



Multi-Resolution Land Characterization Consortium (MRLC) Products

Collin Homer
USGS EROS

Outline

- **MRLC Background**
- **MRLC Products**
 - **Landsat Imagery**
 - **NLCD 2001**
 - **NLCD Change Product**
- **Future Plans**

Multi-Resolution Land Characteristics Consortium

MRLC Consortium



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Shortcuts

Download Data
Dynamic Download
NEW FTP Download

Order Imagery
MRLC 1992
MRLC 2001

Other Data Links
GloVis
Seamless Server

Other Sites
EROS Data Center
EPA Geospatial

Multi-Resolution Land Characteristics Consortium

The Multi-Resolution Land Characteristics (MRLC) Consortium is a group of federal agencies who first joined together in 1993 ([MRLC 1992](#)) to purchase Landsat 5 imagery for the conterminous U.S. and to develop a land cover dataset called the [National Land Cover Dataset \(NLCD 1992\)](#). In 1999, a second-generation MRLC consortium (see logos) was formed to purchase three dates of Landsat 7 imagery for the entire United States ([MRLC 2001](#)) and to coordinate the production of a comprehensive land cover database for the nation called the [National Land Cover Database \(NLCD 2001\)](#).

The MRLC consortium is specifically designed to meet the current needs of Federal agencies for nationally consistent satellite remote sensing and land-cover data. However, the consortium also provides imagery and land cover data as public domain information, all of which can be accessed through this website.

www.mrlc.gov

Contact Information

MRLC Project

Website Content

MRLC Related News

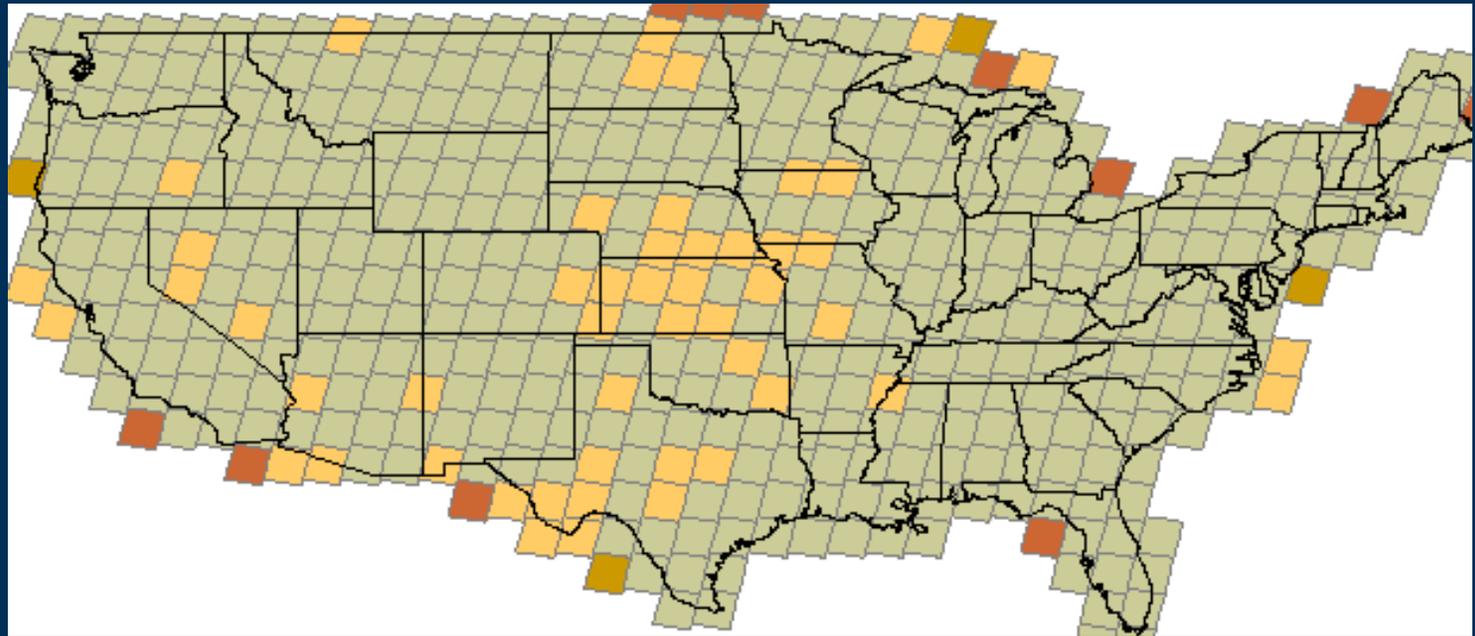
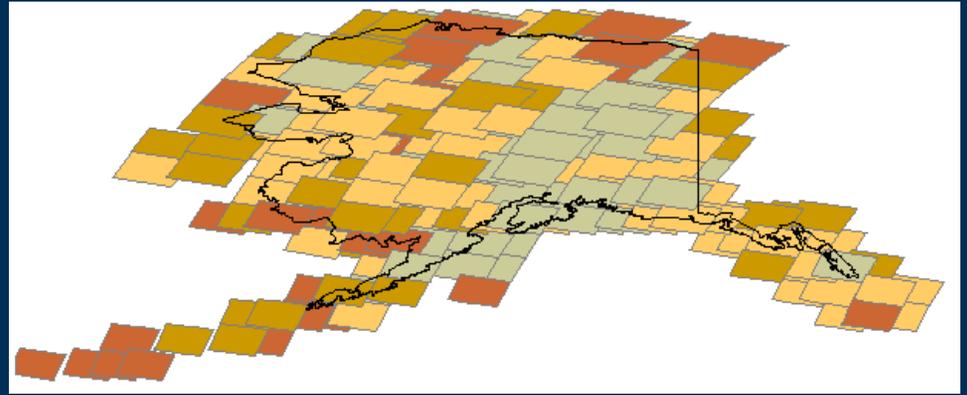
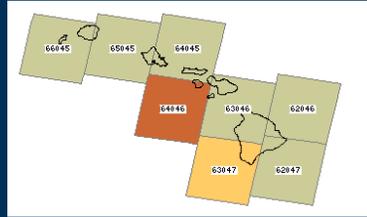
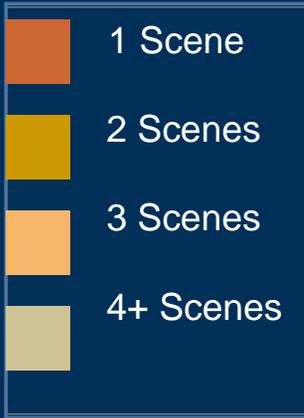
NLCD multizone downloads

NLCD Seamless Data Anomalies

- EPA 
- NOAA 
- USFS 
- USGS 
- LANDFIRE 
- BLM 
- USDA 
- HRCS 
- HPS 
- IIASA 
- USFWS 
- OSM 

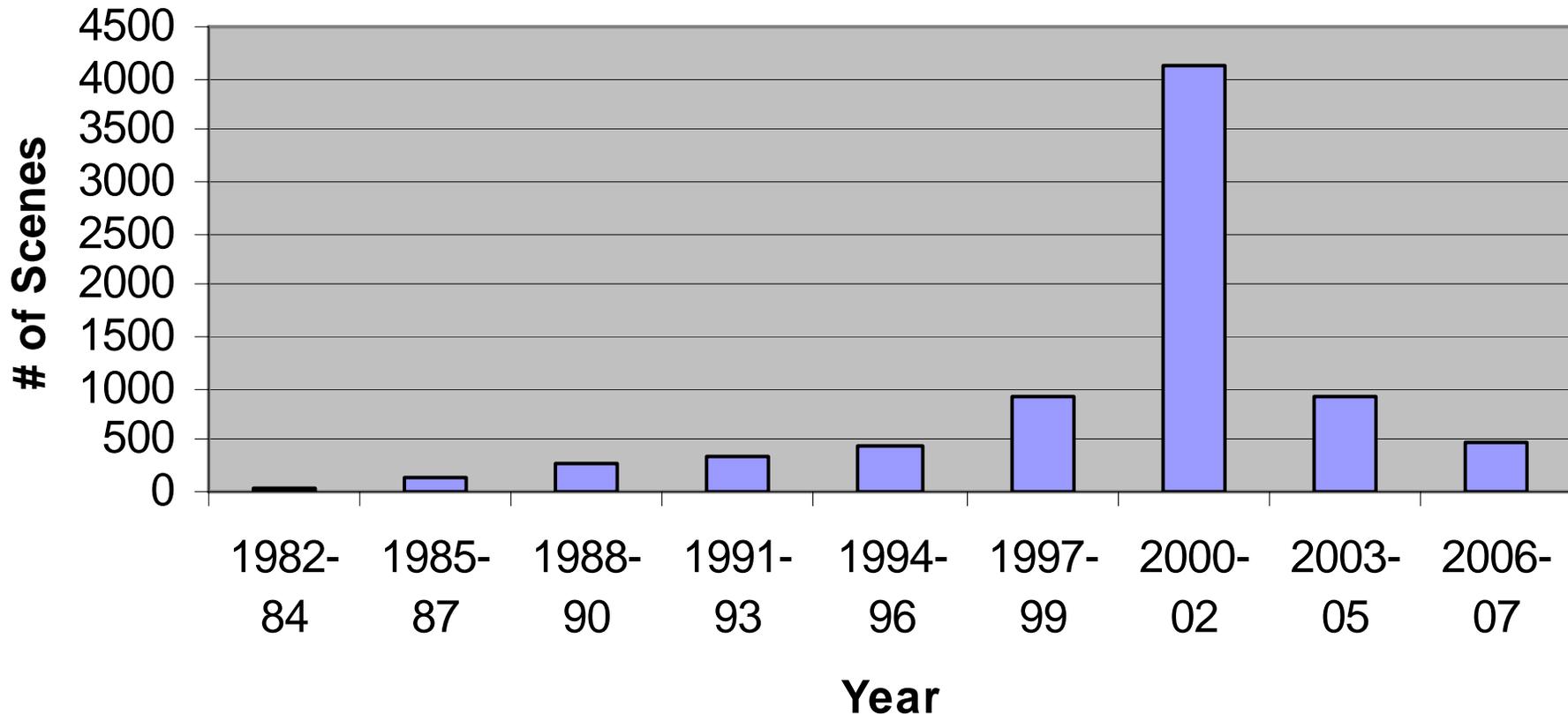
MRLC Terrain Corrected Imagery

Current total of 7,658 scenes



MRLC Imagery, by Year

March 1, 2007 (7,658 Scenes)



MRLC 2001 Database Modeling Layers

Imagery and Derivatives

Three dates per path/row:

Reflectance (bands 1-5 and 7)

Tasseled Cap (3 bands)

Thermal (1 band)

Date Index (1 band)

