

USDA CropScape Data Resources

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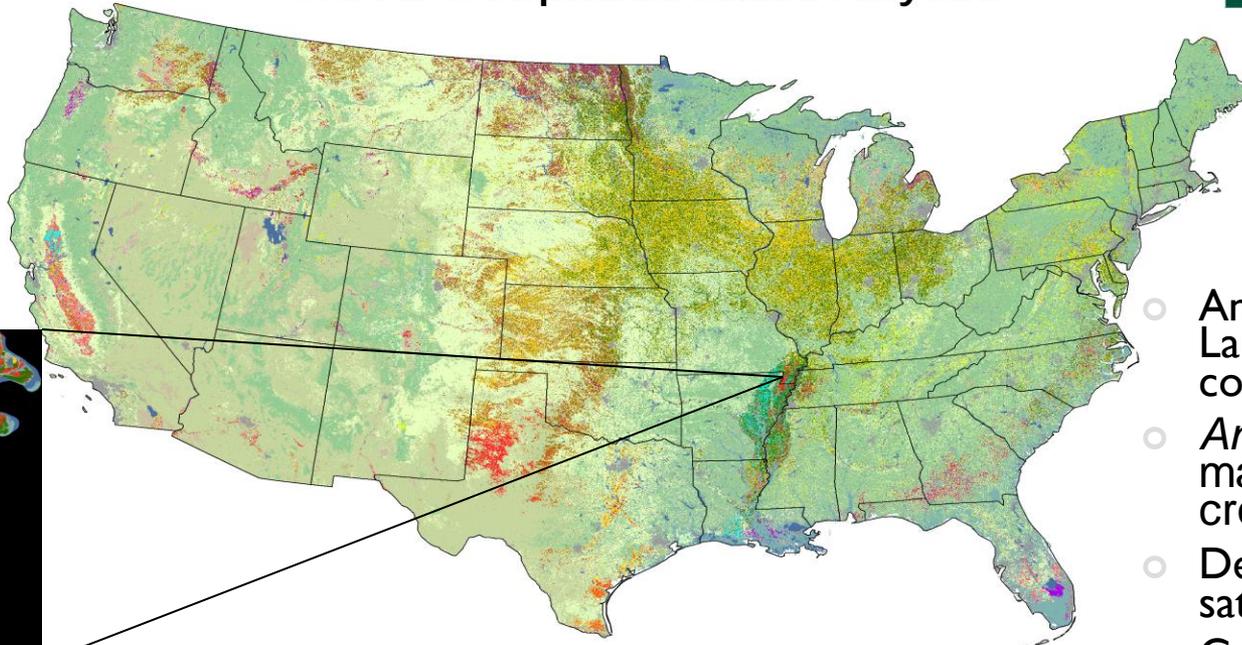
What Is CropScape?

- An online GIS application for agricultural geospatial data visualization, analytics and dissemination
- Serves the NASS Cropland Data Layers (CDL), CropMask, and Crop Planting Frequency Data Layers (Crop-Specific)
- Web based interactive maps to provide capabilities of on-line geospatial crop information access, geospatial query, retrieval and analytics
- OGC standards-compliant geospatial web services for disseminating all data to the decision makers and users via real time retrieval, processing and publishing over the web
- <http://www.nassgeodata.gmu/CropScape>

WHAT ARE THE CROPLAND DATA LAYERS?



2010 Cropland Data Layers



- Annual geospatial Land cover(CONUS)
- *Annually* cover major program crops and regions
- Derived from satellite images
- Geo-referenced
- Raster formatted
- Thematic maps
- Provide timely, accurate, useful estimates

