



AmericaView and Landsat

AMERICA
VIEWSM

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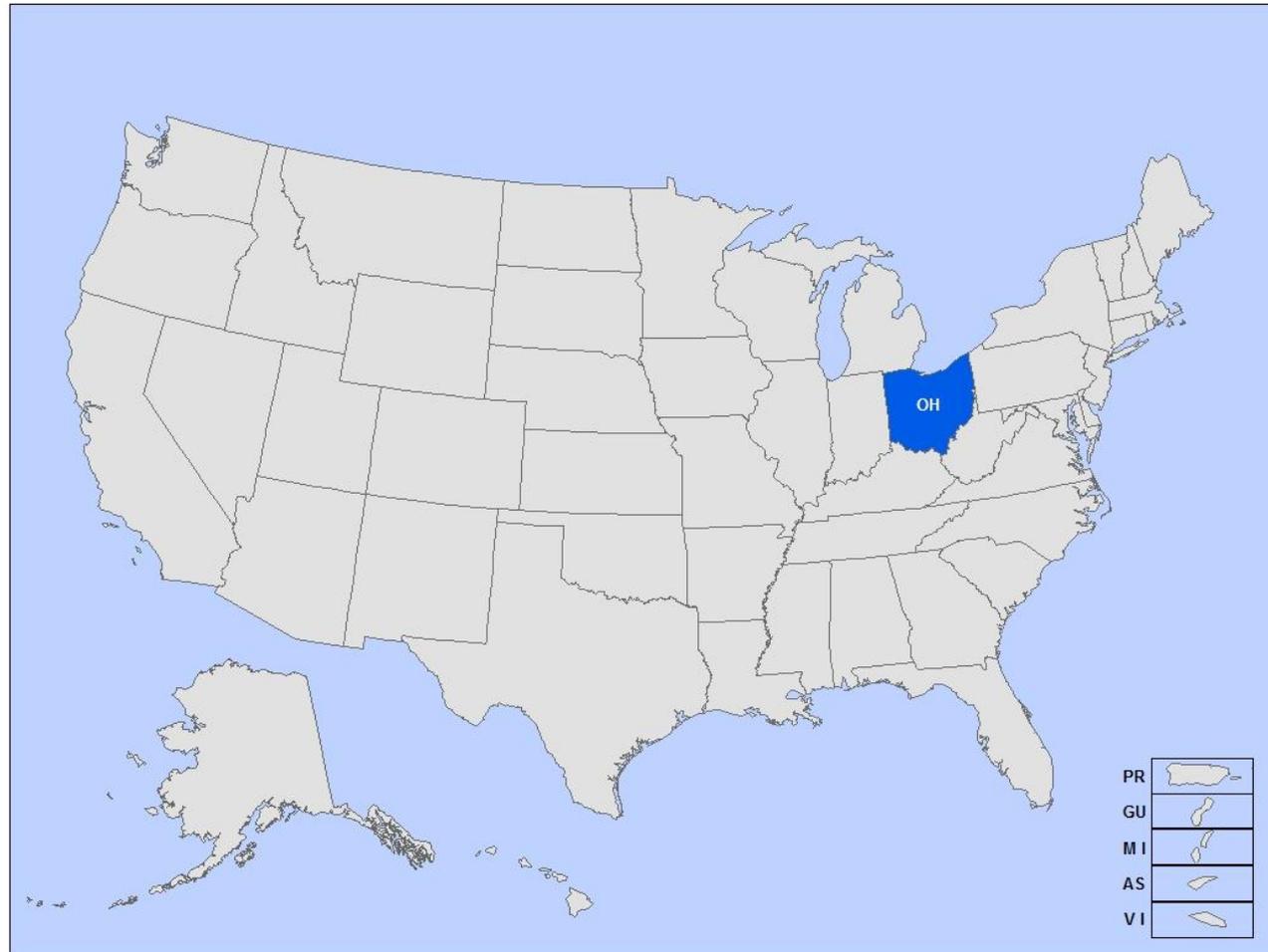
22 July 2014
Landsat Science Team Meeting
Corvallis, Oregon



What is AmericaView

- University-led, state-based consortium
- Dedicated to advancing remote sensing:
 - Data availability and distribution
 - Education
 - Outreach
 - Research and technology transfer
- Funded under the USGS National Land Remote Sensing Education Outreach and Research Activity (NLRSEORA)

