



Forest Inventory

Before, now, and for the future

Presented By

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Purpose of an inventory

“The quicker the inventory can be completed the quicker the management of state forest lands can reach maximum efficiency”
-Gene Little, inventory program, 1958



Statistically sound and replicable



Provide for continued innovation



Provide for decisions



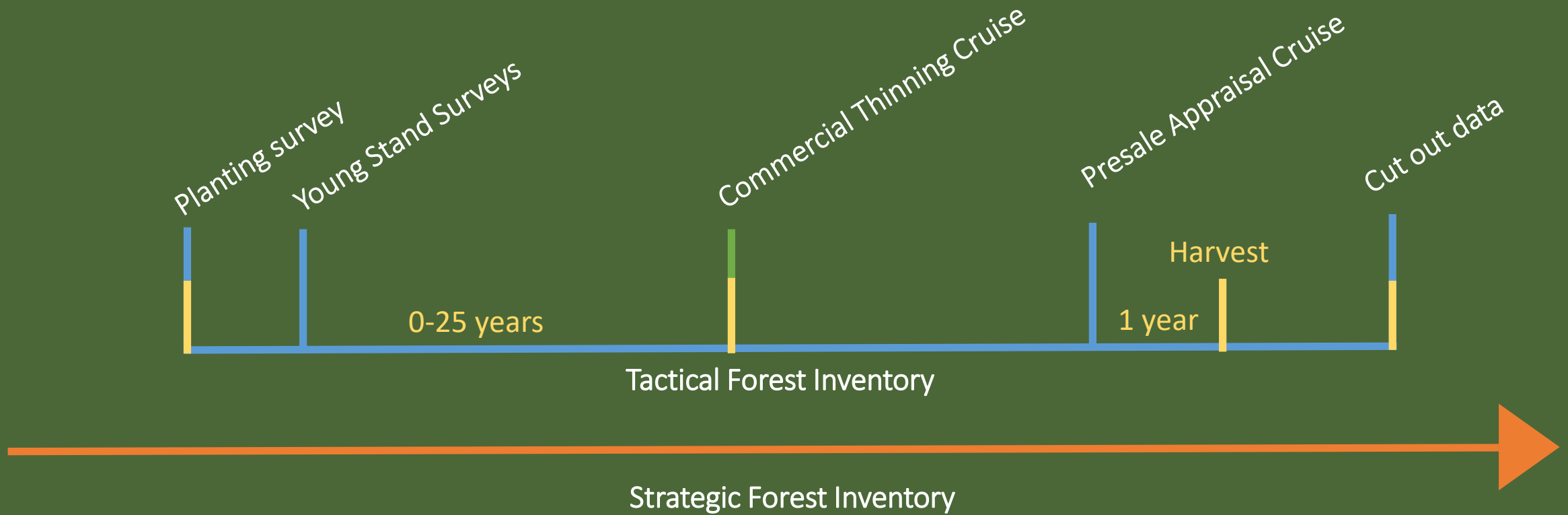
Provide flexibility



Feasible, practical, cost effective

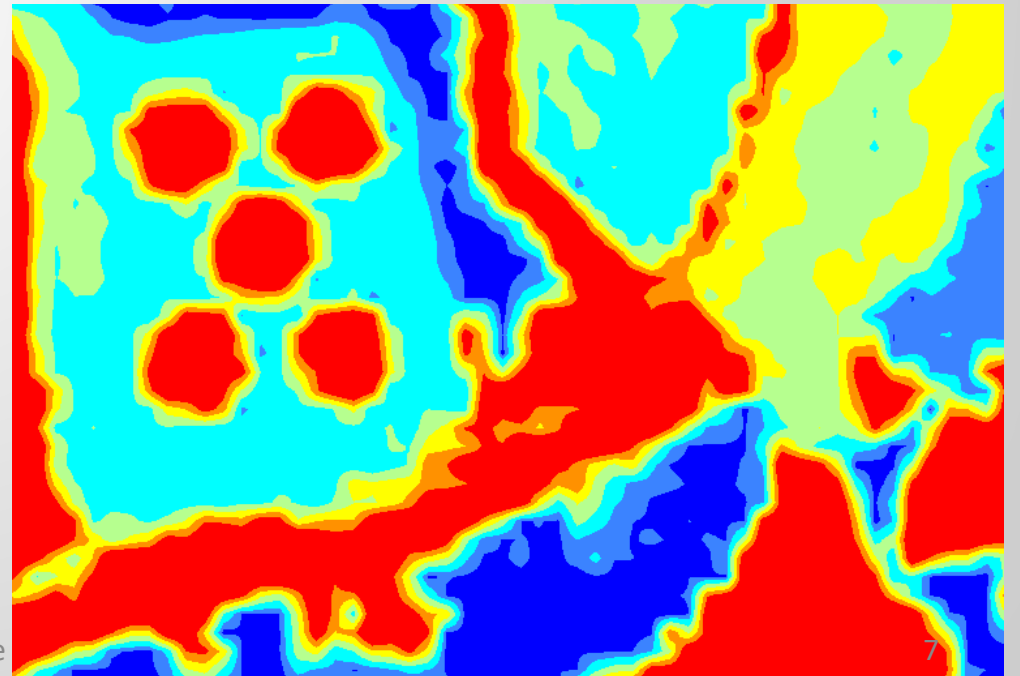


