build 9200) ; Esri ArcGIS 10.5.1.7333

CREDITS

Maxwell, A. E., M. P. Strager, T. A. Warner, C. A. Ramezan, A. N. Morgan, C. E. Pauley. 2019. Large-Area, High Spatial Resolution Land Cover Mapping using Random Forests, GEOBIA, and NAIP Orthophotography: Findings and Recommendations. Remote Sensing, Vol. 11, 1409, 1-27, <https://doi.org/10.3390/rs11121409>.

ARCGIS ITEM PROPERTIES

* NAME WV_Spectral_classes_NAIP_2016.tif
 * LOCATION file:///C:/MIKE/Projects/Landscape Characterization for 2016 imagery/FINAL DELIVERABLES AND REPORT/for-delivery/WV_Spectral_classes_NAIP_2016.tif
 * ACCESS PROTOCOL Local Area Network

[Hide Resource Details ▲](#)

Extents ►

EXTENT

GEOGRAPHIC EXTENT

BOUNDING RECTANGLE

EXTENT TYPE Extent used for searching

* WEST LONGITUDE -82.753764

* EAST LONGITUDE -77.613351

* NORTH LATITUDE 40.691819

* SOUTH LATITUDE 37.141044

* EXTENT CONTAINS THE RESOURCE Yes

EXTENT IN THE ITEM'S COORDINATE SYSTEM

* WEST LONGITUDE 351787.896372

* EAST LONGITUDE 786382.896372

* SOUTH LATITUDE 4115387.003841

* NORTH LATITUDE 4504547.003841

* EXTENT CONTAINS THE RESOURCE Yes

[Hide Extents ▲](#)

Spatial Reference ►

ARCGIS COORDINATE SYSTEM

* TYPE Projected

* GEOGRAPHIC COORDINATE REFERENCE GCS_North_American_1983

* PROJECTION NAD_1983_UTM_Zone_17N

* COORDINATE REFERENCE DETAILS

PROJECTED COORDINATE SYSTEM

WELL-KNOWN IDENTIFIER 26917

X ORIGIN -5120900

Y ORIGIN -9998100

XY SCALE 450445547.3910538

Z ORIGIN -100000

Z SCALE 10000

M ORIGIN -100000

M SCALE 10000

XY TOLERANCE 0.001

Z TOLERANCE 0.001

M TOLERANCE 0.001

HIGH PRECISION true

LATEST WELL-KNOWN IDENTIFIER 26917

WELL-KNOWN TEXT PROJCS["NAD_1983_UTM_Zone_17N",GEOGCS

["GCS_North_American_1983",DATUM["D_North_American_1983",SPHEROID

["GRS_1980",6378137.0,298.257222101]],PRIMEM["Greenwich",0.0],UNIT

["Degree",0.0174532925199433]],PROJECTION["Transverse_Mercator"],PARAMETER

["False_Easting",500000.0],PARAMETER["False_Northing",0.0],PARAMETER

["Central_Meridian",-81.0],PARAMETER["Scale_Factor",0.9996],PARAMETER

["Latitude_Of_Origin",0.0],UNIT["Meter",1.0],AUTHORITY["EPSG",26917]]

REFERENCE SYSTEM IDENTIFIER

* VALUE 26917

* CODESPACE EPSG

* VERSION 6.13(3.0.1)

[Hide Spatial Reference ▲](#)**Spatial Data Properties ►**

GEORECTIFIED GRID ►

* NUMBER OF DIMENSIONS 2

AXIS DIMENSIONS PROPERTIES

DIMENSION TYPE column (x-axis)

* DIMENSION SIZE 86919

* RESOLUTION 5.000000 m (meter)

AXIS DIMENSIONS PROPERTIES

DIMENSION TYPE row (y-axis)

* DIMENSION SIZE 77832

* RESOLUTION 5.000000 m (meter)

* CELL GEOMETRY area

* POINT IN PIXEL center

* TRANSFORMATION PARAMETERS ARE AVAILABLE Yes

* CHECK POINTS ARE AVAILABLE No

CORNER POINTS

* POINT 351787.896372 4115387.003841

* POINT 351787.896372 4504547.003841

* POINT 786382.896372 4504547.003841

* POINT 786382.896372 4115387.003841

* CENTER POINT 569085.396372 4309967.003841

[Hide Georectified Grid ▲](#)