Origins



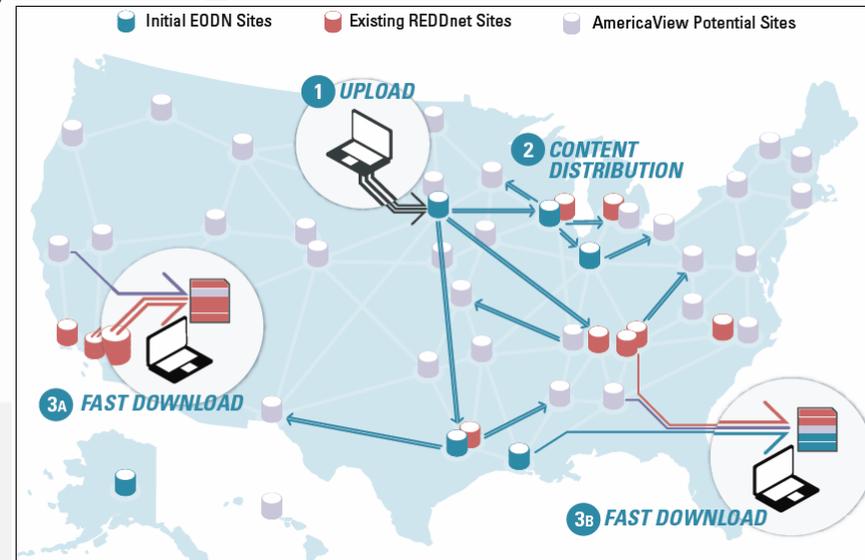
How Activities are Structured

- States develop annual workplans
- Based on determined state-based priorities (within funding constraints)
- Highly collaborative
- Highly leveraged

Data Archive and Distribution

- Reduced priority for many states
- Formatting and access still a priority for some states
- Current archive near 1 TB
- Existing multi-state project

Earth Observation
Depot Network



Education

- K-16 basic STEM education
- University and college level courses
 - AmericaView University
- Workforce development
- Since 2008
 - > 23,000 K-12 students, 1,600 K-12 teachers
 - > 2,300 current workforce
 - 27 new higher education courses

Education Resource Portal



Fade Banner 100%

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Sort by: Title Order: Asc Target Audience: Higher Education Software Requirements: <Any> Type of Imagery Used in Exercises: Landsat

Type of resource: Tutorial Affiliation: <Any> Search: Search Terms [] [Apply] [Reset]

- [Calculating Vegetation Indices from Landsat 5 TM and Landsat 7 ETM+ Data](#) ☆☆☆☆
Author(s): Grant J. Firl and Lane Carter
Affiliation: ColoradoView
Date: 11/30/2010 **Download Access:** Public Access
Course Material: No **Resource Type:** Tutorial
Audience: Higher Education
- [Classification](#) ☆☆☆☆
Author(s): Jay Morgan
Affiliation: MarylandView
Date: 07/31/2011 **Download Access:** Public Access
Course Material: No **Resource Type:** Tutorial
Audience: High school, Higher Education
- [Compositing Landsat Data](#) ☆☆☆☆
Author(s): Grant J. Firl
Affiliation: ColoradoView
Date: 11/30/2010 **Download Access:** Public Access
Course Material: No **Resource Type:** Tutorial
Audience: Higher Education
- [How to Bring Landsat Data into ArcGIS, Mosaic and Clip Scenes](#) ☆☆☆☆



Outreach

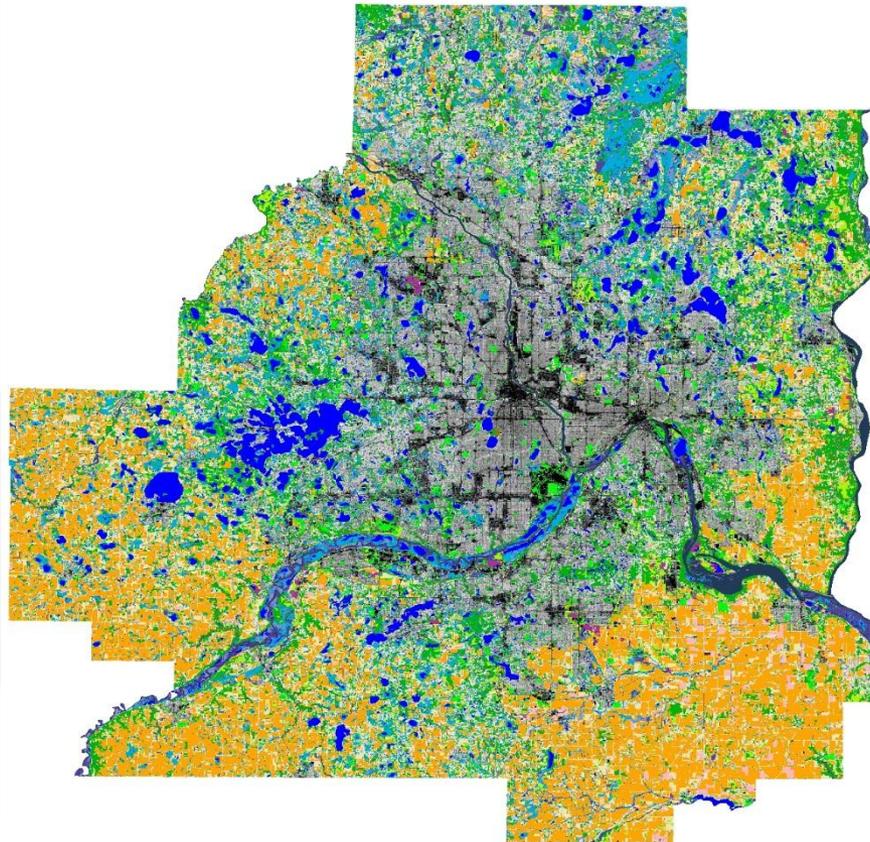
- Congressional education/informational visits
- Public outreach