Major Land Cover Categories

Agriculture

- Pasture/Grass
- Corn
- Soybeans
- All Wheat
- Other Hay

- Fallow/Idle Cropland
- Alfalfa
- Cotton
- Other Crops
- Vegetables/Fruits/Nuts

- Sorghum
- Other Small Grains
- Rice

Non-Agriculture

- Woodland
- Shrubland
- Urban/Developed
- Wetlands
- Water

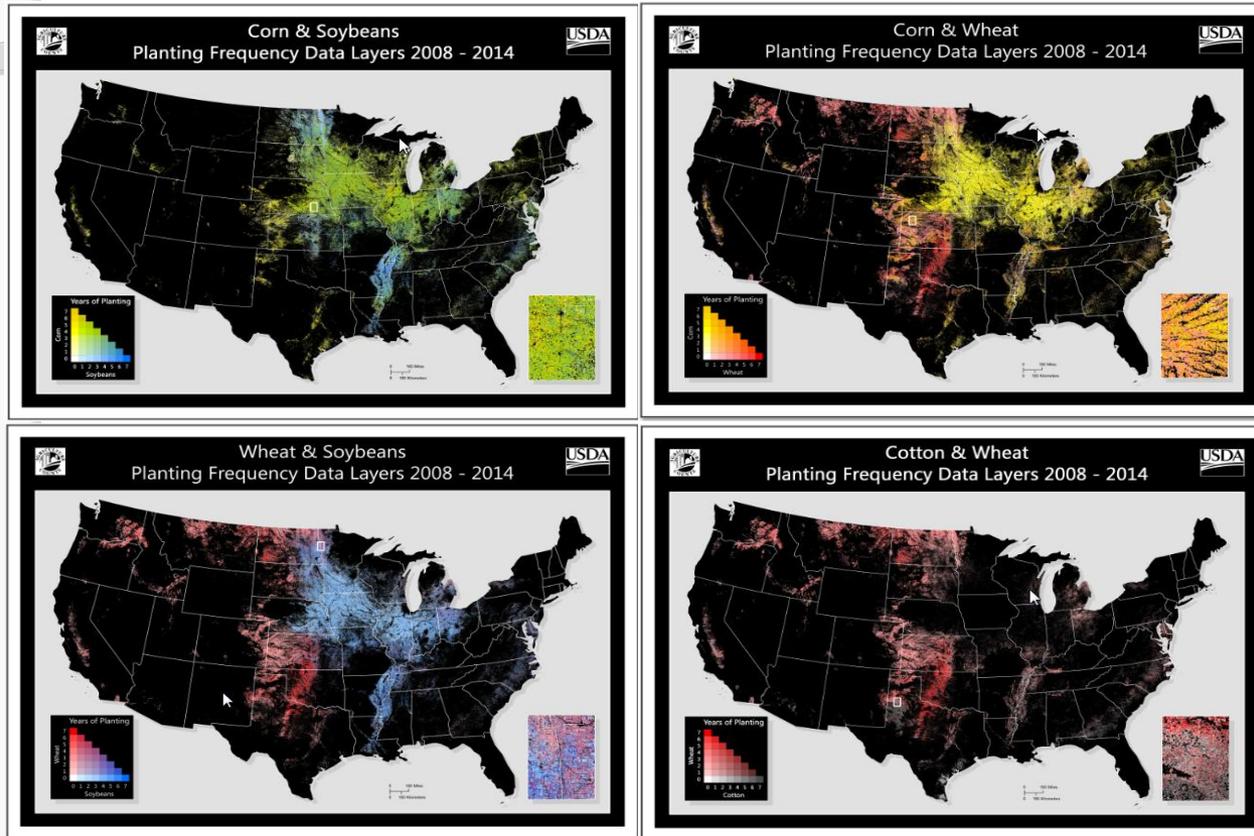
- Barren
- Perennial Ice/Snow



www.nassgeodata.gmu/CropScope

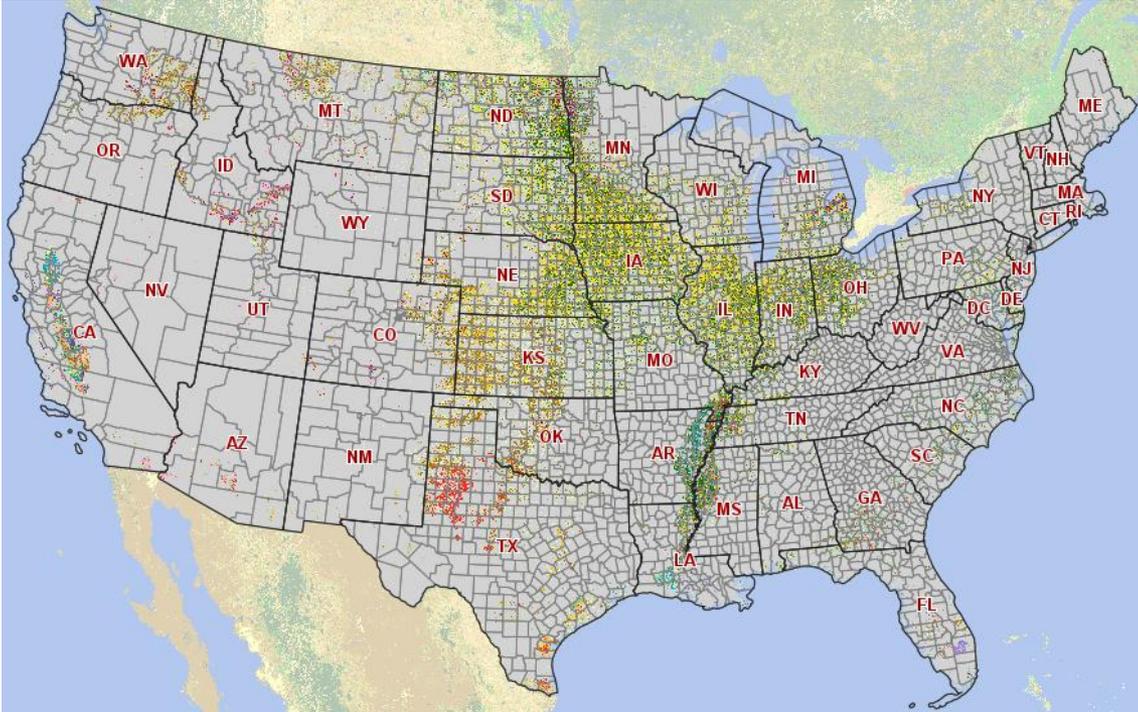


Crop Planting Frequency Data Layers



- Derived from CDL
- Crop specific, 30m resolution, geo-referenced
- computed from 2008-2014 CDLs.

CropMask



- A CDL derivative product
- A map of national cultivated crop land cover.
- 30m resolution, geo-referenced

CropScape Browser Based Client - User Interface

The screenshot shows the CropScape browser-based client user interface. The interface is displayed in a Mozilla Firefox browser window. The main content area shows a map of the United States with various crop layers overlaid. A 'Define Area of Interest' dialog box is open, allowing users to select a state (Iowa), an ASD (Dialog), or a county (Calhoun). The interface includes a toolbar, a legend, a layer control panel, and an overview map. Navigation links for Help, FAQ, and Demo are visible.