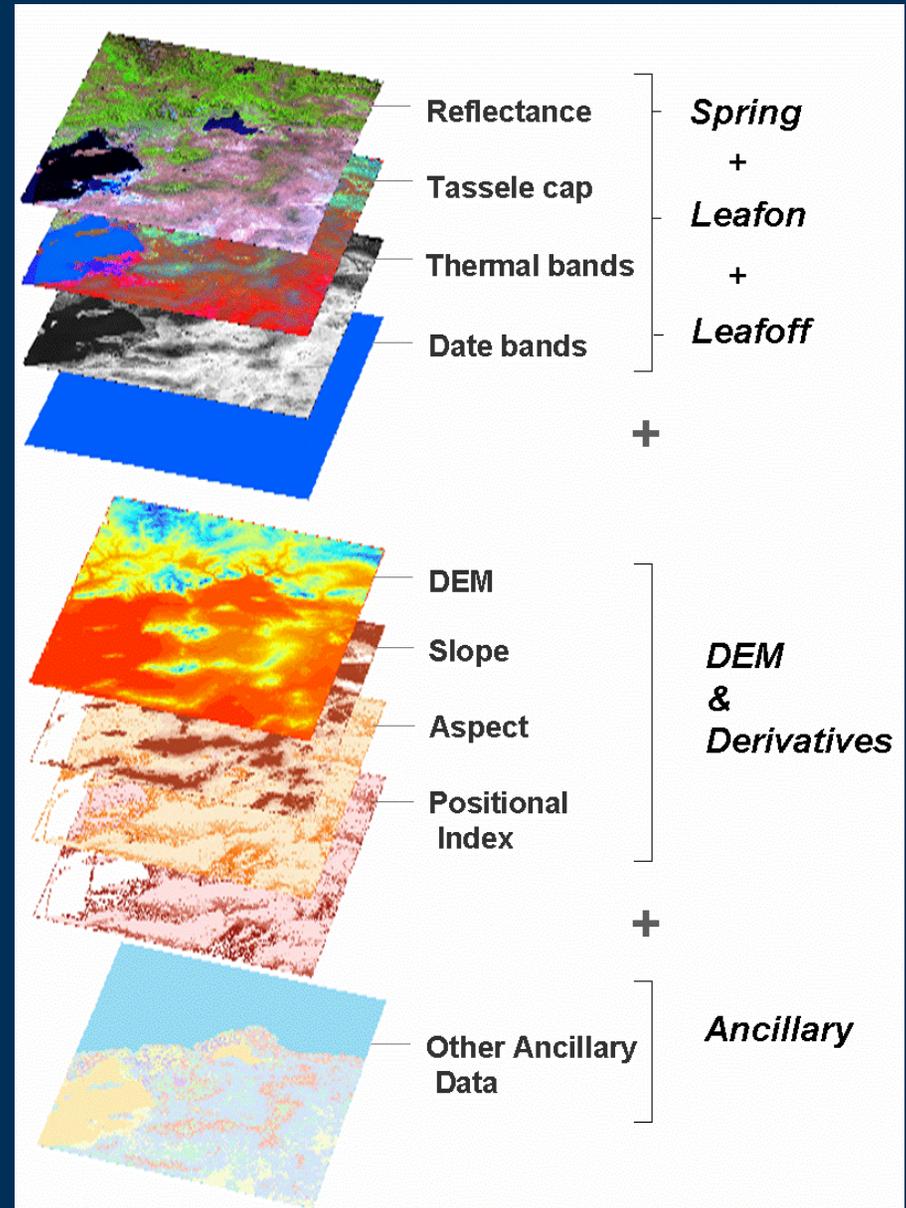
Topographic Derivatives

NED Digital Elevation Model

Slope

Aspect

Positional Index

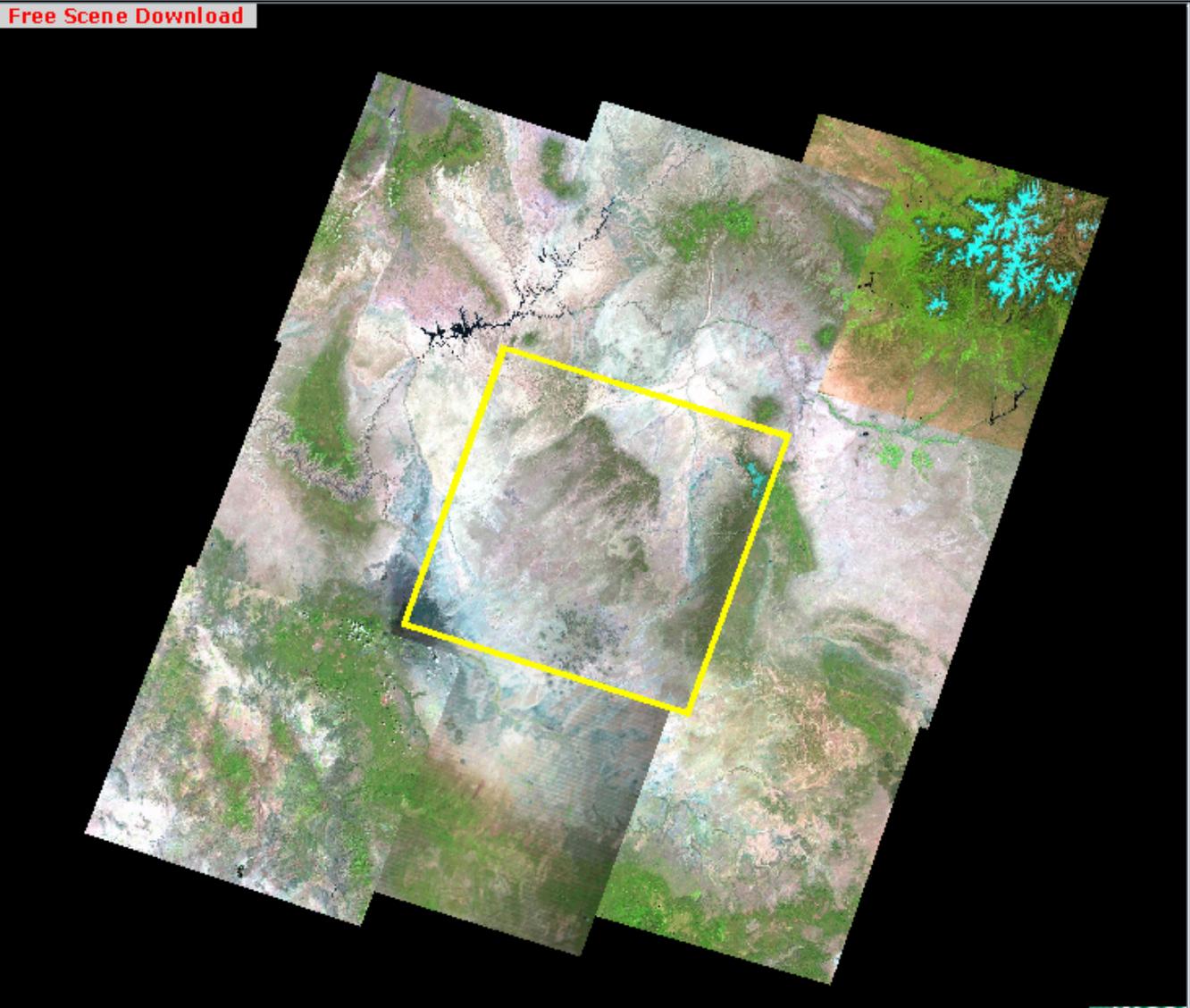


Available for download from <http://glovis.usgs.gov/>

USGS Global Visualization Viewer

Sensor Resolution Map Layers Tools File Help

Free Scene Download



WRS-2
Path /Row: 36 35 Go
Lat/Long: 36.0 -110.2 Go

Max Cloud: 100% [Left Arrow] [Up Arrow] [Down Arrow] [Right Arrow]

Scene Information:
ID: NZT070380350415200100
Cloud Cover: 0%
Date: 2001/4/15

Apr 2001 Go

Prev Scene Next Scene

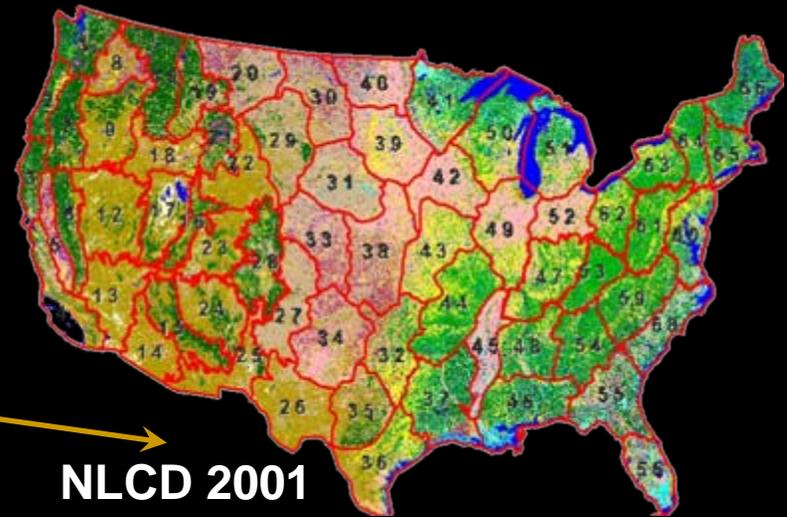
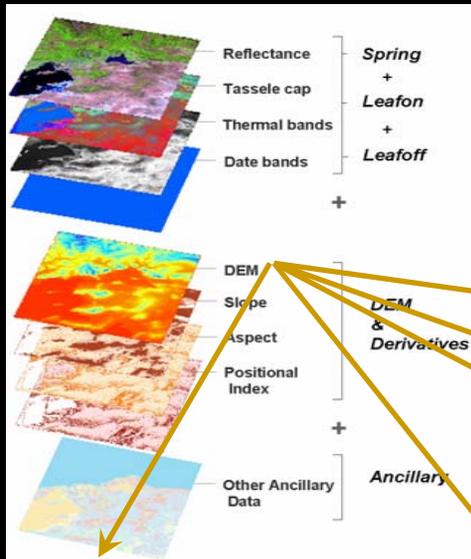
MRLC 2001 TC Scene List

Add Del Order Download

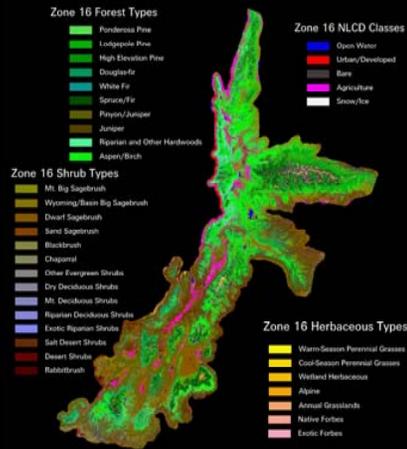
1000m No Limits Set Lat/Long: 36.345977, -111.706923 degrees