Chronology of inventory points



Remote-Sensing Forest Inventory

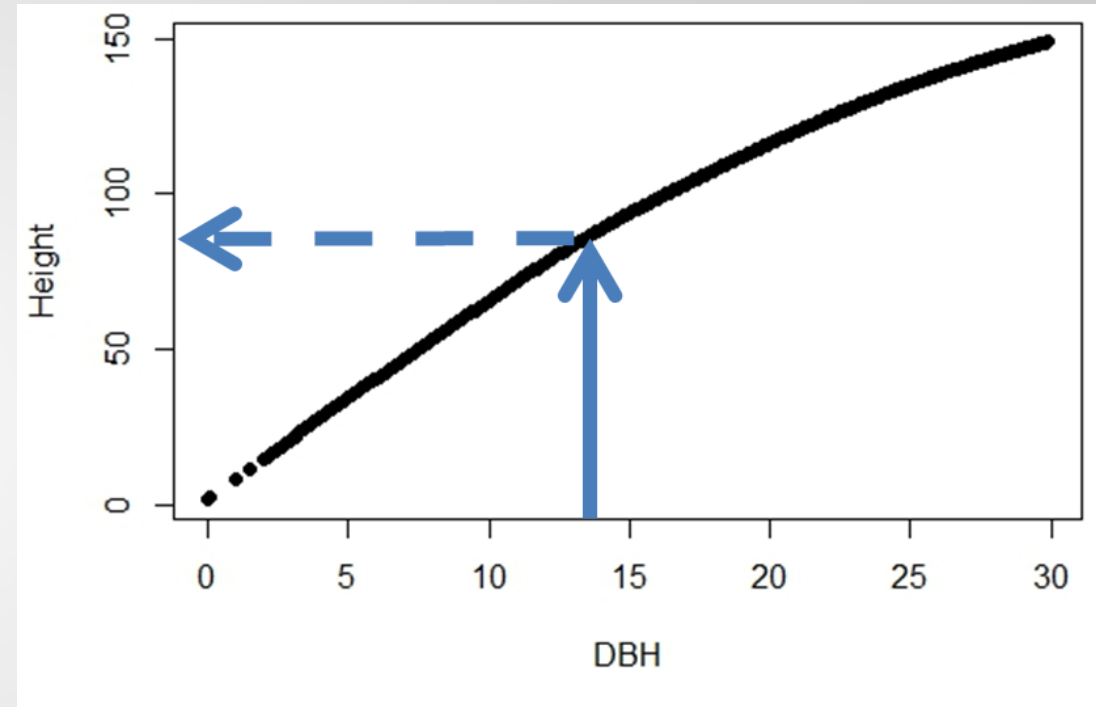
- A new inventory paradigm
- Building a new inventory
 - Ground (inventory plots)
 - Air (remote sensing)
 - Modeling
- How well does it work?



Shifting the Inventory Paradigm

Previous Paradigm

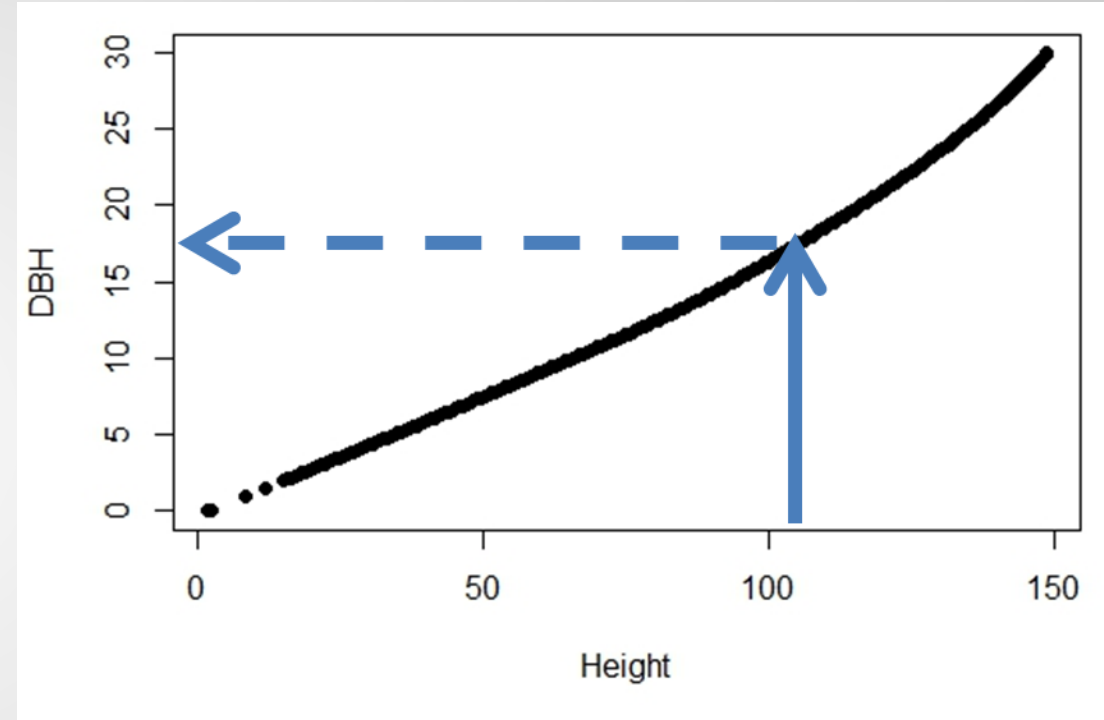
- Measure sample points across the landscape
- Diameter at breast height (DBH) is accessible to measure
- Diameter is linked to height and then volume
- Focus goes to lowering sample error by measuring more plots