Toolbar

Location

Help

FAQ

Map View

Dialog

Legend

Layer Control

Overview

Demo

Define Area of Interest By State/ASD/County

Select a State

State: Iowa

Select an ASD

ASD: Dialog

Or Select a County

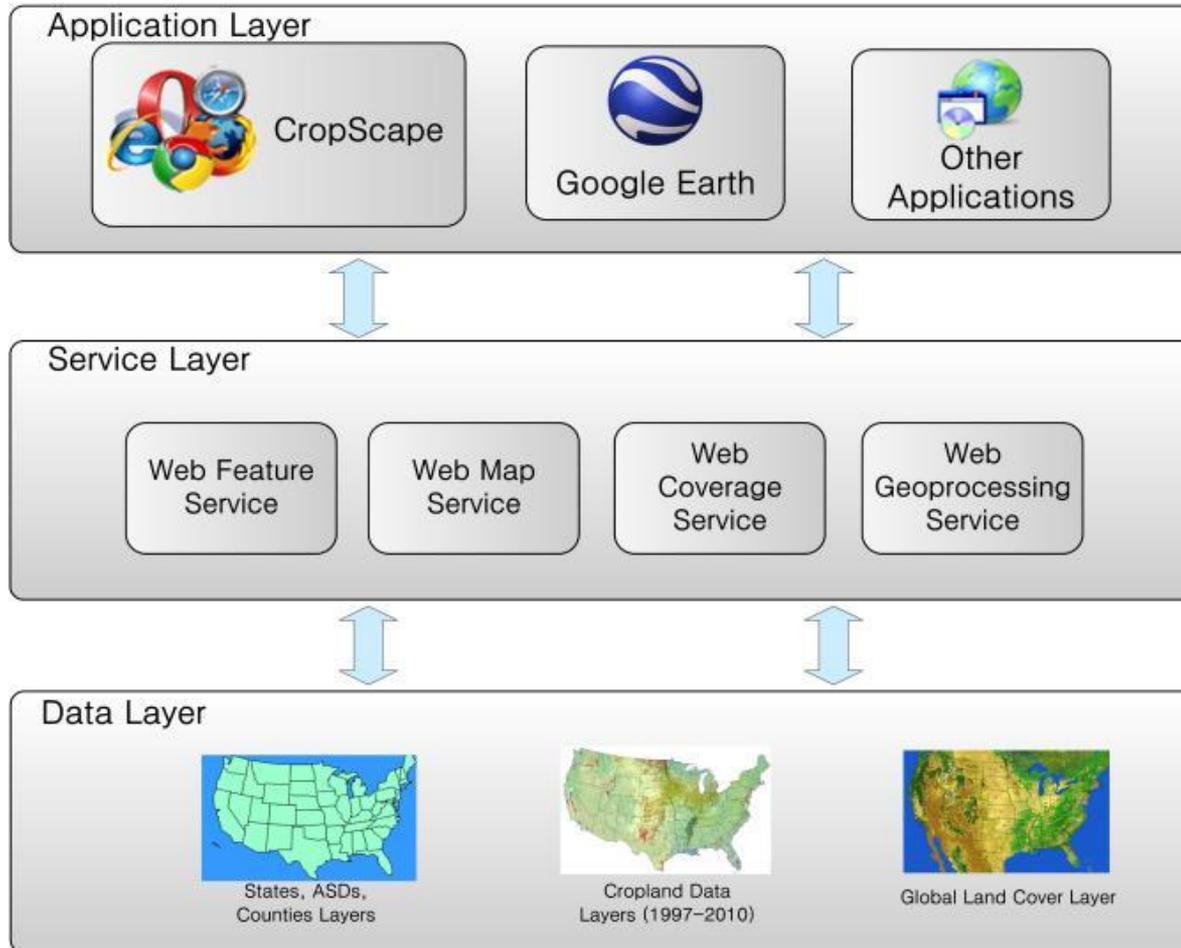
County: Calhoun

Reset Submit Cancel

Done

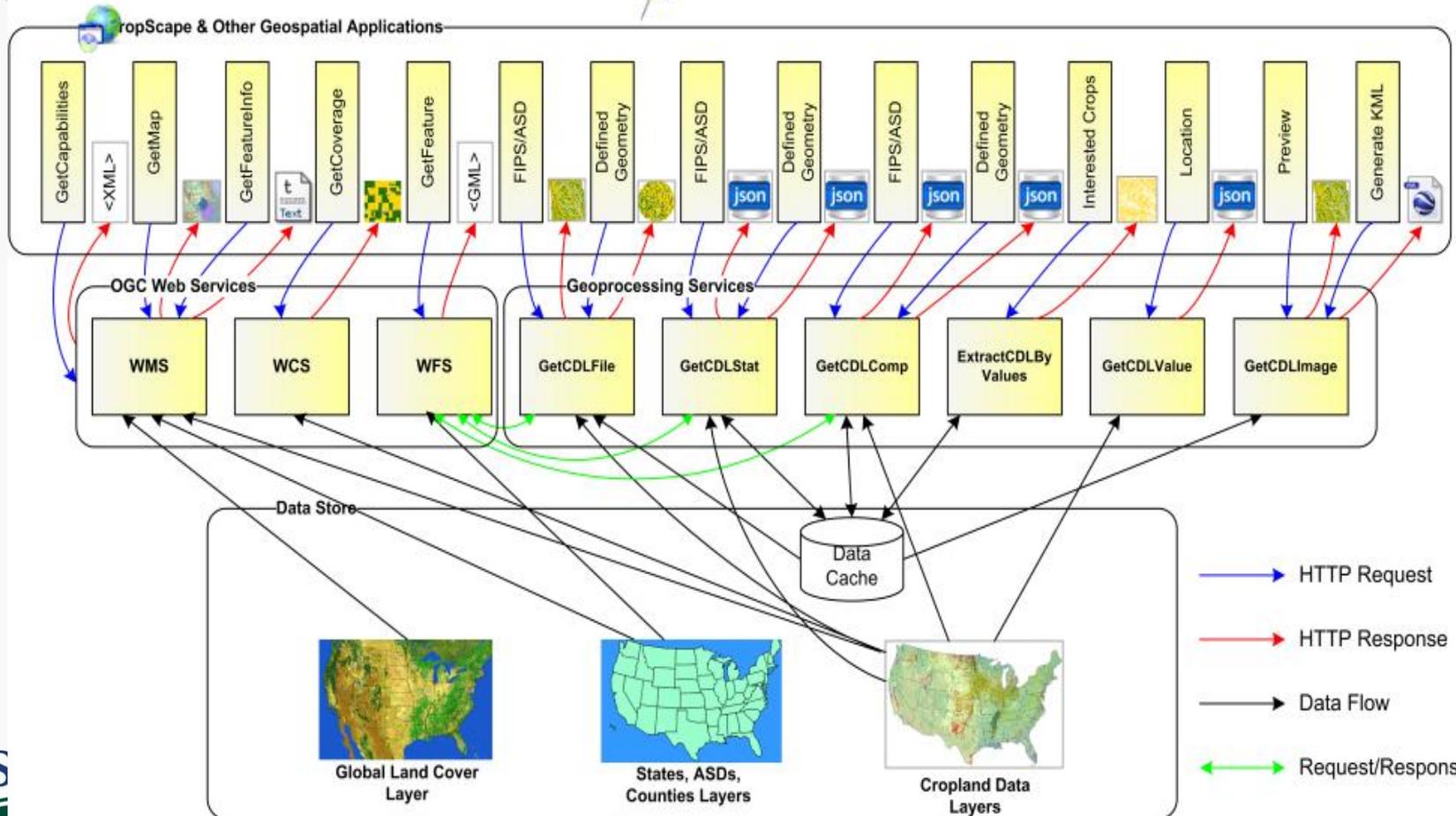
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Service Oriented Architecture