Applied Research

- Supporting 70-80 research projects each year
- Research areas include:
 - Ecological monitoring
 - Climate change
 - Agricultural management
 - Wildfire risk assessment
 - Vegetation phenology
 - Wetland function
 - Invasive species monitoring
 - Land use/land cover change
 - Natural hazards
 - Water quality monitoring
 - Transportation management

State-Driven Applied Research – MNView



2011 Land Cover Level 2 Classes

Wetlands

- Lakes & Ponds
- Emergent Wetlands
- Forested Wetlands
- Shrub Wetlands
- Rivers

Uplands

- Deciduous Forest
- Conifer Forest
- Mixed Forest
- Managed Grass
- Grassland
- Row Crops
- Hay and Pasture
- Small Grains
- Extraction

Urban / Developed

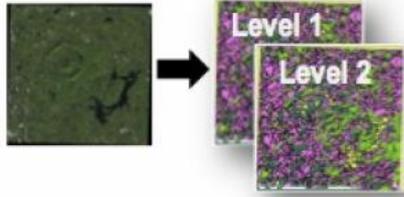


1 % Impervious 100

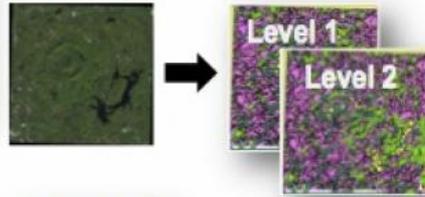
A combination of multitemporal Landsat data and lidar data with object-based image analysis enabled accurate level 1 and 2 land cover classifications for 2011 of the seven-county Twin Cities Metropolitan Area. The classifications also include percent impervious area for the urban class.