Shifting the Inventory Paradigm

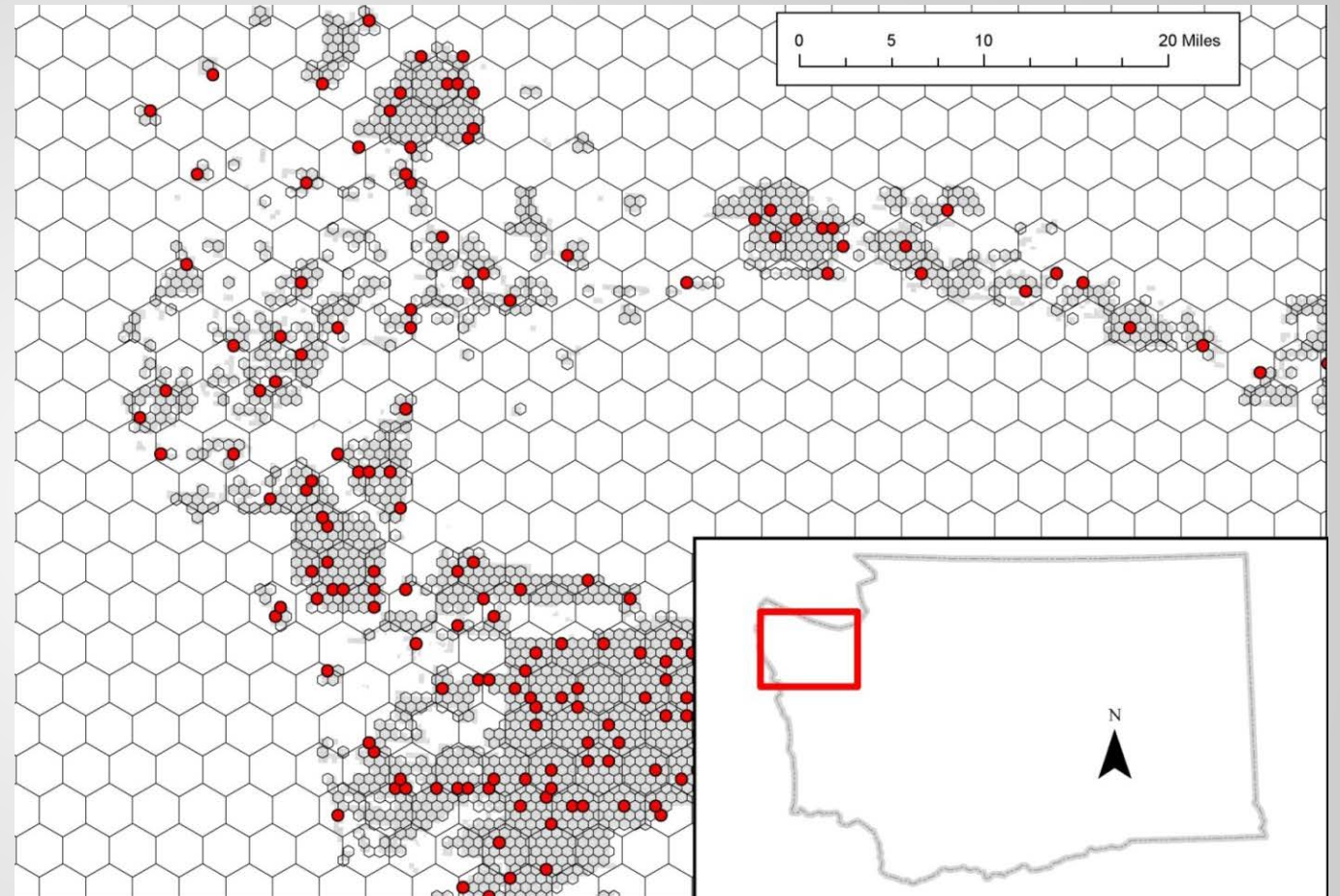
New Paradigm

- Measure everywhere across the landscape (remote sensing)
- Height is now accessible and precise
- Height is linked to diameters and then volume through models
- Focus on increasing accuracy of data based on ground plots and acquiring fresh remote sensing data



Inventory Plot Locations

- Ground plots are used to reinforce models
- Goal is to measure 400 plots per year
- Forested landscape is diverse across the state but having plots on a grid ensures we are sampling everywhere