- Open Architecture
- Comprehensive Standard API
- Accessible through HTTP
- Scalable, Robust, and Reusable
- Implement standard web services and geoprocessing web services
- Raster data
- Vector data
- Attribute Data

Functional Diagram Blocks Implemented in Web Services



CropScape Tools

- Zoom in
- Zoom out
- Pan
- Drag zoom
- Home
- Refresh
- Previous View
- Next view
- Save view
- Query pixel value
- Find location
- Define state/county AOI
- Define rectangle AOI
- Import AOI
- Clear AOI
- Statistics analysis
- Change analysis
- Swipe layers
- Create PDF map
- Download Data



Select an Area of Interest (AOI)

Define Area of Interest By State/ASD/County

Select a State
State: Iowa

Select an ASD
ASD: Select an ASD...

Or Select a County
County: Select a county...

Reset Submit Cancel

State

Define Area of Interest By State/ASD/County

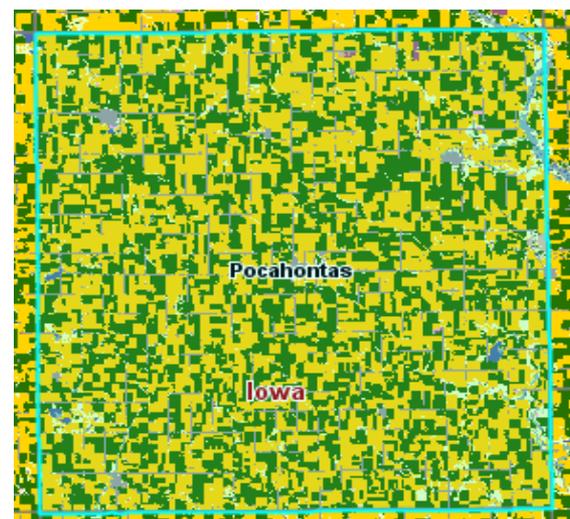
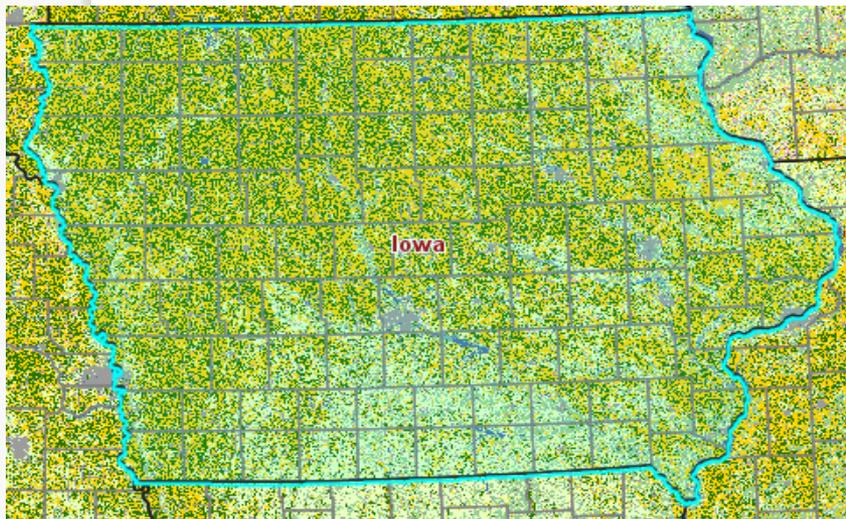
Select a State
State: Iowa

Select an ASD
ASD: Select an ASD...