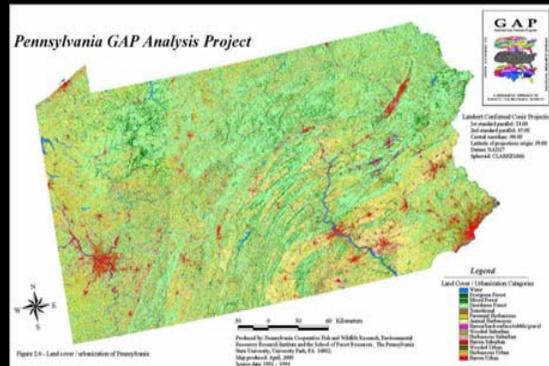
MRLC Database



LandFire



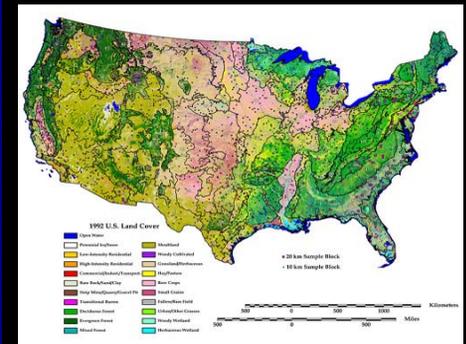
Gap Analysis



C-CAP



Land Cover Trends



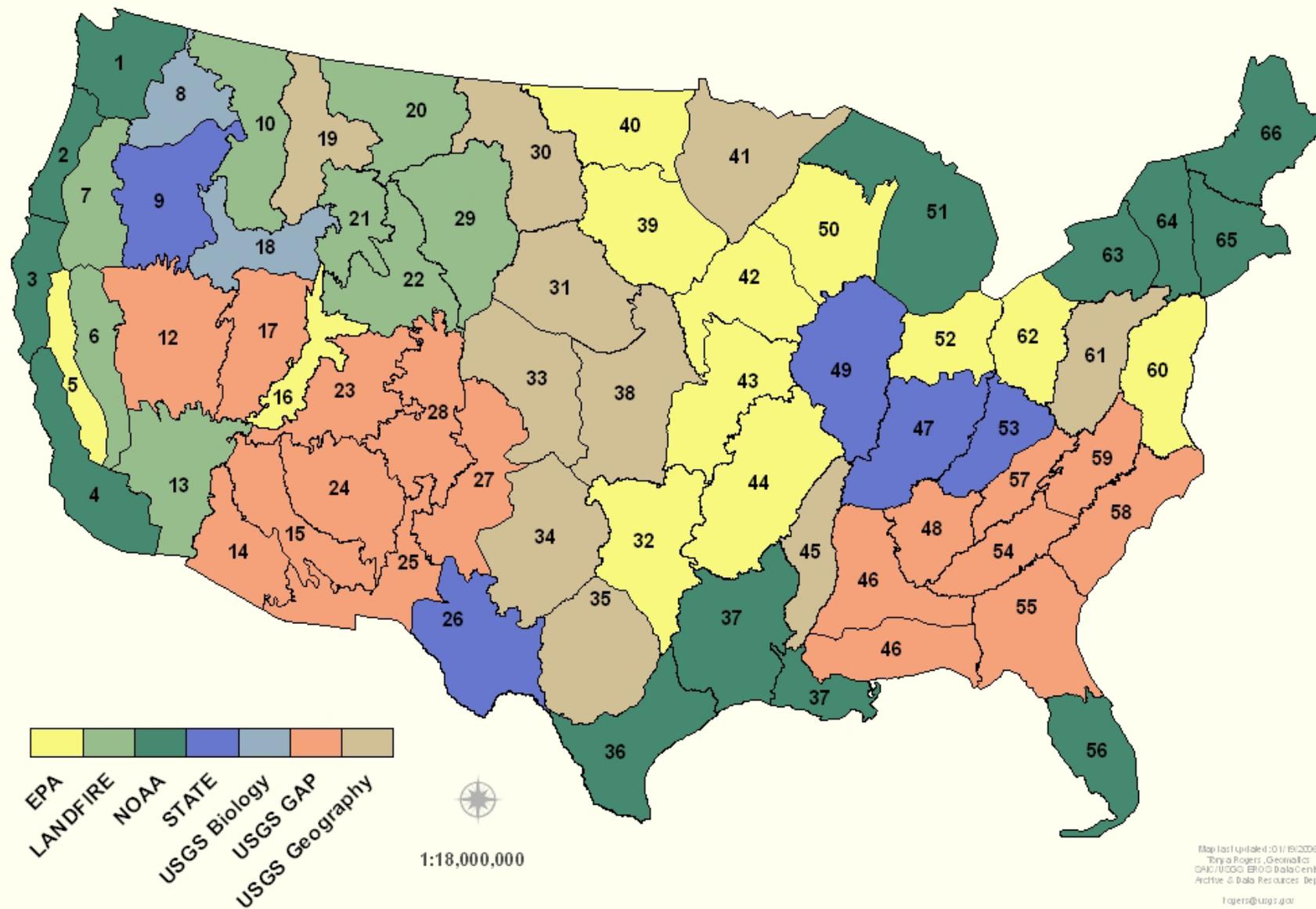
The Geographic Face of the Nation – Land Cover



NLCD 1992 is broadly used across all sectors of society, and has factored in to over 250 published studies and thousands of applications

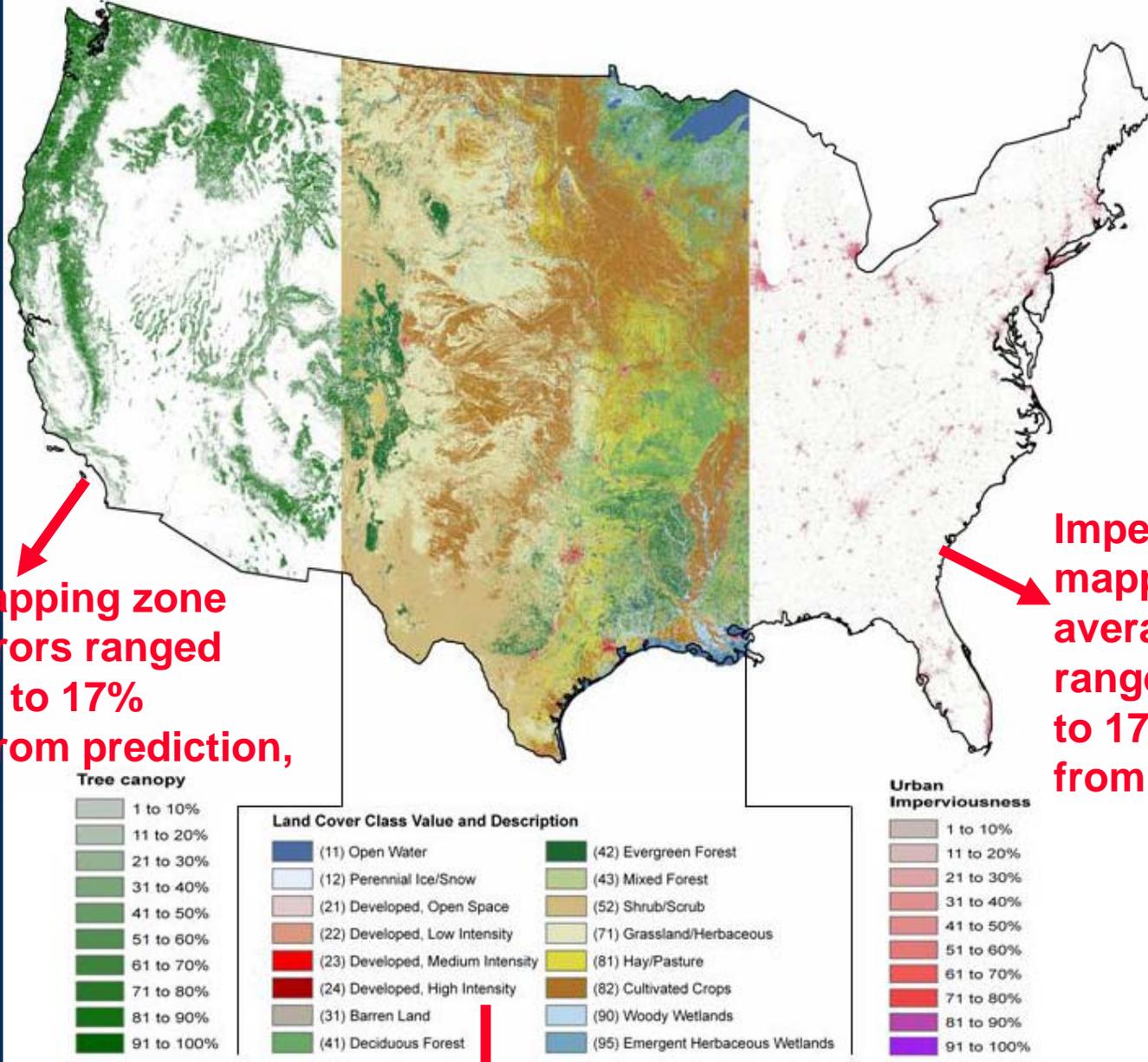
Land Cover production was facilitated by Federal partnering.