Remote Sensing Data

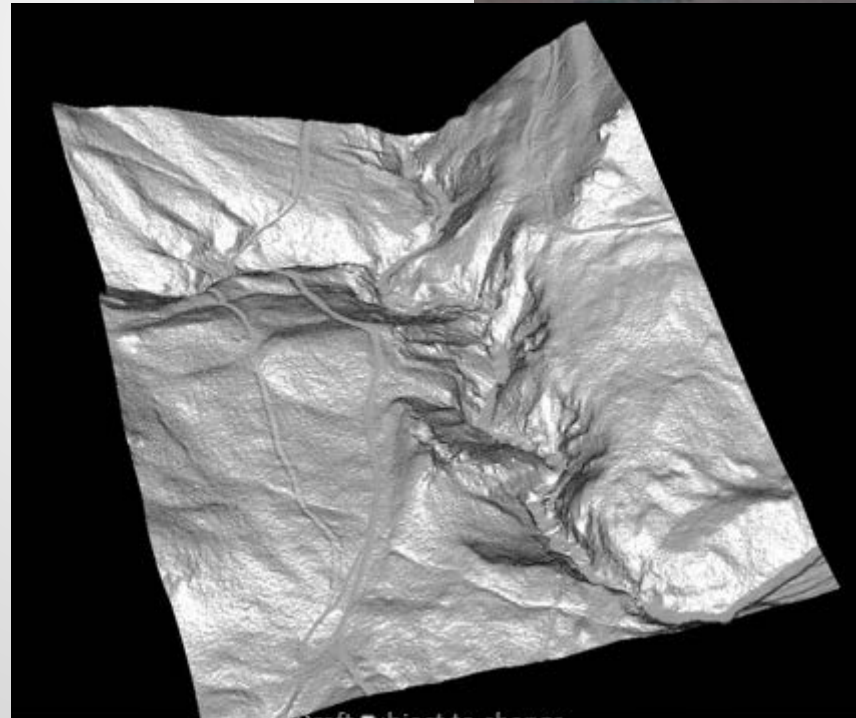
Light Detection and Ranging (LiDAR)

- Typically on fixed-wing aircraft but also helicopters
- Acquisitions cover 10's to 100's thousand acres
- Data transferable amongst landowners



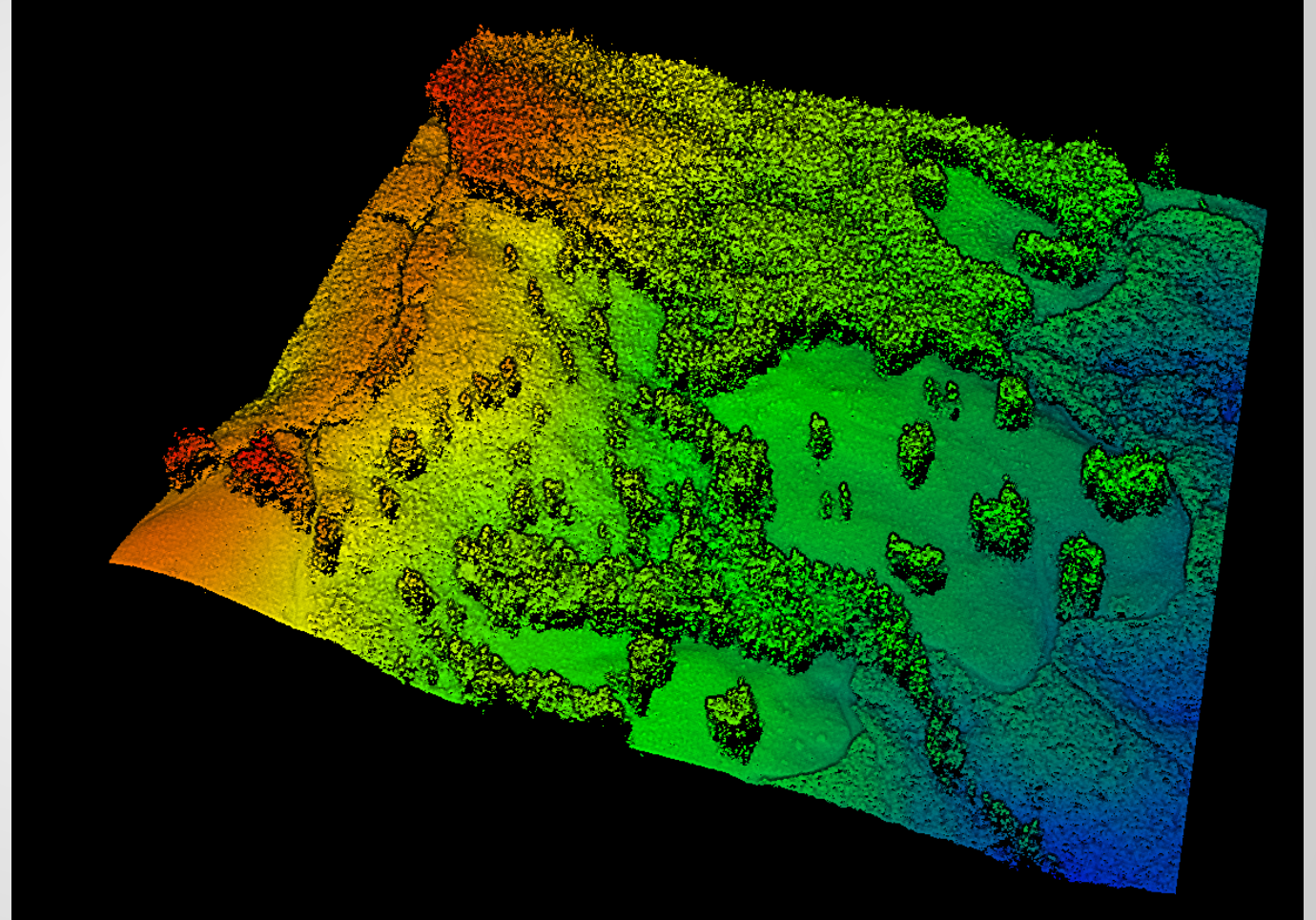
PhoDAR (photo based)