Or Select a County
County: Pocahontas

Reset Submit Cancel

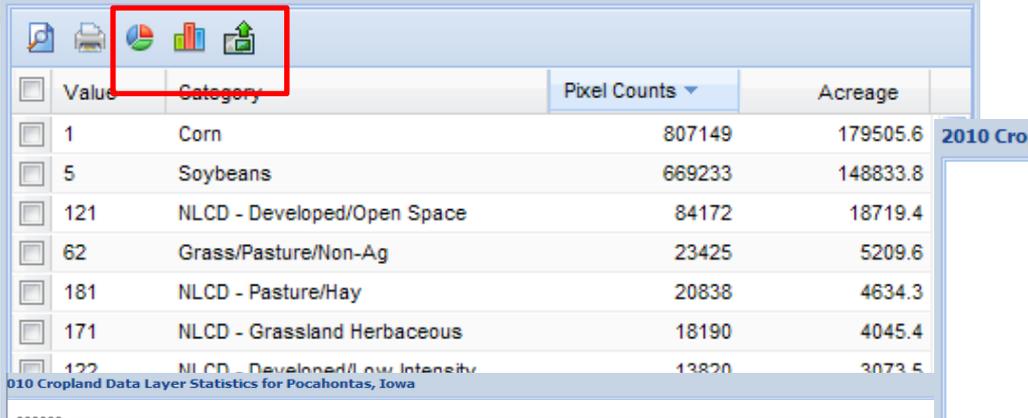
County



CropScape Statistics

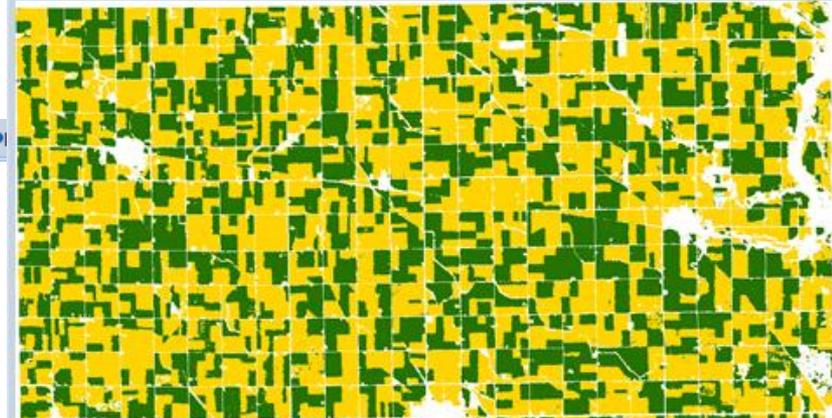
Pie/Histogram/Graphic

2010 Cropland Data Layer Statistics for Pocahontas, Iowa



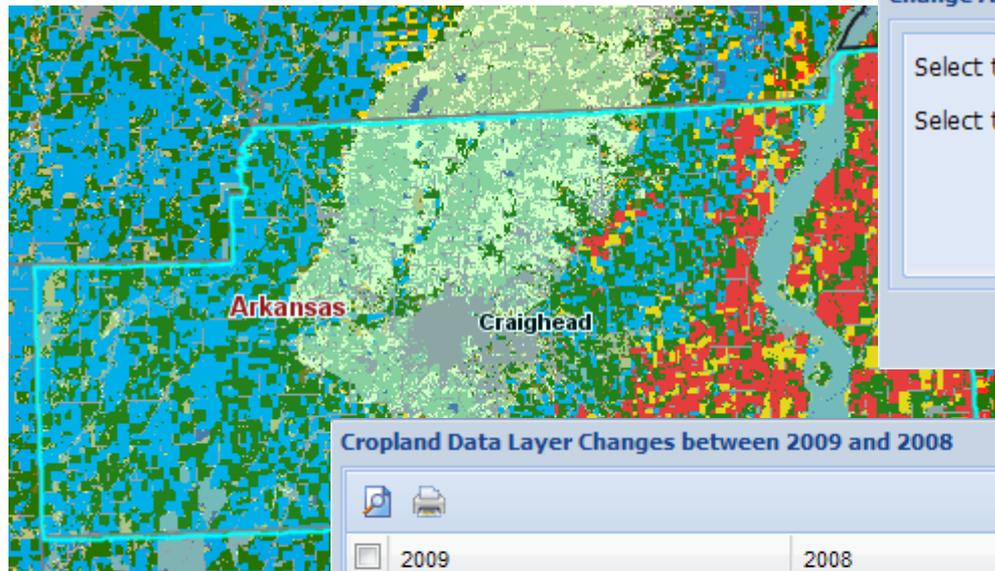
| Value | Category | Pixel Counts | Acreage |
|-------|--------------------------------|--------------|----------|
| 1 | Corn | 807149 | 179505.6 |
| 5 | Soybeans | 669233 | 148833.8 |
| 121 | NLCD - Developed/Open Space | 84172 | 18719.4 |
| 62 | Grass/Pasture/Non-Ag | 23425 | 5209.6 |
| 181 | NLCD - Pasture/Hay | 20838 | 4634.3 |
| 171 | NLCD - Grassland Herbaceous | 18190 | 4045.4 |
| 122 | NLCD - Developed/Low Intensity | 13820 | 3073.5 |

Data Preview of Corn, Soybeans



Pixel counting is usually downward biased when compared to official estimates. Counting pixels and multiplying by the area of each pixel will result in biased area estimates and should be considered raw numbers needing bias correction. Official crop acreage estimates at the state and county level are available at <http://www.nass.usda.gov/>.

CropScape Change Analysis



Change Analysis X

Select the Reference Year: ▾

Select the Other Year: ▾

Cropland Data Layer Changes between 2009 and 2008

| <input type="checkbox"/> | 2009 | 2008 | Pixel Counts ▾ | Acreage |
|--------------------------|-----------------------------|-----------------------------|----------------|-----------------|
| <input type="checkbox"/> | Rice | Soybeans | 133502 | 103453.6 |
| <input type="checkbox"/> | Soybeans | Rice | 129916 | 100674.7 |
| <input type="checkbox"/> | Cotton | Cotton | 120872 | 93666.3 |
| <input type="checkbox"/> | Soybeans | Soybeans | 106428 | 82473.4 |
| <input type="checkbox"/> | NLCD - Developed/Open Space | NLCD - Developed/Open Space | 85414 | 66189.2 |
| <input type="checkbox"/> | NLCD - Woody Wetlands | NLCD - Woody Wetlands | 83660 | 64830 |
| <input type="checkbox"/> | NLCD - Deciduous Forest | NLCD - Deciduous Forest | 73312 | 56811.1 |
| <input type="checkbox"/> | Other Hays | Other Hays | 61496 | 47654.6 |
| <input type="checkbox"/> | Rice | Rice | 39116 | 30311.8 |
| | | | 1177212 | 912239.6 |

CropScape Download & Export

CDL Downloading - Please specify your choice(s)

Select Year(s)