Major NLCD 2001 Land Cover Partner, By Mapping Zone



NLCD 2001 Database- Final Products





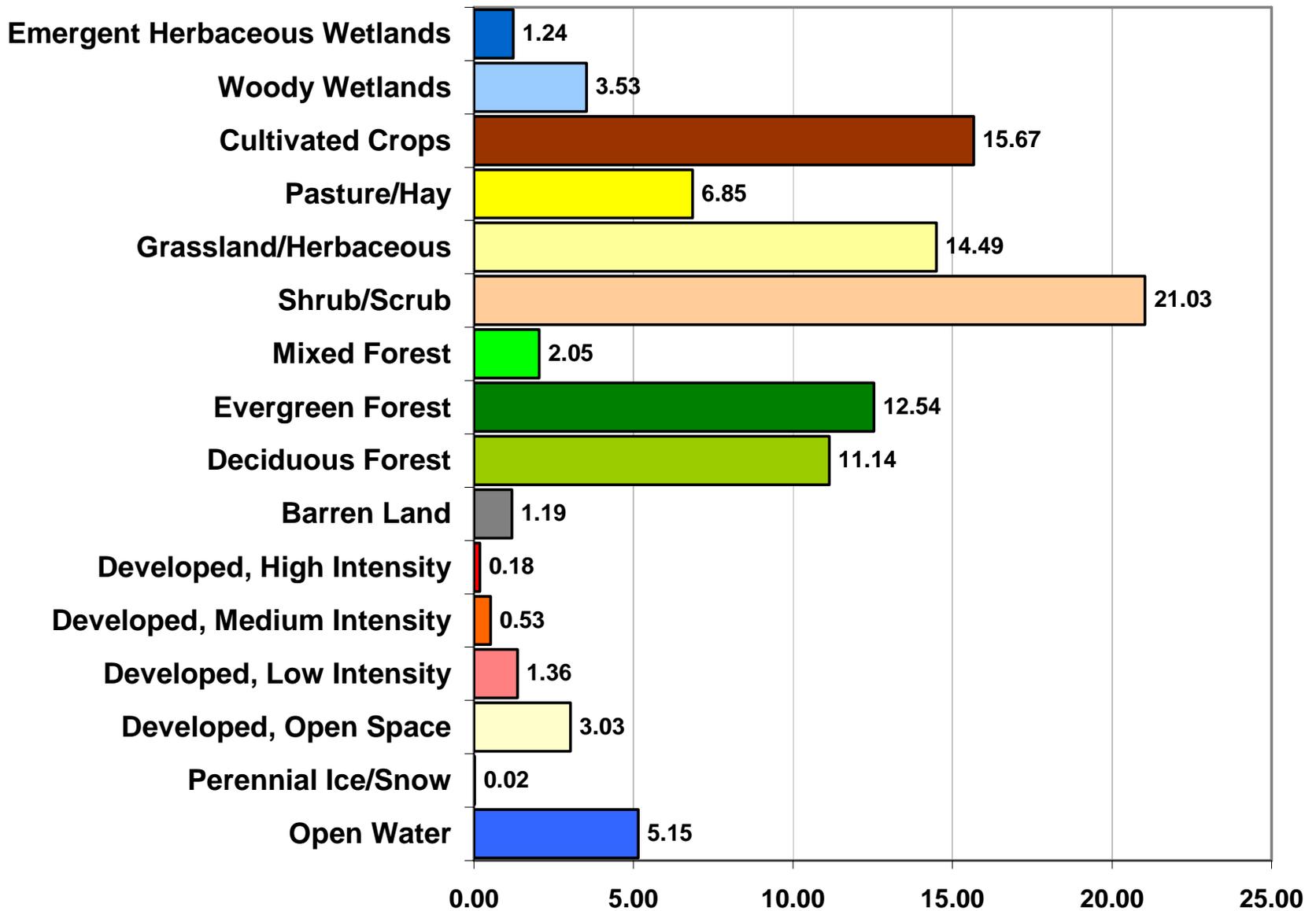
Canopy mapping zone average errors ranged from 6% to 17% deviation from prediction,

Imperviousness mapping zone average error ranged from 4% to 17% deviation from prediction

Land cover mapping zone accuracy ranged from 70% to 98%, with an overall average accuracy 83.9%.



NLCD 2001 Land Cover Classes, by Area



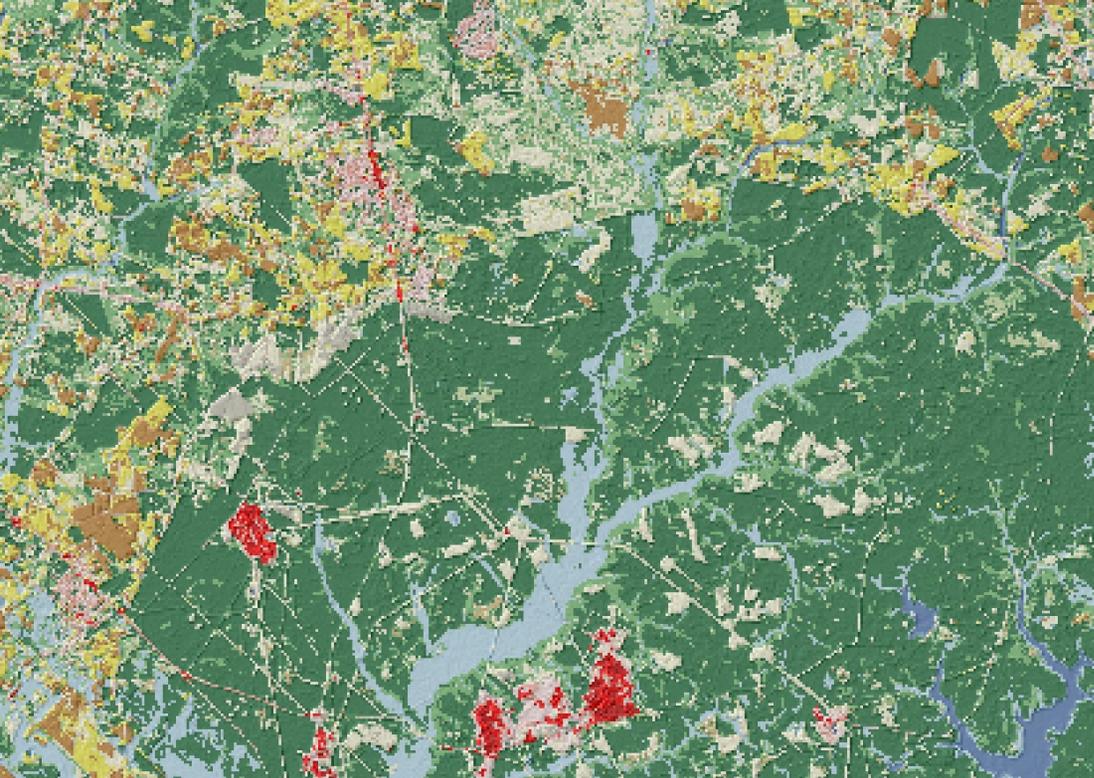
NLCD 2001 Database Applications: Land Cover, Tree canopy and Imperviousness, Nephi, Utah



NLCD 2001 Land Cover – 16 classes

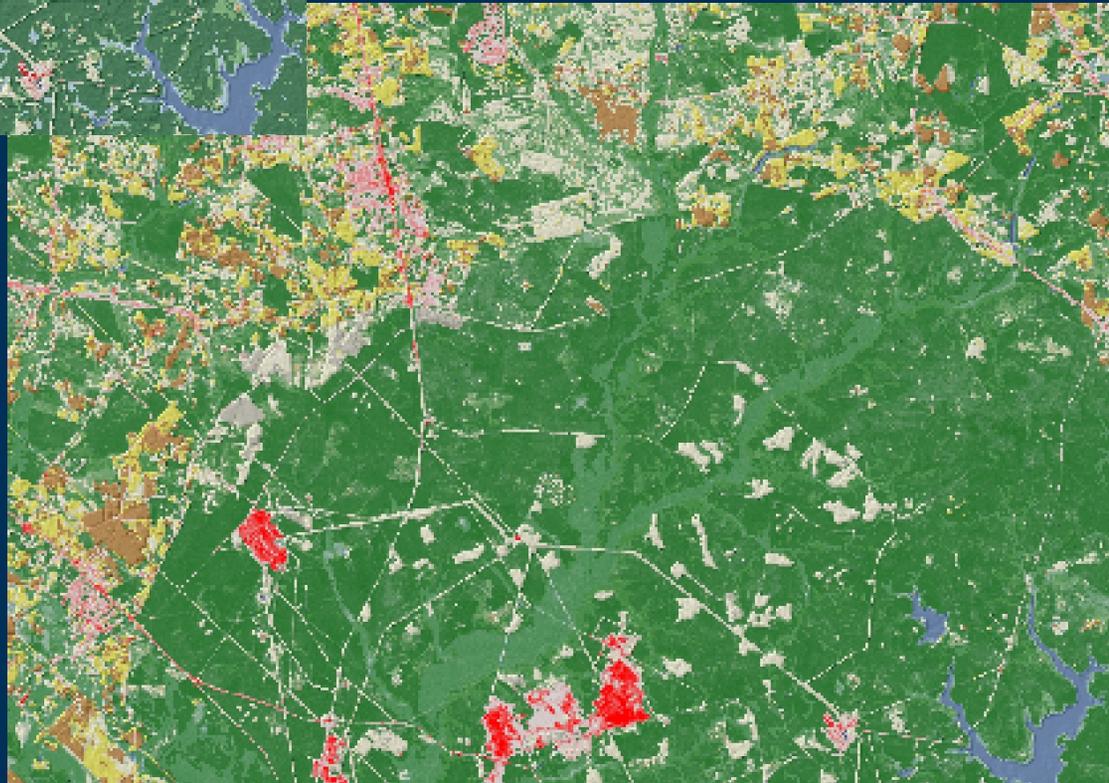


NLCD 2001 Land Cover, with fractional continuous estimates of Tree Canopy and Imperviousness