- Need LiDAR ground model
- Utilizes highly accurate photography
- Much cheaper than LiDAR



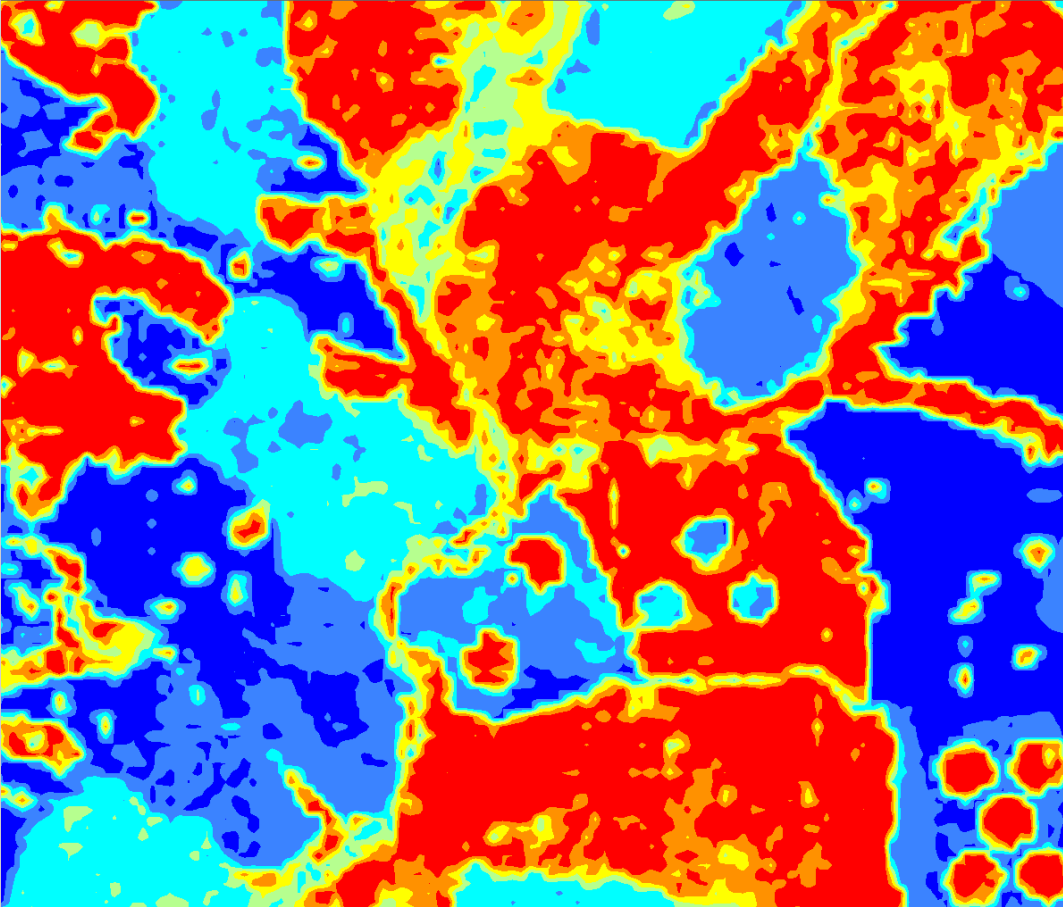
Remote Sensing Modeling

Goal: predict what we measure on the ground using data that we measure from the air