Year: 2010 2009 2008 2007
 2006 2005 2004 2003
 2002 2001 2000 1999
 1998 1997

Specify Projection

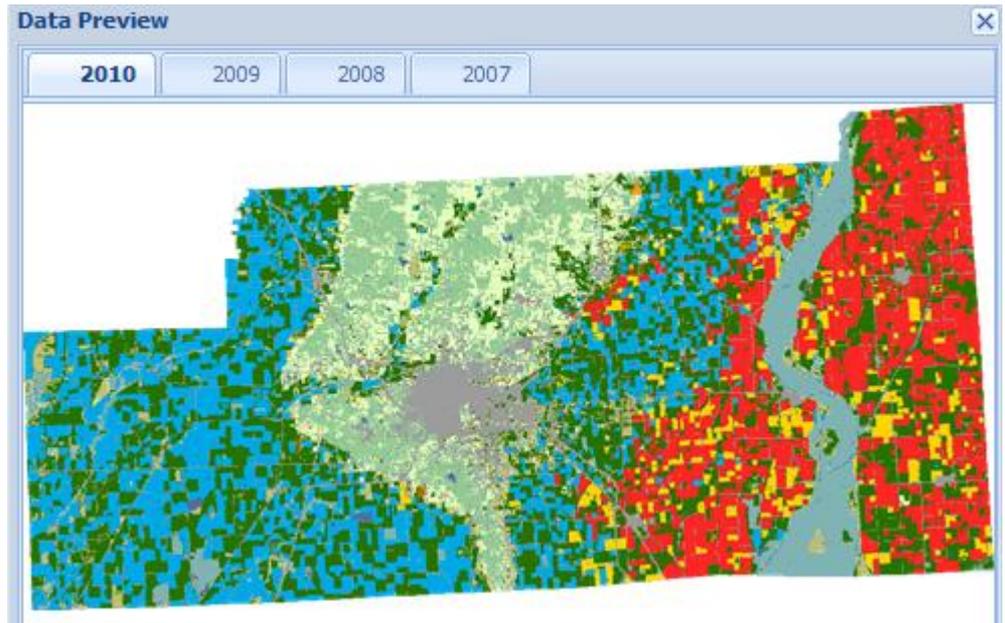
Projection: USA Contiguous Albers Equal Area Conic USG
USA Contiguous Albers Equal Area Conic USGS
Degrees Lat/Lon, WGS84 Datum
UTM Zone 15
UTM Zone 16
UTM Zone 14