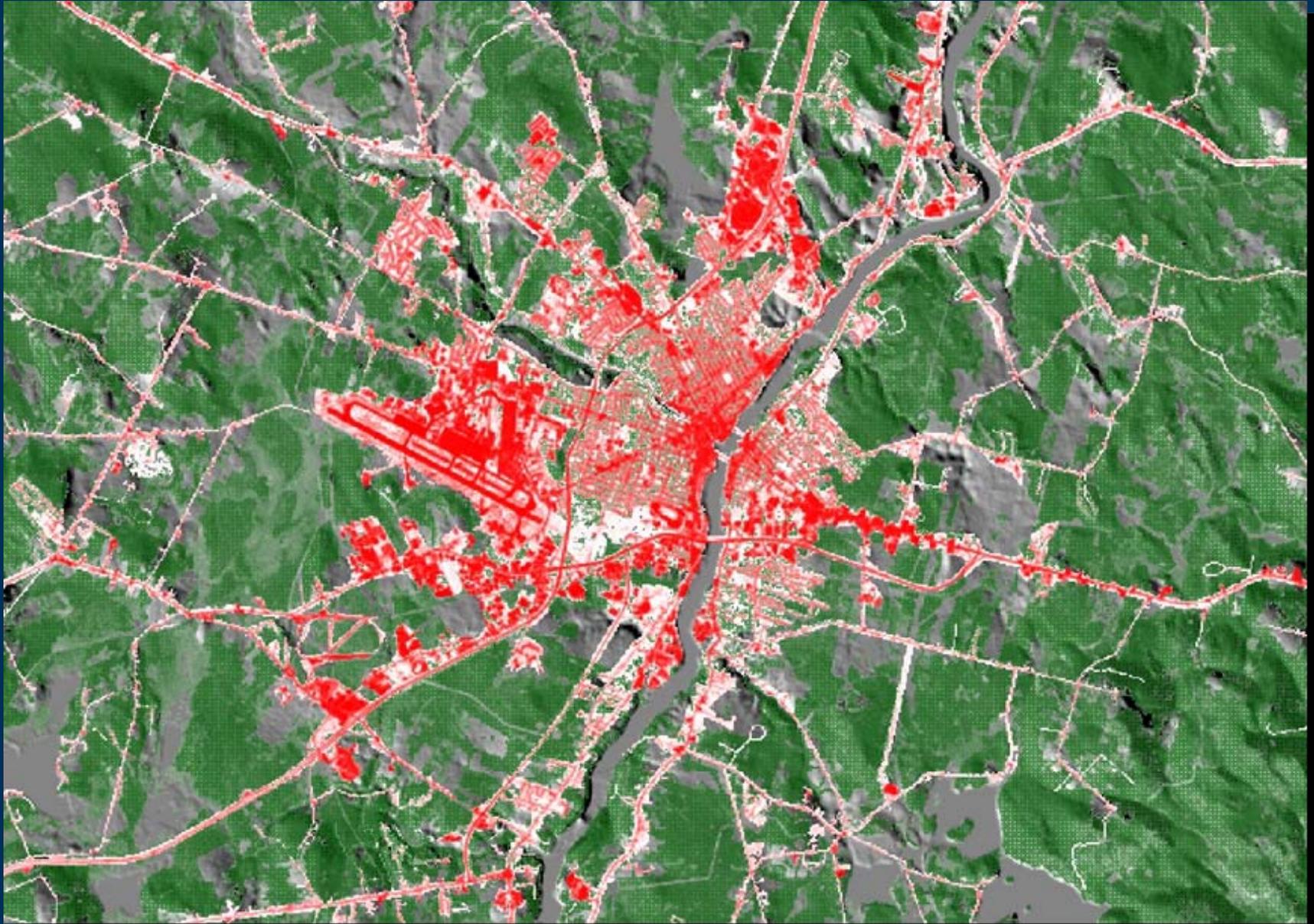


NLCD 2001 Landcover, Savannah River Site

NLCD 2001 Landcover, Canopy and Imperviousness, Savannah River Site



NLCD 2001 Database Applications: Tree Canopy and Imperviousness, Bangor, Maine



NLCD 1992



NLCD 1992



NLCD 2001

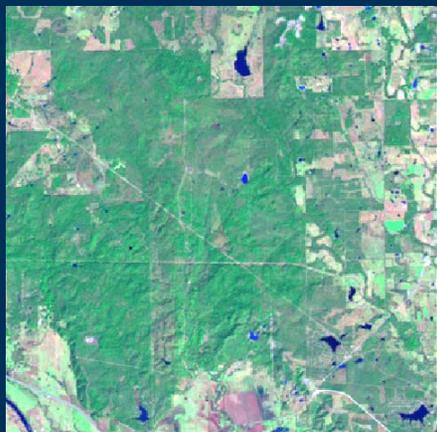


NLCD 2001



Land cover models from two different era's cannot be directly compared.....

NLCD Change Product developed to facilitate comparison between the two eras of land cover



1992 Imagery

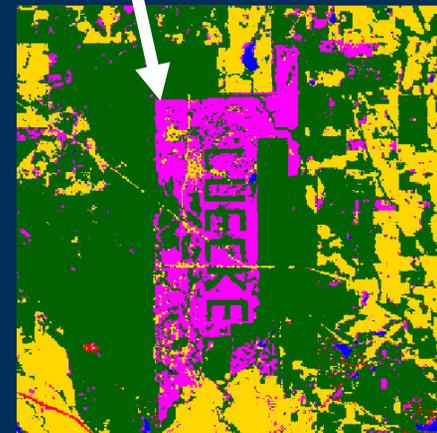


2001 Imagery

Example: Texas Forest Cut

- NLCD 2001/1992 provides training
- Produce Anderson I Classification
- Stratify and filter to identify high confidence areas for further sampling
- Implement additional classification procedures to purify spectral differences and combine into final product

Land cover changes (magenta)

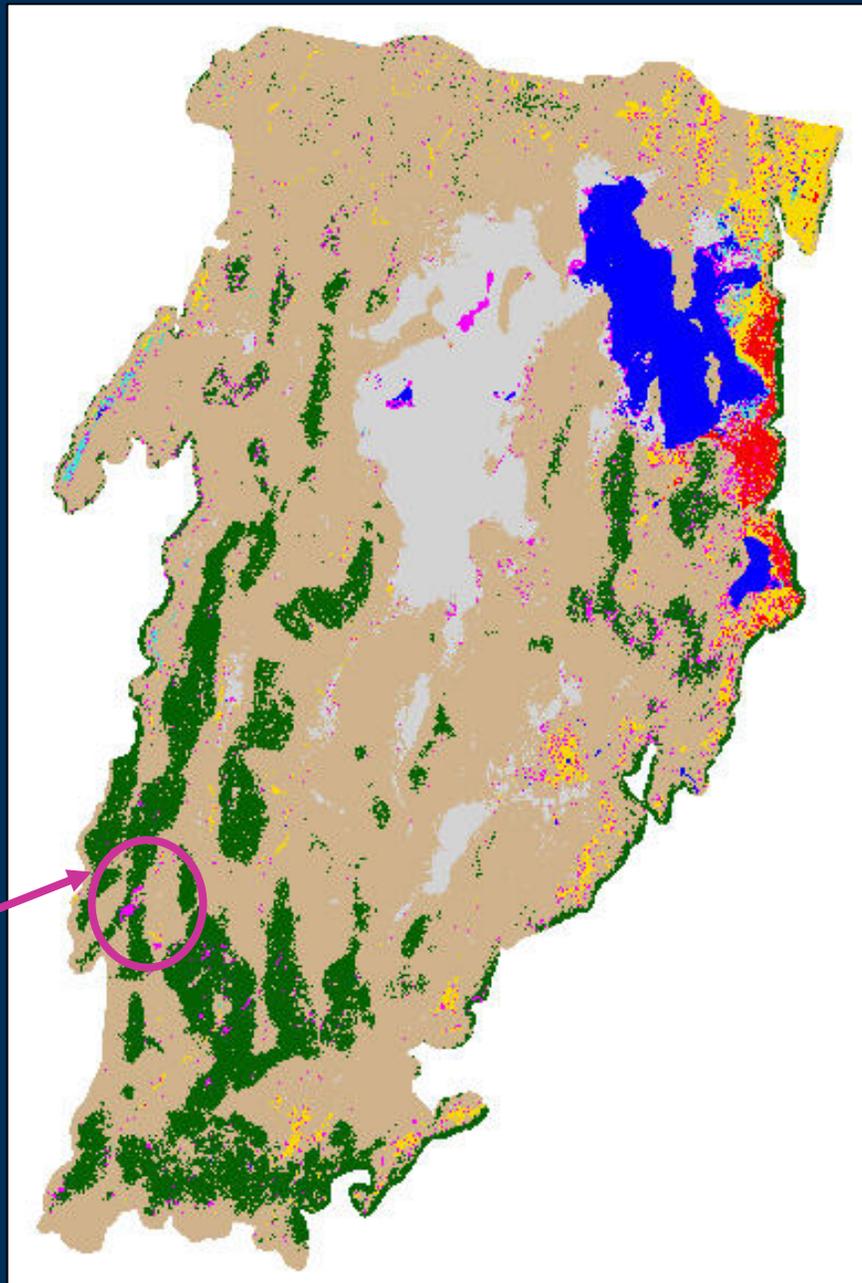


Land cover change classified for each era

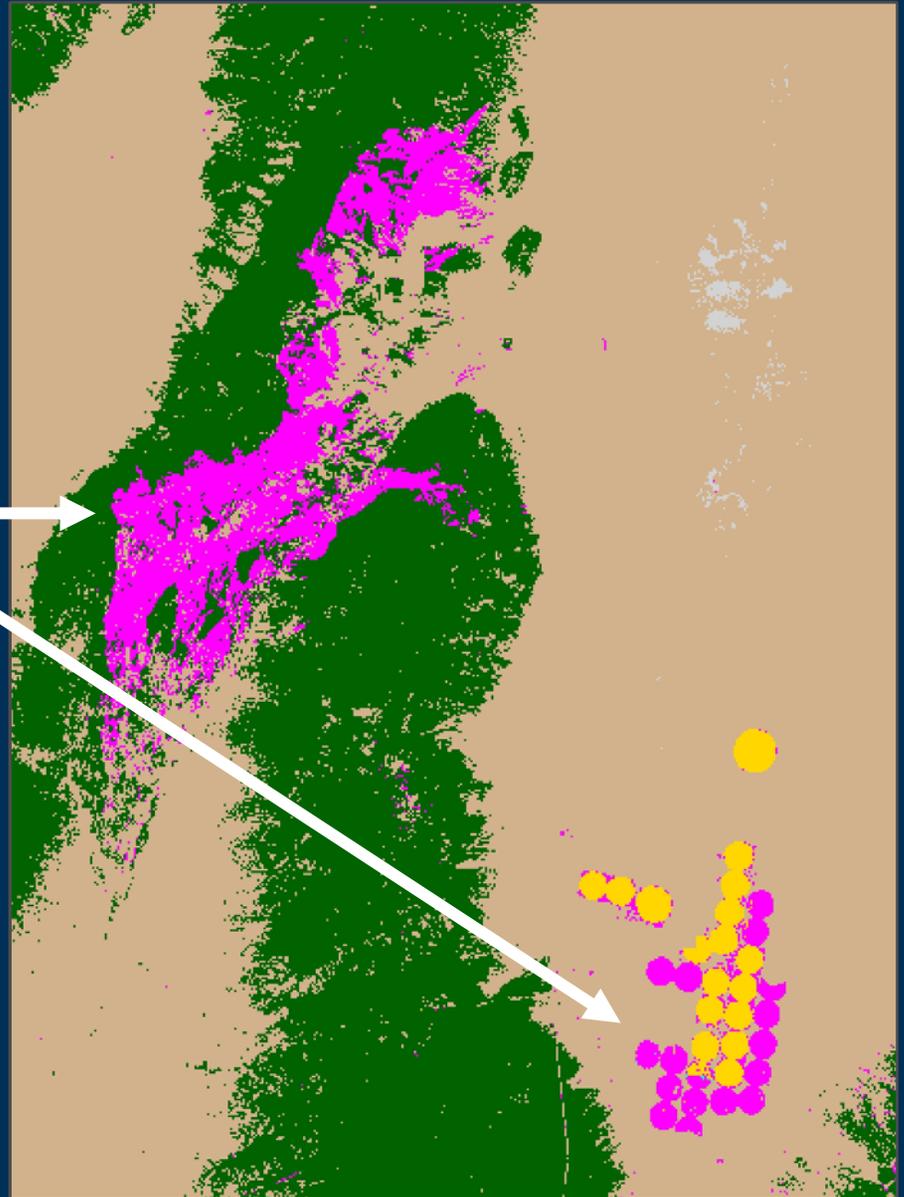
Accuracy assessment produced 94.2% agreement on change/no-change pixel identification