ARCGIS RASTER PROPERTIES ►

GENERAL INFORMATION

* PIXEL DEPTH 4
 * COMPRESSION TYPE PACKBITS
 * NUMBER OF BANDS 1
 * RASTER FORMAT TIFF
 * SOURCE TYPE continuous
 * PIXEL TYPE unsigned integer
 * NO DATA VALUE 0
 * HAS COLORMAP No
 * HAS PYRAMIDS Yes

[Hide ArcGIS Raster Properties ▲](#)

[Hide Spatial Data Properties ▲](#)

Spatial Data Content ►

IMAGE DESCRIPTION

* TYPE OF INFORMATION image

BAND INFORMATION

* DESCRIPTION Layer_1
 * MAXIMUM VALUE 6.000000
 * MINIMUM VALUE 1.000000
 * NUMBER OF BITS PER VALUE 4

[Hide Spatial Data Content ▲](#)

Geoprocessing history ►

PROCESS

PROCESS NAME

DATE 2020-01-08 22:38:58

TOOL LOCATION c:\program files\arcgis\pro\Resources\ArcToolbox\toolboxes\Data Management Tools.tbx\Copy

COMMAND ISSUED

Copy D:\Aaron_final_2016_classification\state_merge\lc_2016_statewide_5m.tif
 C:\temp\WV_lulc_2016_12-11-19\for-delivery\lc_2016_statewide_5m.tif "Raster
 Dataset" #

INCLUDE IN LINEAGE WHEN EXPORTING METADATA No

PROCESS

PROCESS NAME

DATE 2020-01-08 22:40:28

TOOL LOCATION c:\program files\arcgis\pro\Resources\ArcToolbox\toolboxes\Data Management Tools.tbx\Rename

COMMAND ISSUED

Rename C:\temp\WV_lulc_2016_12-11-19\for-delivery\lc_2016_statewide_5m.tif
 C:\temp\WV_lulc_2016_12-11-19\for-delivery\WV_Spectral_classes_NAIP_2016.tif
 RasterDataset

INCLUDE IN LINEAGE WHEN EXPORTING METADATA No

[Hide Geoprocessing history ▲](#)

Distribution ►

DISTRIBUTION FORMAT

* NAME Raster Dataset

[Hide Distribution ▲](#)

Fields ►

DETAILS FOR OBJECT [WV_Spectral_classes_NAIP_2016.tif.vat](#) ►

* TYPE Table

* ROW COUNT 6

FIELD [OID](#) ►

* ALIAS OID

* DATA TYPE OID

* WIDTH 4

* PRECISION 0

* SCALE 0

* FIELD DESCRIPTION

Internal feature number.

* DESCRIPTION SOURCE

Esri

* DESCRIPTION OF VALUES

Sequential unique whole numbers that are automatically generated.

[Hide Field OID ▲](#)

FIELD [Value](#) ►

* ALIAS Value

* DATA TYPE Integer

* WIDTH 10

* PRECISION 10

* SCALE 0

[Hide Field Value ▲](#)

FIELD [Count](#) ►

* ALIAS Count

* DATA TYPE Double

* WIDTH 19

* PRECISION 0

* SCALE 0

[Hide Field Count ▲](#)

[Hide Details for object WV_Spectral_classes_NAIP_2016.tif.vat ▲](#)

[Hide Fields ▲](#)

Metadata Details ►

- * METADATA LANGUAGE English (UNITED STATES)
- * METADATA CHARACTER SET utf8 - 8 bit UCS Transfer Format

SCOPE OF THE DATA DESCRIBED BY THE METADATA * dataset
 SCOPE NAME * dataset

* LAST UPDATE 2020-01-15

ARCGIS METADATA PROPERTIES

METADATA FORMAT ArcGIS 1.0
 STANDARD OR PROFILE USED TO EDIT METADATA FGDC

CREATED IN ARCGIS FOR THE ITEM 2020-01-08 22:38:58
 LAST MODIFIED IN ARCGIS FOR THE ITEM 2020-01-15 12:56:43

AUTOMATIC UPDATES

HAVE BEEN PERFORMED Yes
 LAST UPDATE 2020-01-15 12:45:04

ITEM LOCATION HISTORY

ITEM COPIED OR MOVED 2020-01-08 22:38:58
 FROM D:\Aaron_final_2016_classification\state_merge\lc_2016_statewide_5m.tif
 TO \\AGRRES184213\C\$\temp\WV_lulc_2016_12-11-19\for-delivery\lc_2016_statewide_5m.tif

[Hide Metadata Details ▲](#)

Thumbnail and Enclosures ►

THUMBNAIL
 THUMBNAIL TYPE JPG

[Hide Thumbnail and Enclosures ▲](#)

FGDC Metadata (read-only) ▼