Download Files from Server

http://129.174.131.228/nass_data_cache/polygonclip_201101180/

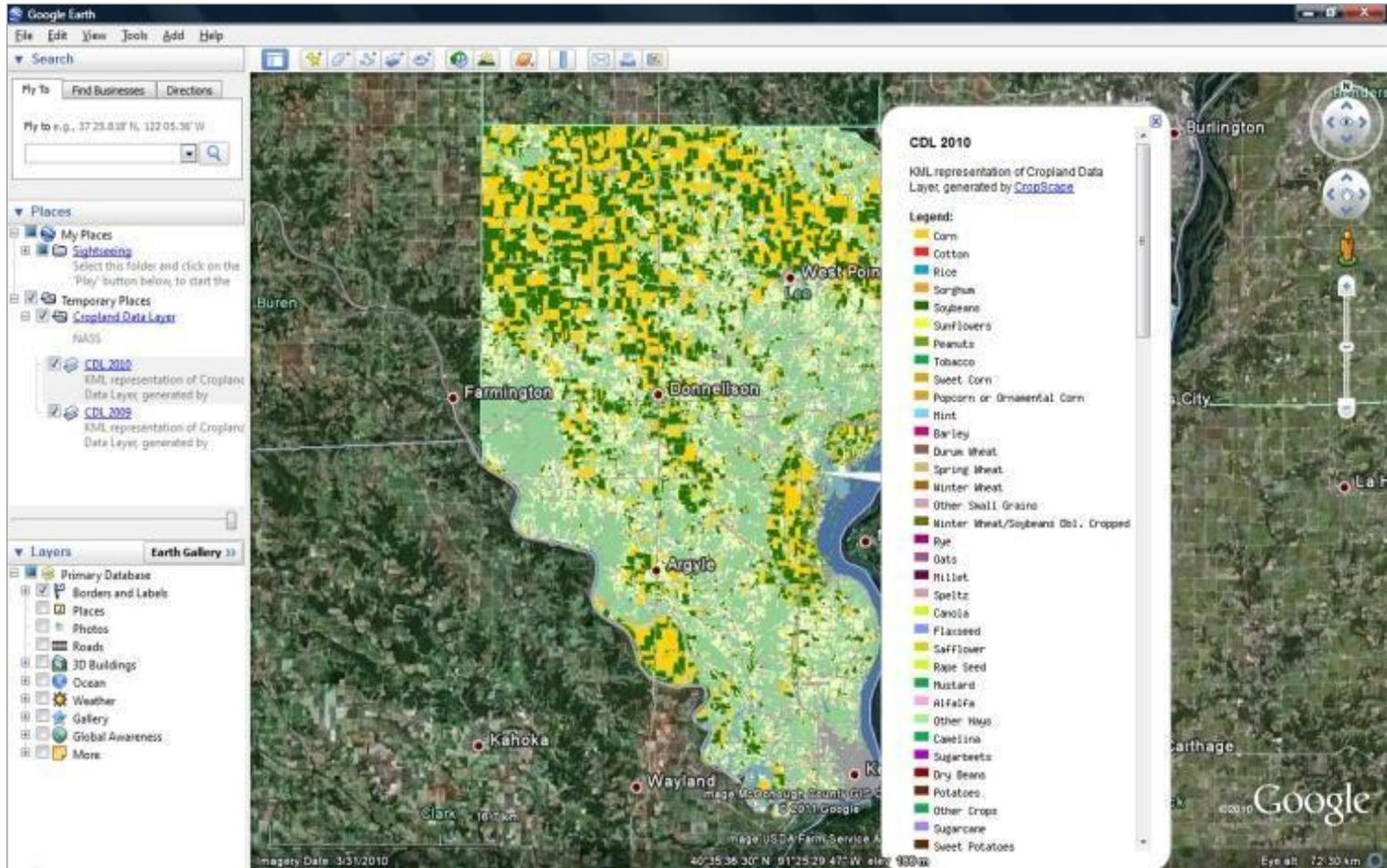
Download Preview Export as KML

Preview and Download

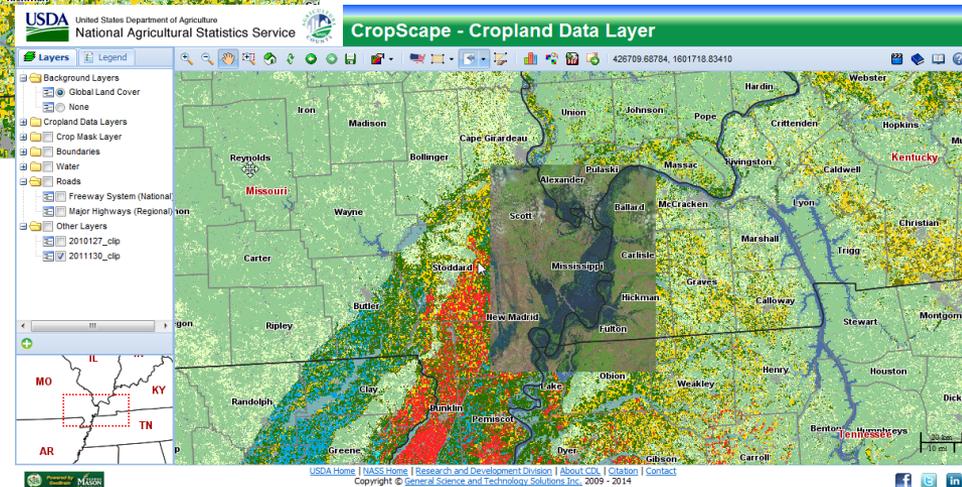
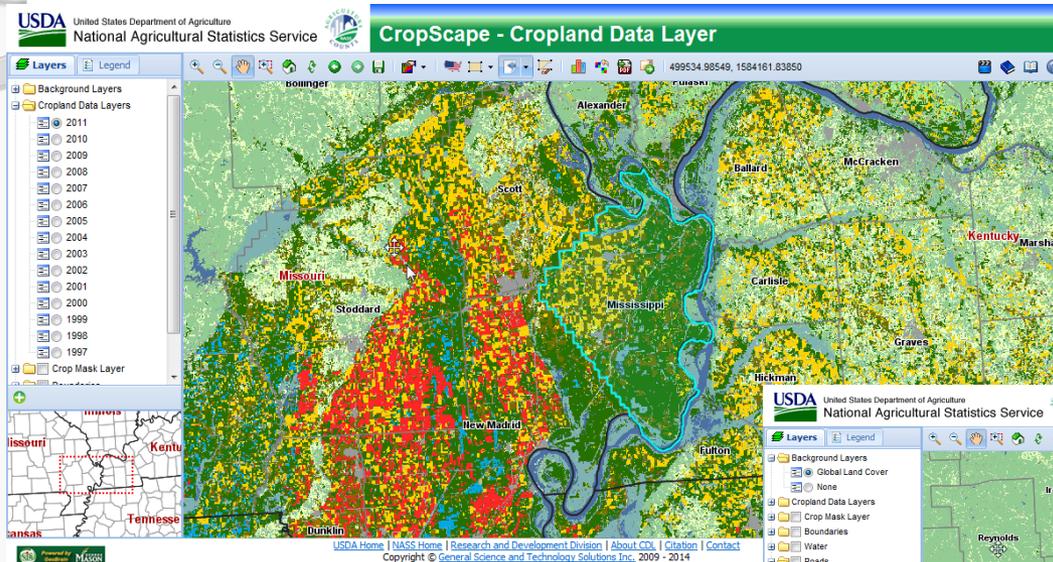


Specify Years and Projection

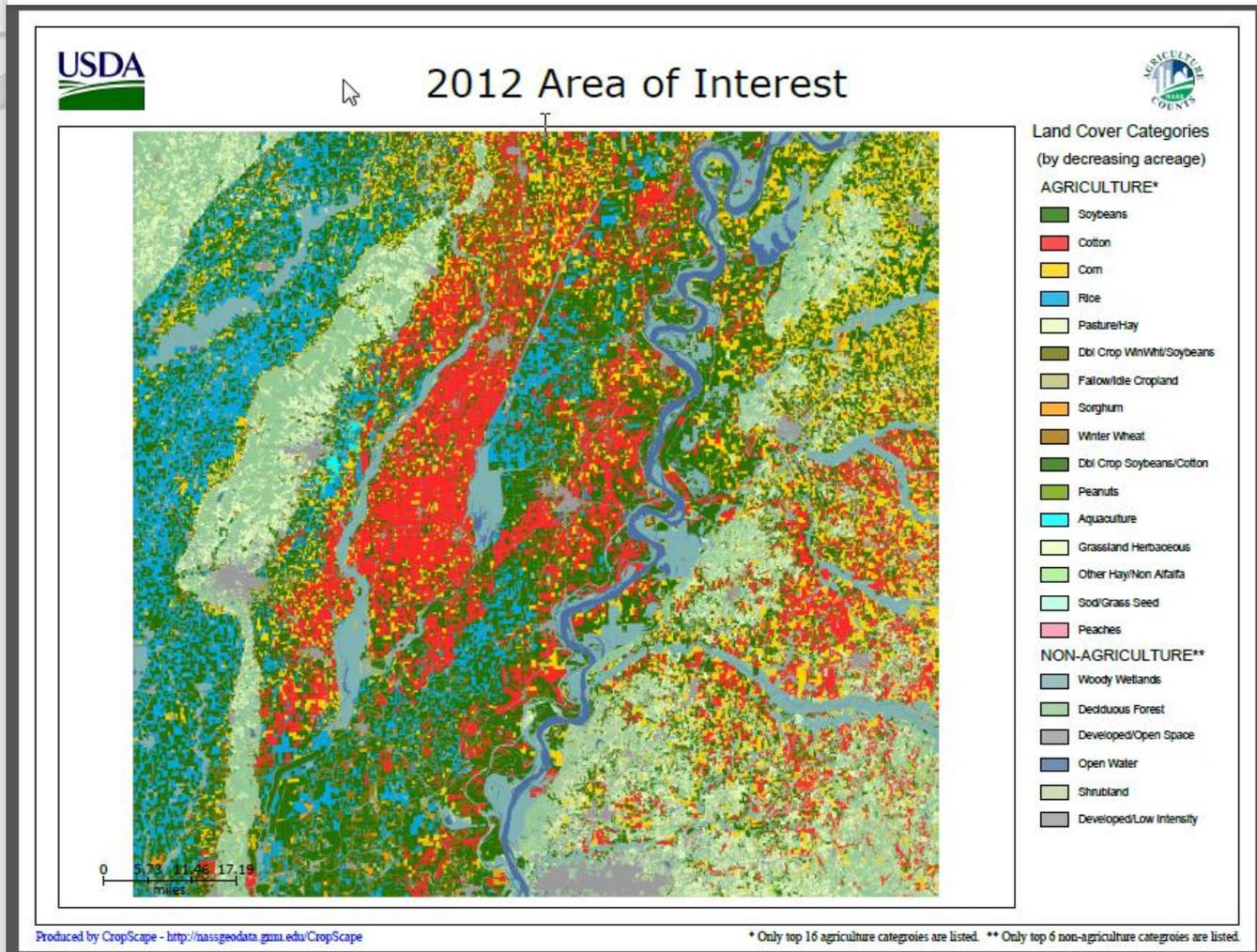
Export CDL Area of Interest to Google Earth