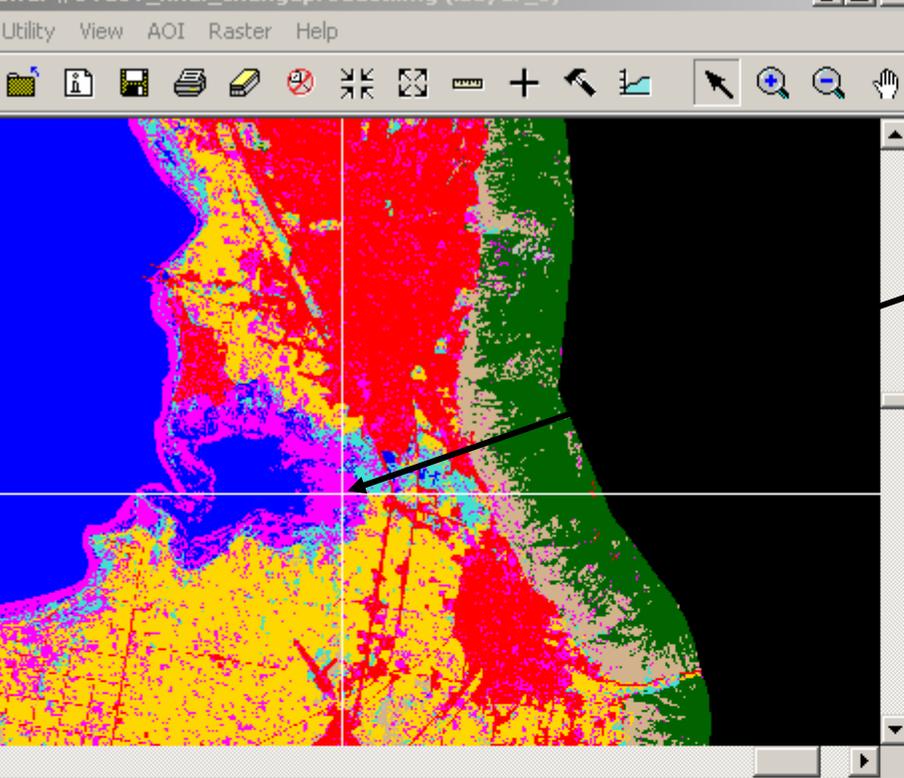
NLCD Land Cover Change Product produced by Mapping Zone, (Zone 17)

Identifies what patches have potentially changed between NLCD 1992 and NLCD 2001 and labels the change at Anderson level 1 (here in magenta)



**NLCD Land cover
change patches
close-up
(change in magenta)**





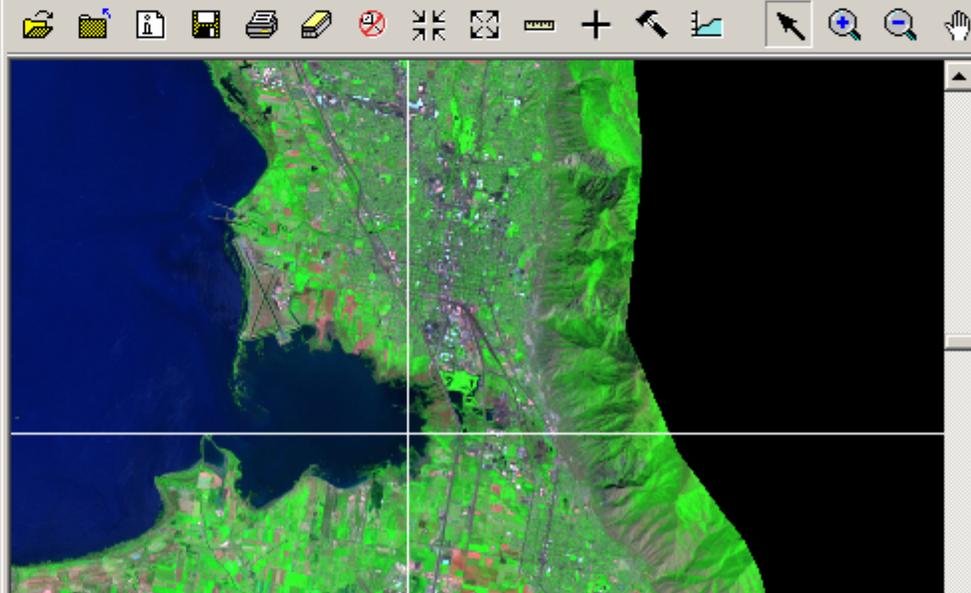
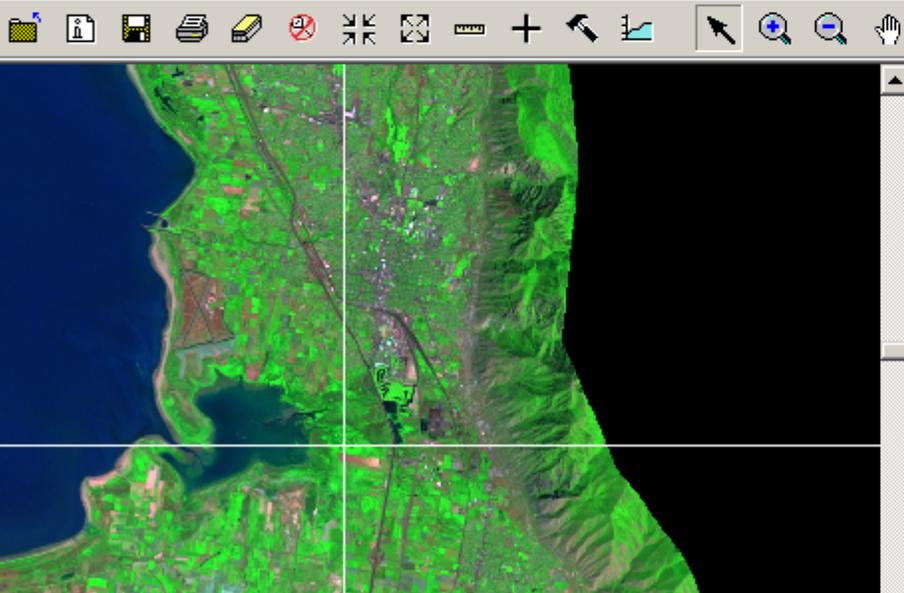
Map X: -1316098.996785 Y: 2016852.052940 meters

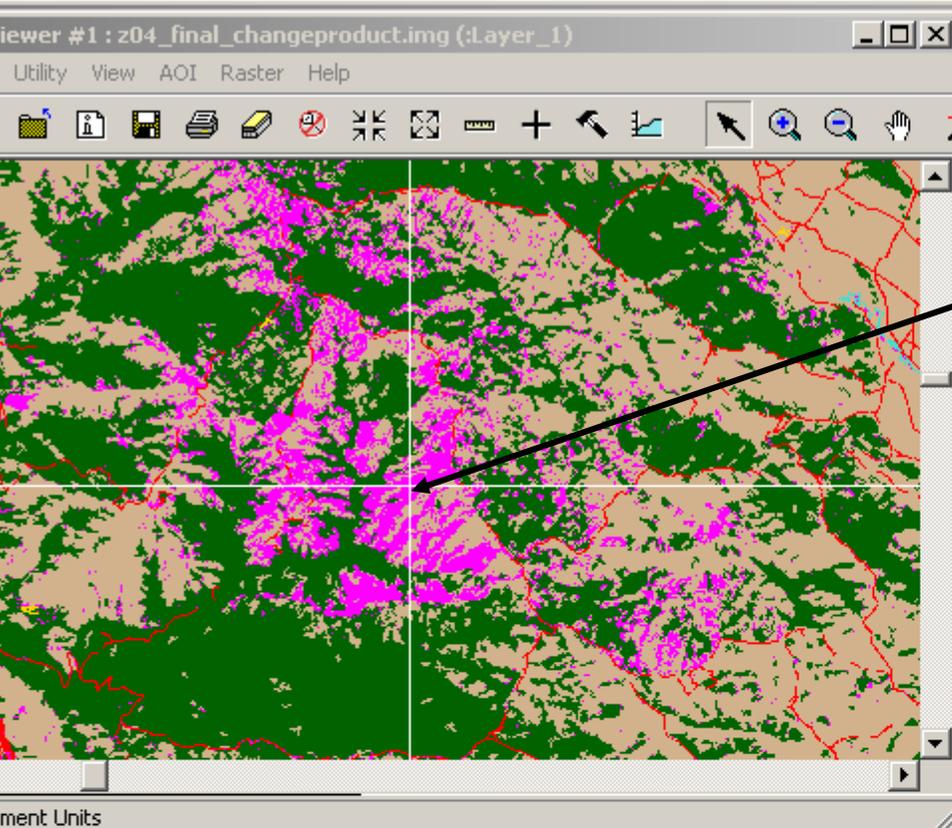
Projection: Albers Conical Equal Area / GRS 1980

Layer	Pixel Value	RED	GREEN	BLUE
1	61.000	255.000	0.000	255.000

1.0000 File Close Help

57	108705	Grassland/Shrub to Wetlands	
58	87	Grassland/Shrub to Ice/Snow	
59	0		
60	0		
61	22458	Agriculture to Open Water	
62	61530	Agriculture to Urban	
63	11963	Agriculture to Barren	
64	7136	Agriculture to Forest	
65	233842	Agriculture to Grassland/Shrub	
66	0		





Viewer #1: z04_final_changeproduct.img

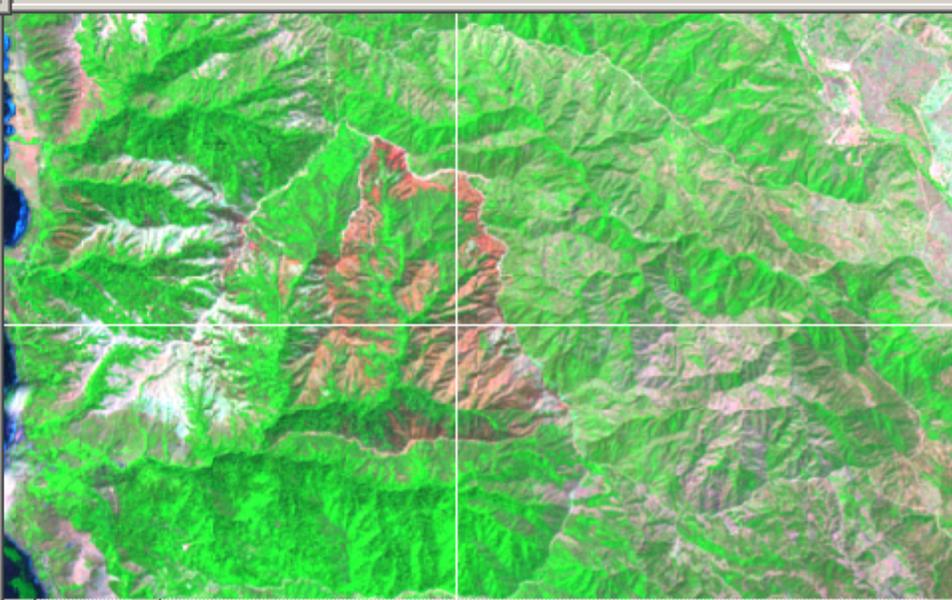
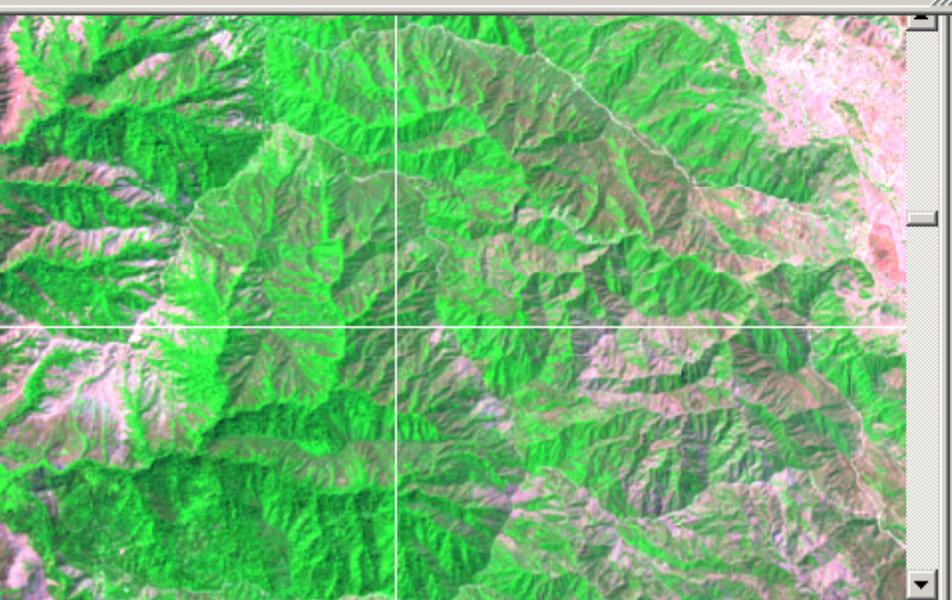
Map X: -2243758.815466 Y: 1732115.235958 meters