State-Driven Applied Research – NHView

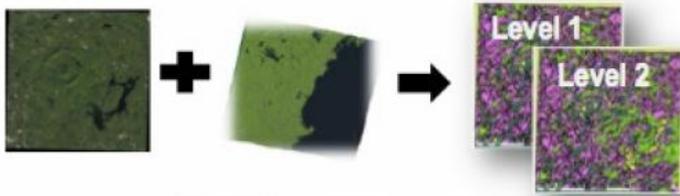
Worldview-2: 4 bands



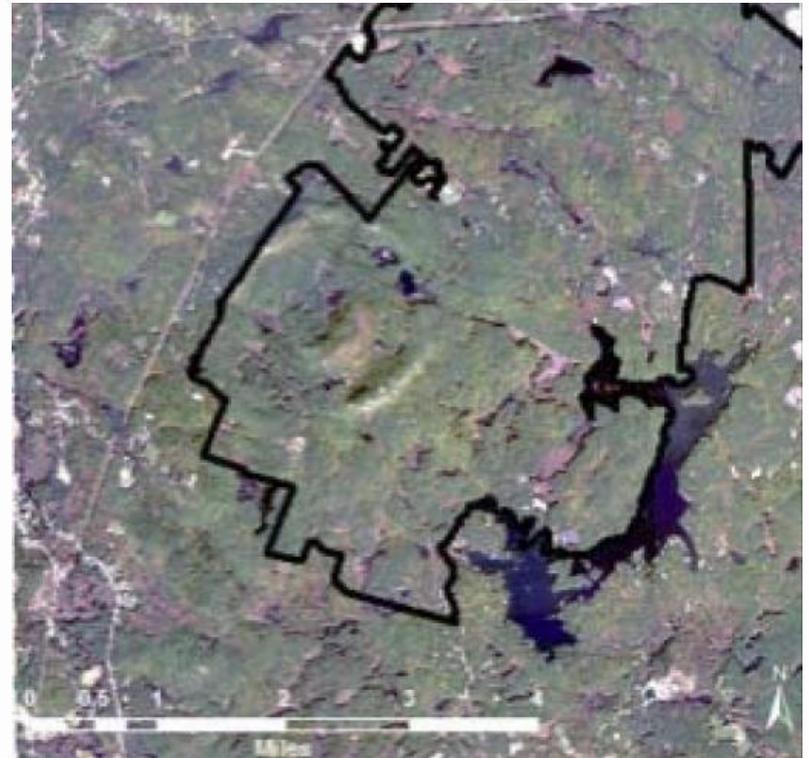
WorldView-2: 8 bands



Worldview-2: 4 bands + Landsat



WorldView-2: 8 bands + Landsat



State-Driven Applied Research – VAView



The screenshot shows the InFOREST web application interface. At the top, it features the Virginia Department of Forestry logo and the CNRE logo. The main content area is divided into two columns. The left column, titled "InFOREST", contains a list of topics: "Investing in Forests", "Innovation in Managing Forests", "Integrating Forest Ecosystems in Land-use Planning", and "In Forests We Find Solutions for Renewable Wood Products, Water and Air Quality, and Biodiversity". Below this list is a paragraph describing the tool's purpose and a mention of its GIS platform. The right column contains three interactive buttons: "Go to Mapping" (with a "Go" button), "Run an Ecosystem Service Calculator" (with a "Go" button), and "Get Help With InFOREST". The "Run an Ecosystem Service Calculator" button is highlighted, showing a preview of a map with a pie chart and a bar chart. At the bottom, there is a "Contributing Partners" section with logos for the University of Virginia and the Virginia Department of Forestry.

In GY 2011, Virginia View integrated Landsat imagery into a layer within the InFOREST online mapper. This server-based web mapping application was designed to provide landowners, natural resource planners, educators, and the public with access to local forest ecosystem information. InForest is available at www.inforest.frec.vt.edu.

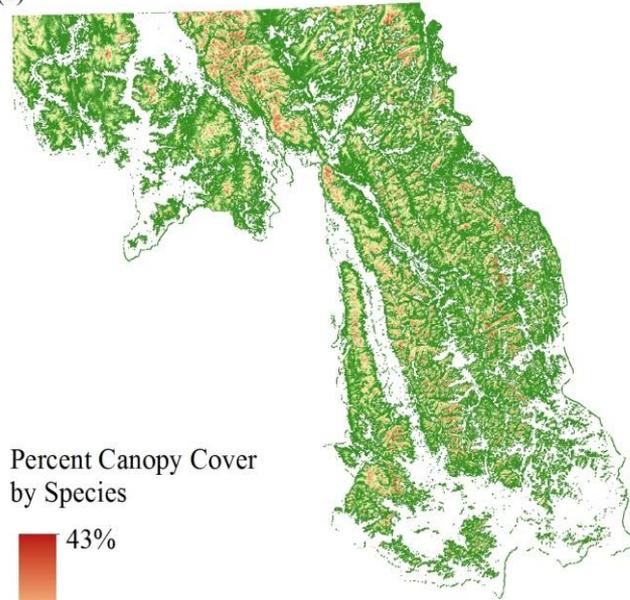
State-Driven Applied Research – MTView

AmericaView Classification Methods Accuracy Comparison (ACMAC) Program

	Random Forest	Support Vector Machines	C5.0	CART	Logistic Model Trees	Multivariate Adaptive Regression Splines
Random Forest	--	RF+9.7	RF+2.2	RF+20.2	RF+7.1	RF+12.3
Support Vector Machines	RF+9.7	--	C5.0+10.0	SVM+10.5	LMT+2.5	SVM+2.6
C5.0	RF+2.2	C5.0+10.0	--	C5.0+21.1	C5.0+5.3	C5.0+10.5
CART	RF+20.2	SVM+10.5	C5.0+21.1	--	LMT+12.6	MARS+7.4
Logistic Model Trees	RF+7.1	LMT+2.5	C5.0+5.3	LMT+12.6	--	LMT+5.2
Multivariate Adaptive Regression Splines	RF+12.3	SVM+2.6	C5.0+10.5	MARS+7.4	LMT+5.2	--

State-Driven Applied Research – MTView

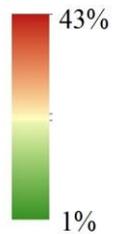
(a) Fir



(b) Spruce



Percent Canopy Cover
by Species



Acknowledgments

- Russ Congalton, AV Board Chair
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- Debbie Deagen, AV Program Manager
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