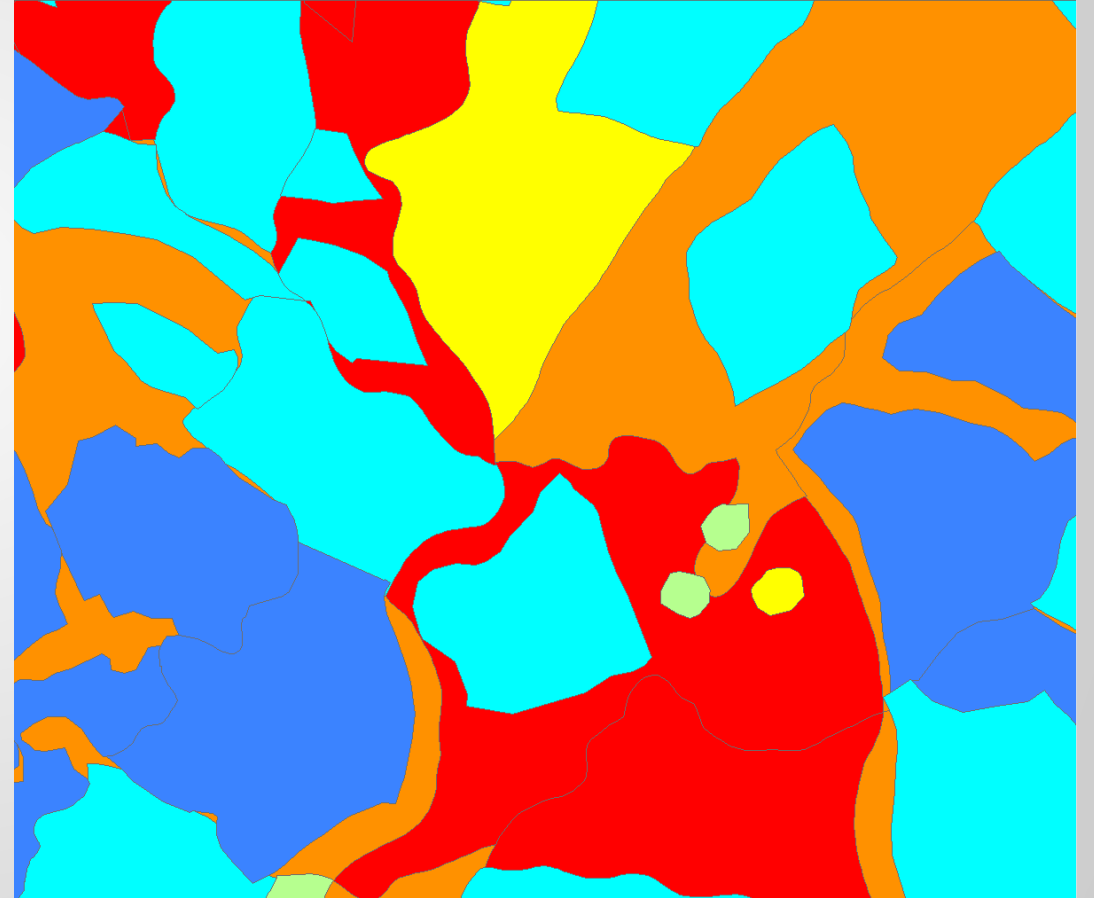


Modeling Results

1/10th Acre Scale (raster)