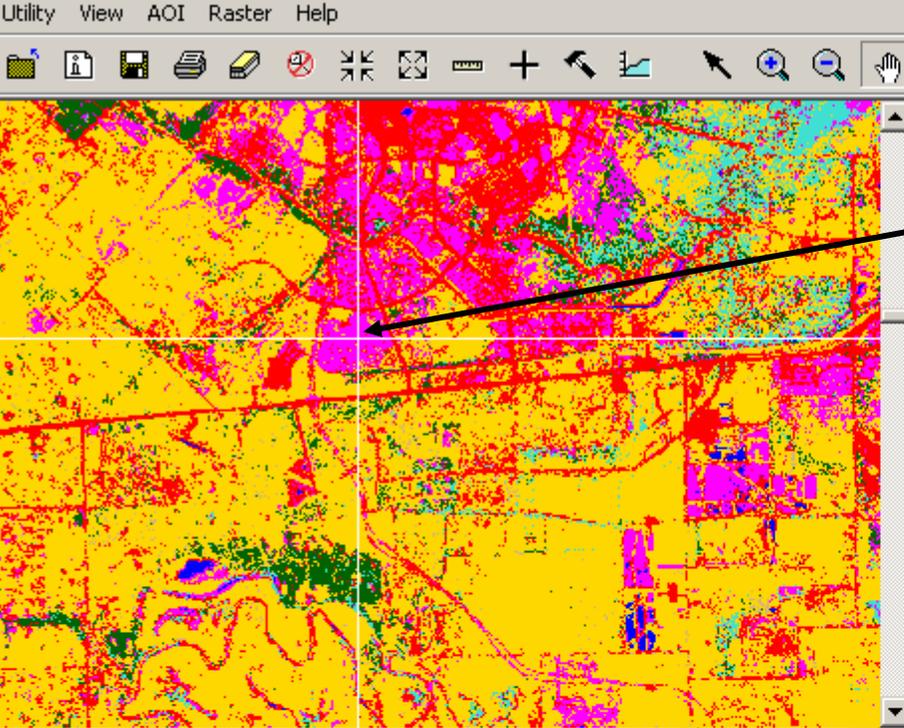
Projection: Albers Conical Equal Area / GRS 1980

Layer	Pixel Value	RED	GREEN	BLUE
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1.0000 File Close Help

Row	Histogram	Land Cover Change	Color	Opacity
40	0			
41	1575	Forest to Open Water		
42	87847	Forest to Urban		
43	6544	Forest to Barren		
44	0			
45	410050	Forest to Grassland/Shrub		
46	94210	Forest to Agriculture		
47	12434	Forest to Wetlands		
48	0	Forest to Ice/Snow		
49	0			





Map X: 22419.355915 Y: 737126.807136 meters

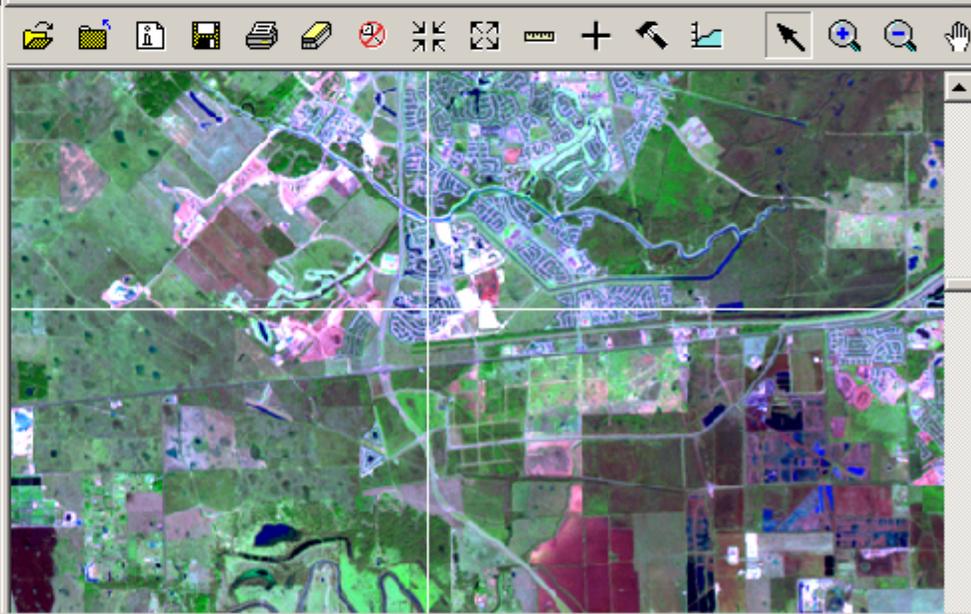
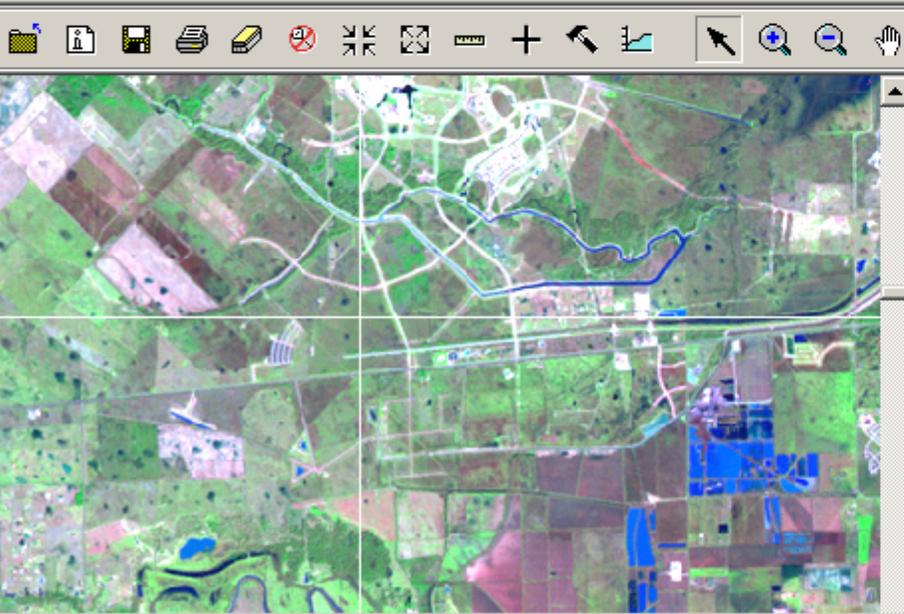
Projection: Albers Conical Equal Area / GRS 1980

Layer	Pixel Value	RED	GREEN	BLUE
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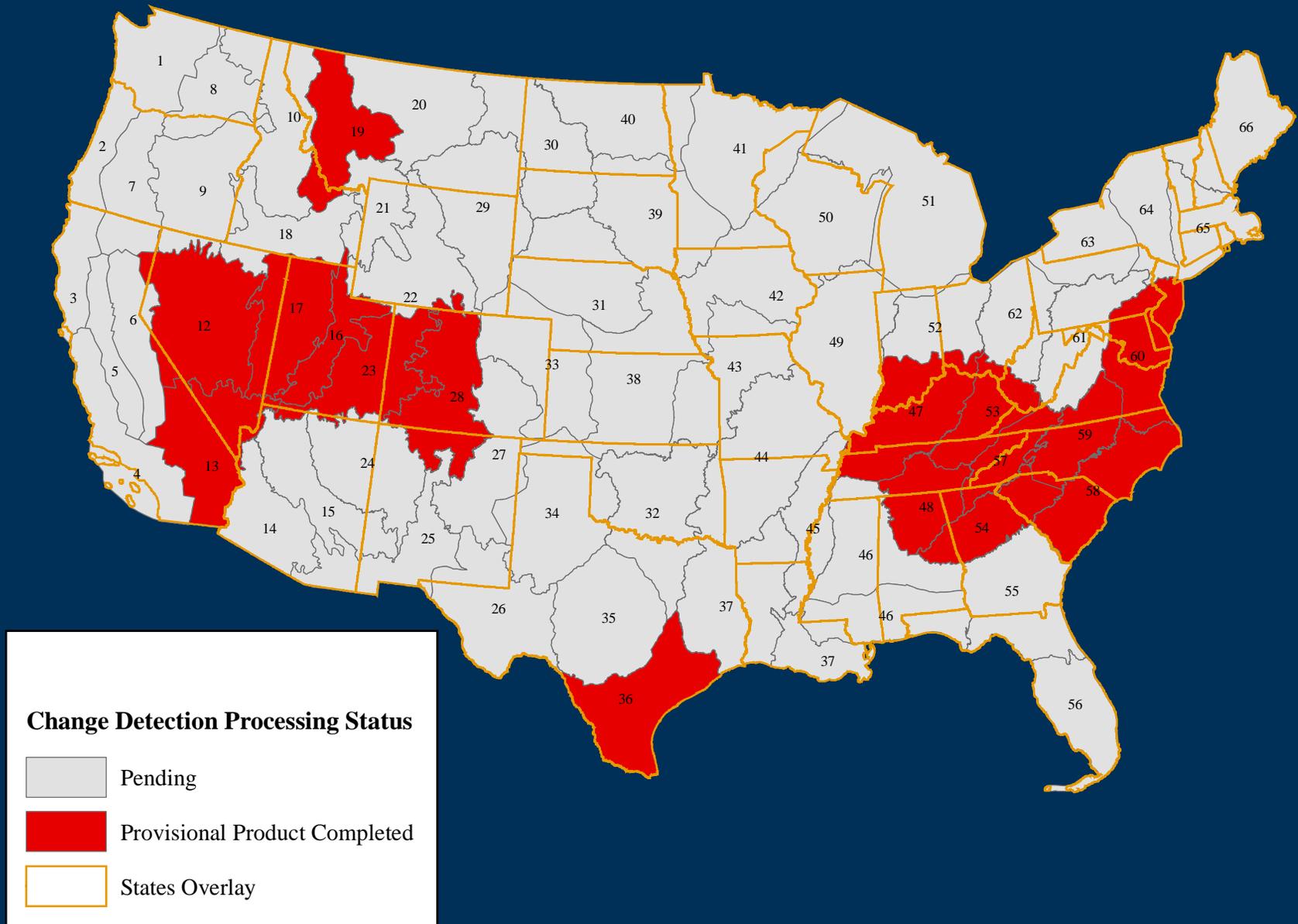
1.0000 File Close Help