Import Area of Interest Boundary and Customer Data Layer



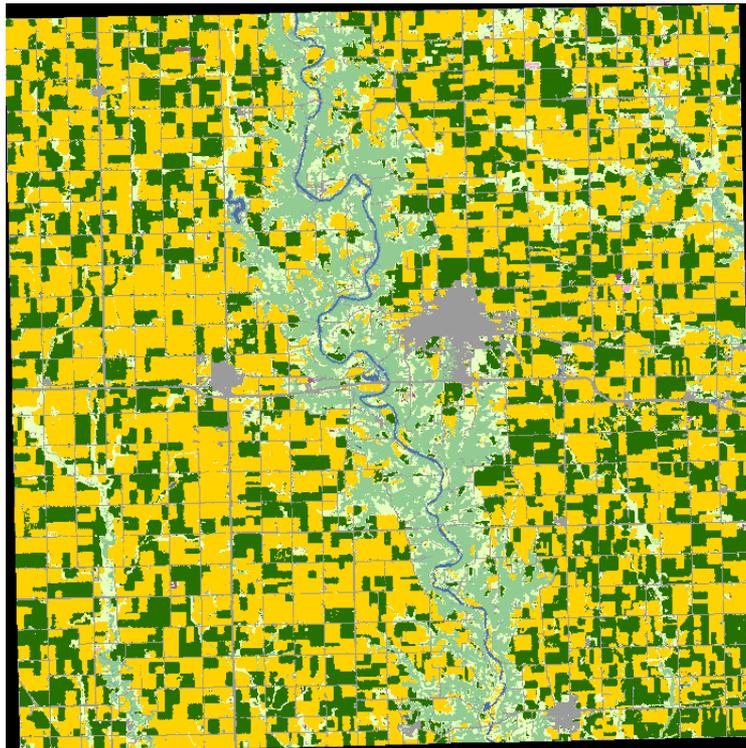
Automatically Created On-the-Fly Map in PDF



CROPSCAPE WEB SERVICE EXAMPLES

a) <http://nassgeodata.gmu.edu/CropScape/GetCDL?year=2009&fips=19015>
(Get CDL County data)

a) <http://nassgeodata.gmu.edu/CropScape/GetCDLStatData?year=2009&fips=19015> (Get CDL County Statistics Data)



a)

| Value Category | Acreage |
|---------------------------------------|----------|
| 1 Corn | 156661.3 |
| 5 Soybeans | 100869.2 |
| 12 Sweet Corn | 1.5 |
| 24 Winter Wheat | 13.2 |
| 28 Oats | 389.8 |
| 36 Alfalfa | 327.8 |
| 37 Other Hays | 486.7 |
| 59 Seed/Sod Grass | 2.3 |
| 61 Fallow/Idle Cropland | 0.8 |
| 62 Grass/Pasture/Non-Ag | 3313.6 |
| 63 Woodland | 13.9 |
| 87 Wetlands | 41.8 |
| 111 NLCD - Open Water | 2064.4 |
| 121 NCLD - Developed/Open Space | 29350.2 |
| 122 NCLD - Developed/Low Intensity | 3873.8 |
| 123 NCLD - Developed/Medium Intensity | 708.3 |
| 124 NCLD - Developed/High Intensity | 206.1 |
| 131 NLCD - Barren | 93.0 |
| 141 NLCD - Deciduous Forest | 34563.8 |
| 142 NLCD - Evergreen Forest | 7.0 |
| 143 NLCD - Mixed Forest | 0.8 |
| 152 NLCD - Shrubland | 19.4 |
| 171 NLCD - Grassland Herbaceous | 10842.7 |
| 181 NLCD - Pasture/Hay | 21097.2 |
| 190 NLCD - Woody Wetlands | 1896.2 |
| 195 NLCD - Herbaceous Wetlands | 285.9 |

b)

CropScape Usage Statistics

(From July 1, 2014 to Oct. 14, 2015)

- Total Visits: 55,188
 - 59.1% New Visitor, 40.1% Returning Visitor
- Total users visited: 33,492 (92% from US)
- Total user countries: 113

CropScape – An Award Winning Application

- CropScape won 2014 URISA Exemplary Systems in Government (ESIG™) Award
- CropScape Application & CDL won 2011 USDA Secretary's honor awards.
- CropScape was listed as only USDA achievement in “highlights of Agency Open Government IT Accomplishments that improve citizen engagement” in the FY 2011 Report to Congress on the Implementation of The E-Government Act of 2002 (U. S. Office of Management and Budget, 2012).

Publications

- W. Han, Z. Yang, L. Di, B. Zhang, C. Peng, “ Enhancing Agricultural Geospatial Data Dissemination and Applications Using Geospatial Web Services,” *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 05/2014; 11(7).
- W. Han, Z. Yang and L. Di, “A Web Geoprocessing Service Approach for Generating On-demand Thematic Map”, *Trans of American Society of Agricultural and Biological Engineers (ASABE)*, 02/2014; 57(1):239-247.
- W. Han, Z. Yang, L. Di, A. L. Yagci, “CropScape: Making Cropland Data Layer data accessible and actionable in GIS education,” *Journal of Geography*, 01/2014.
- W. Han, Z. Yang, L. Di, R. Mueller, “CropScape: A Webservice based application for exploring and disseminating US conterminous geospatial cropland data products for decision support,” *Computers and Electronics in Agriculture*, Volume 84, June 2012, Pages 111–123



Question?

THANK YOU!

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<http://www.nassgeodata.gmu/CropScape>