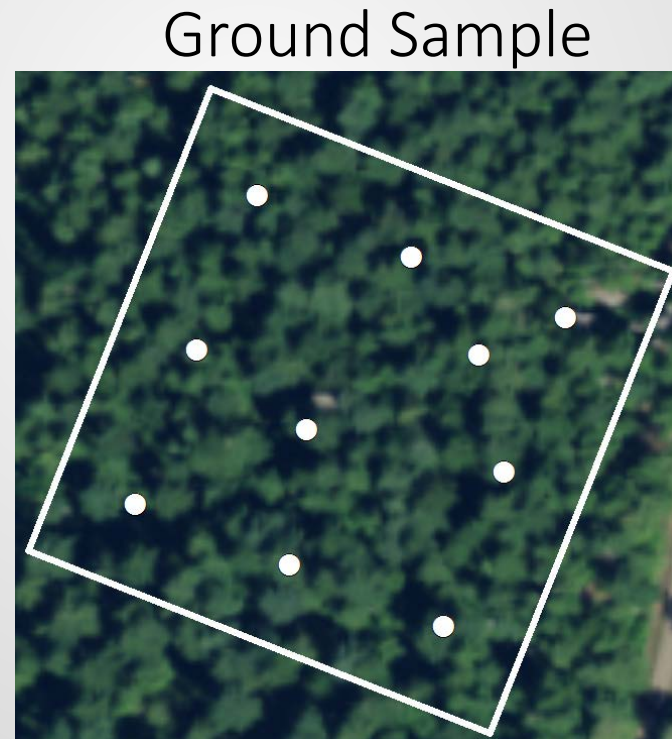


Stand Scale

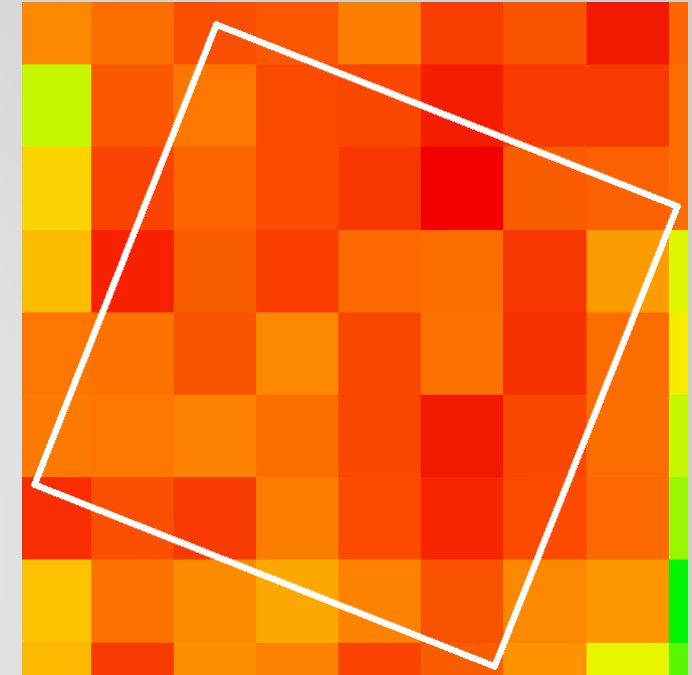


How Well Does it work?

- Validation Block
 - Small stands: 3.6 acres
 - 10 ground sample plots
 - 36 predicted cells
 - Used to test and validate our remote-sensing predictions

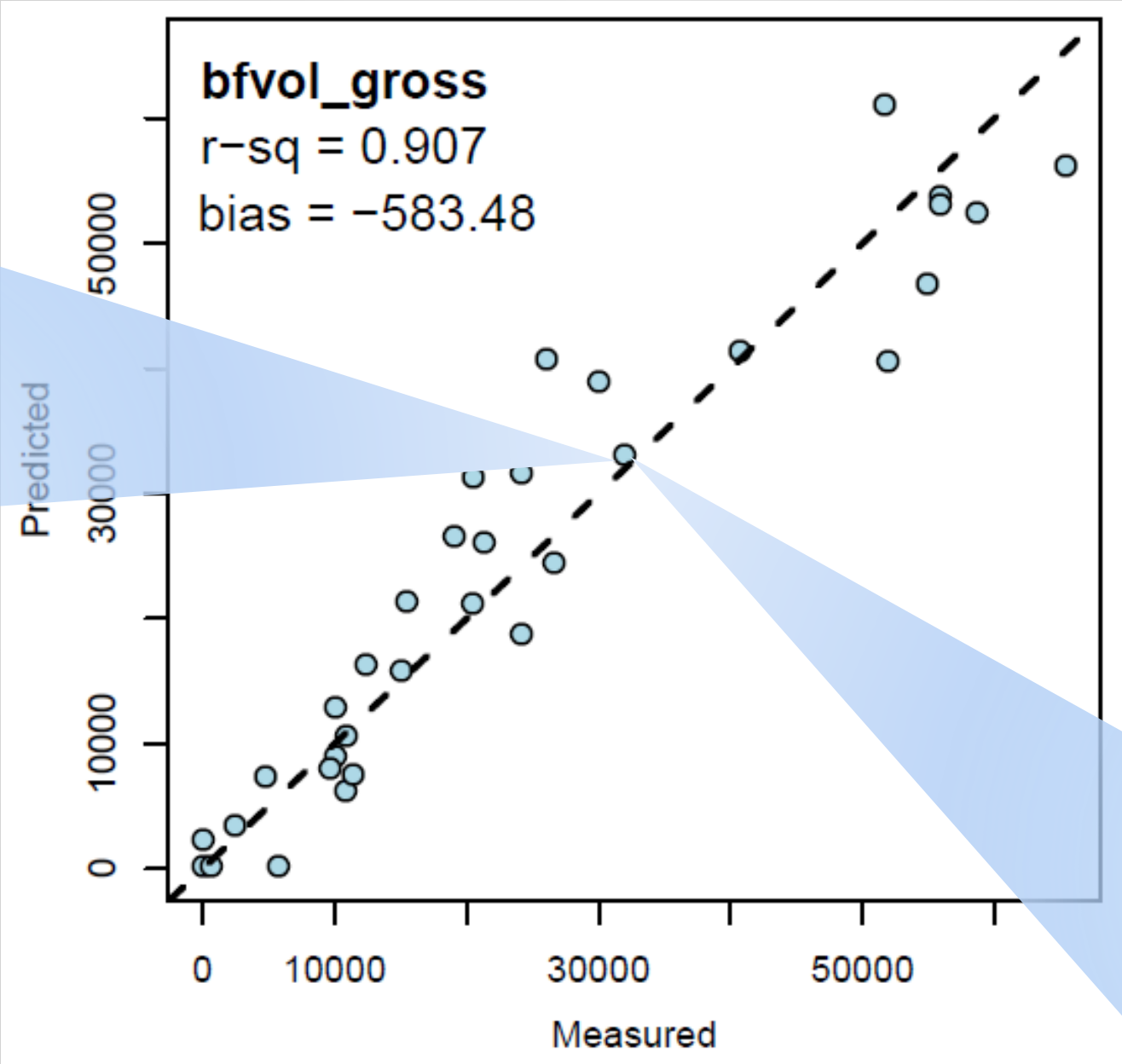
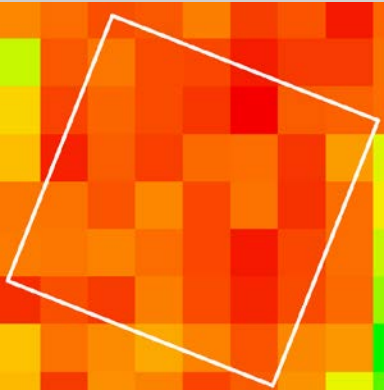