Layer Number: 1

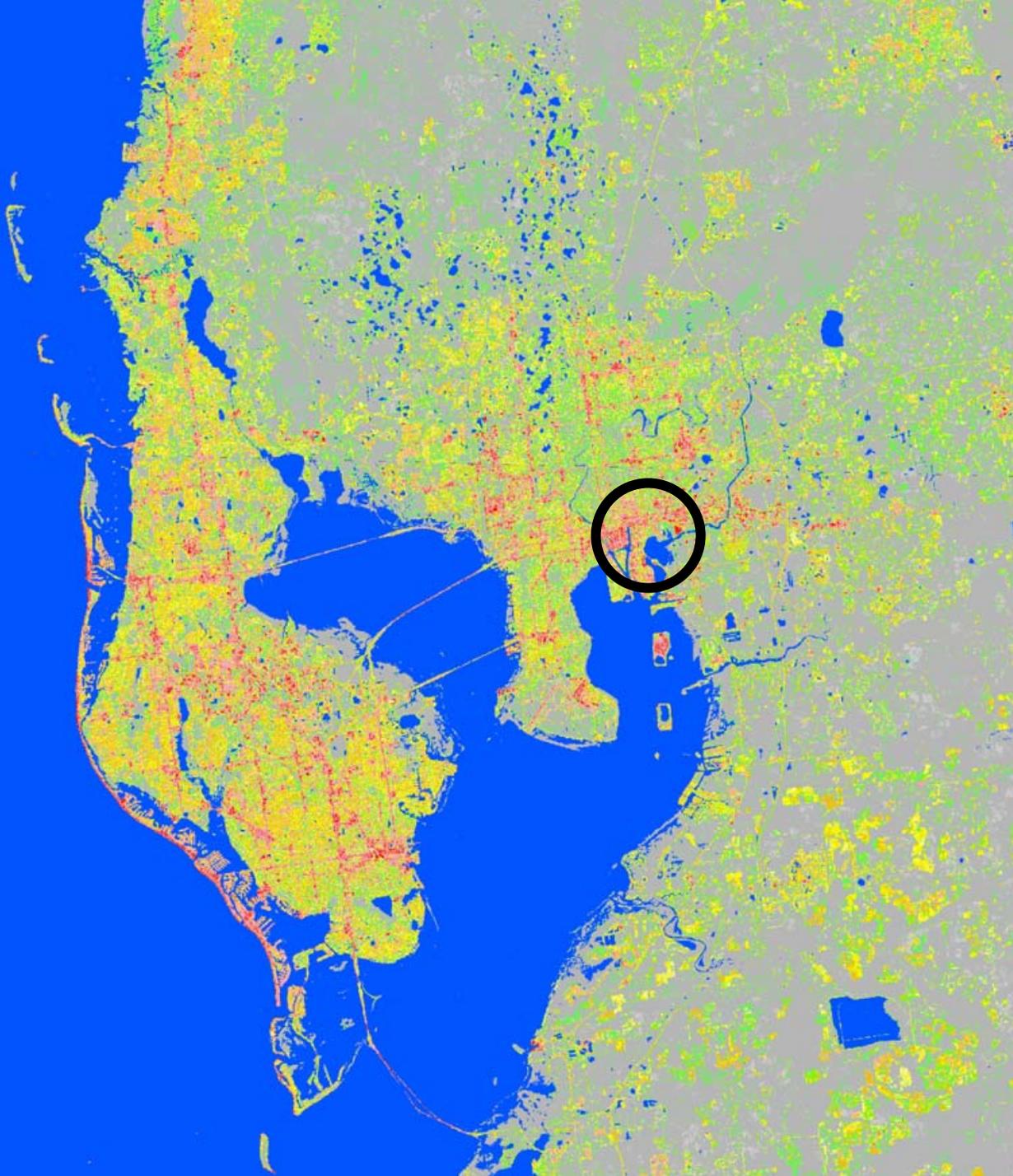
Row	Histogram	Landcover Change	Color	Opacity
58	0	Grassland/Shrub to Ice/Snow		
59	0			
60	0			
61	56962	Agriculture to Open Water		
62	403888	Agriculture to Urban		
63	38511	Agriculture to Barren		
64	224283	Agriculture to Forest		
65	1557143	Agriculture to Grassland/Shrub		
66	0			



NLCD Change Product, production status

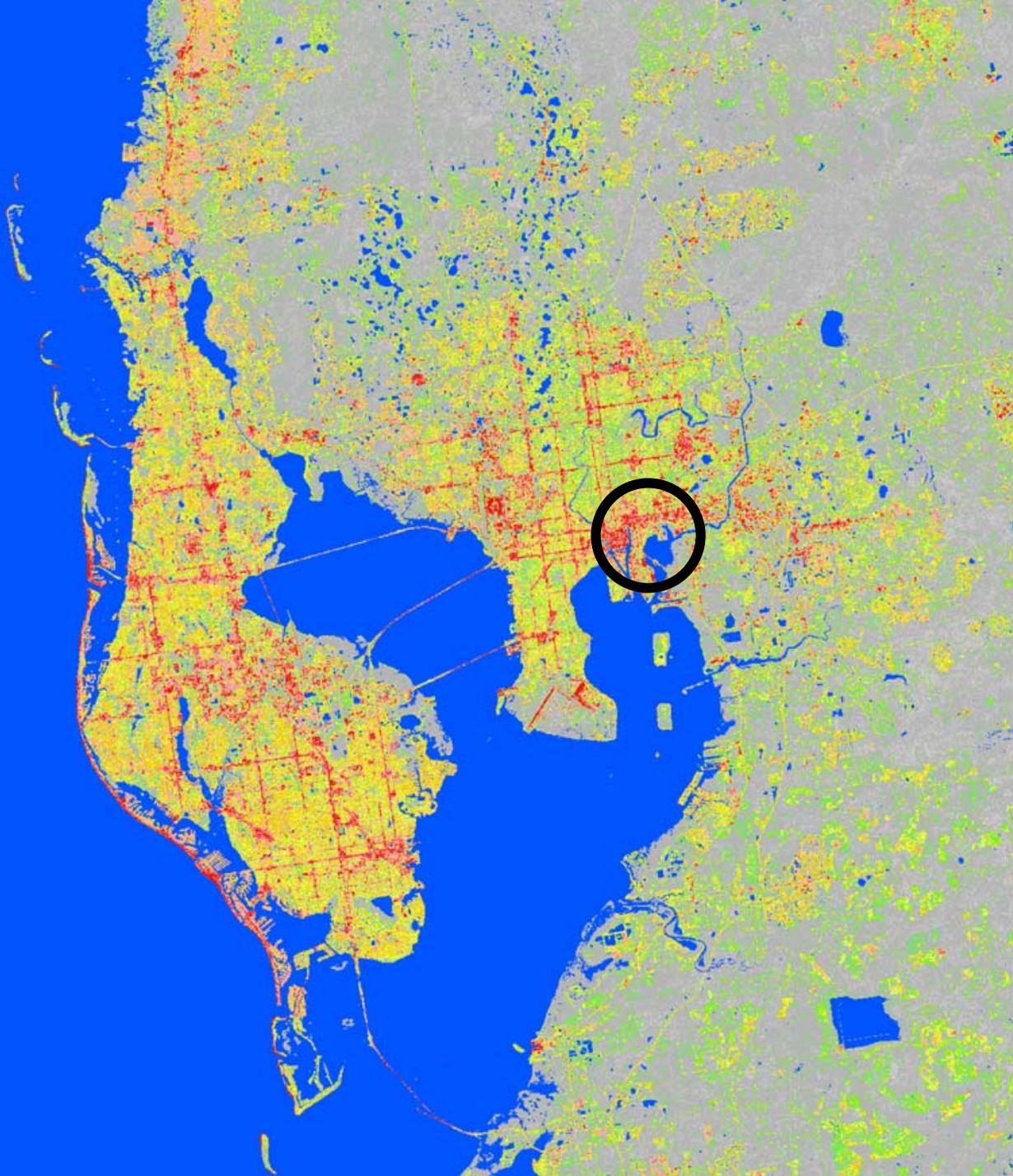


Tampa Bay Imperviousness 1991



Tampa Bay Imperviousness

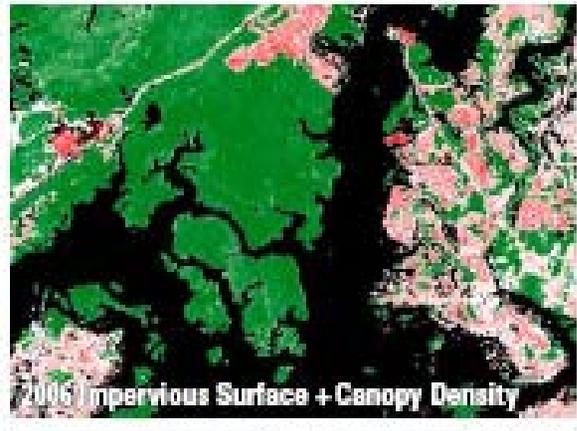
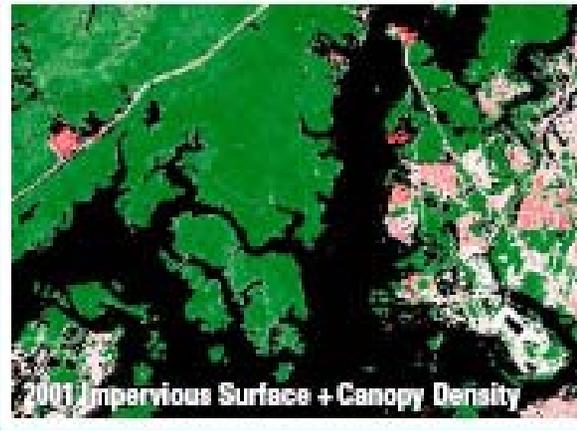
2002



1992

2001

2006



NLCD Future Plans

USGS Report to the Office of
Management and Budget

June 26, 2006



NLCD 2001 Goals for 2007

- Complete Accuracy Assessment of NLCD CONUS
- Complete Land Cover modeling of Alaska, Hawaii and Puerto Rico
- Complete the NLCD CONUS 1992-2001 Change Product
- Prototype Next-generation NLCD 2006 products
- Enhance User Access to Current Data (www.mrlc.gov)