RS Predictions

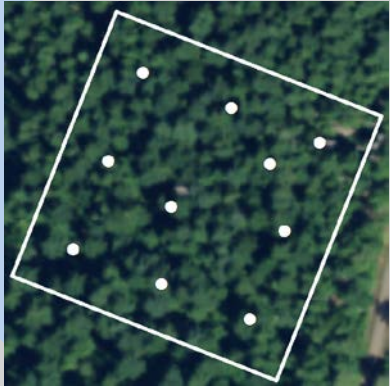


Validation Block Results

RS Predictions



Ground Sample



Remote Sensing Forest Resource Inventory System

Continuous Refinement Program

- region/user feedback is important

- validation blocks give confidence in the statistics

- comparing strategic forest inventory to our tactical inventory and harvest data



Statistically sound and replicable



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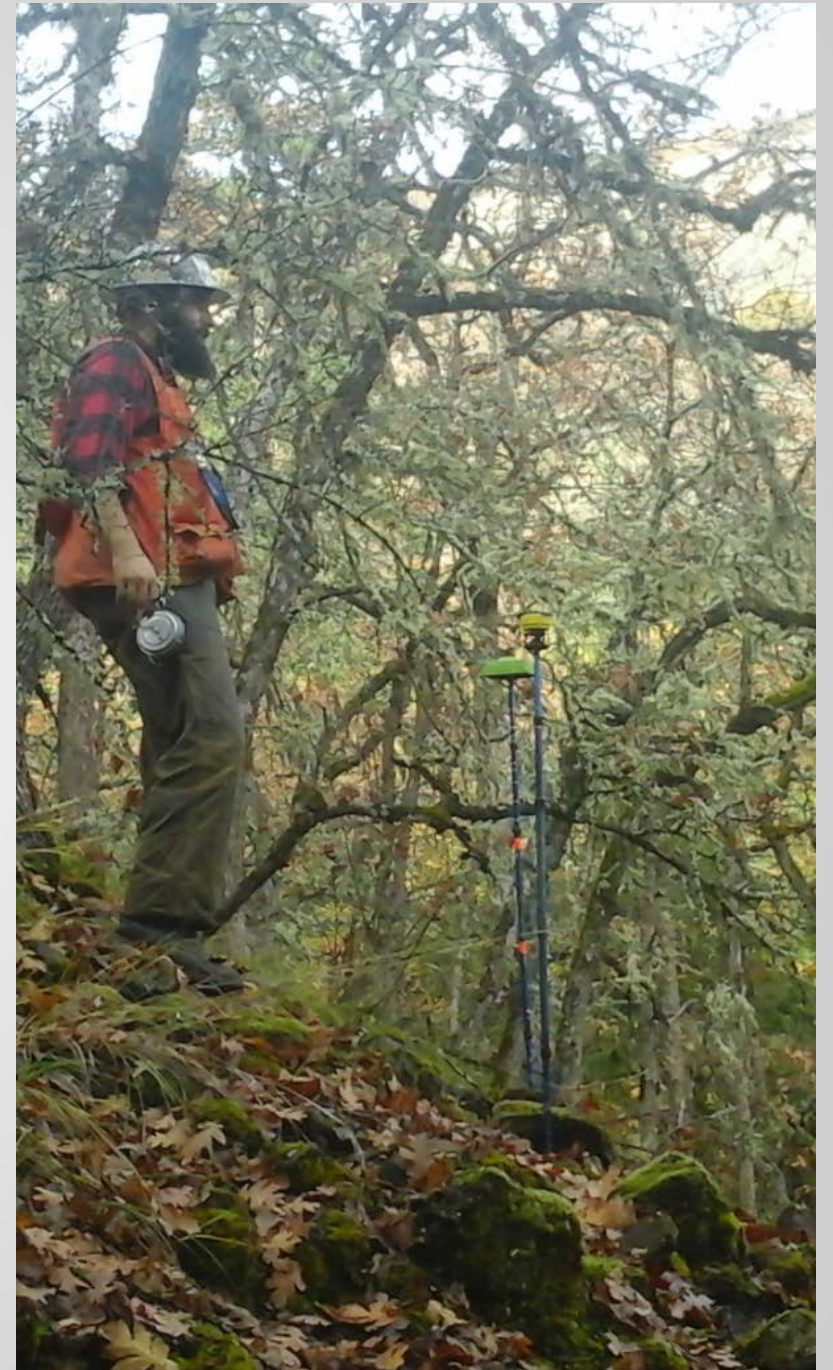
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Forest Inventory

- Critical to sustainable forest management
- Informs EISs and sustainable harvest calculation
- Provides up-to-date and accurate information
- Cost effective



Want to Learn More

- 2017 Operational LiDAR Meeting, Olympia, April 20th, 2017 (sponsored by PNW research station)



