

Inventory Information with High Spatial Precision

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Spatial Precision of Inventory

- FIA P2 plot data fine for regional/national analyses, or state analyses with limited categorical detail
- Many resource assessment questions need more local scale
- Logical course: combination of FIA plot data with higher-resolution remote sensing data
- Many examples, much work has been done in this arena

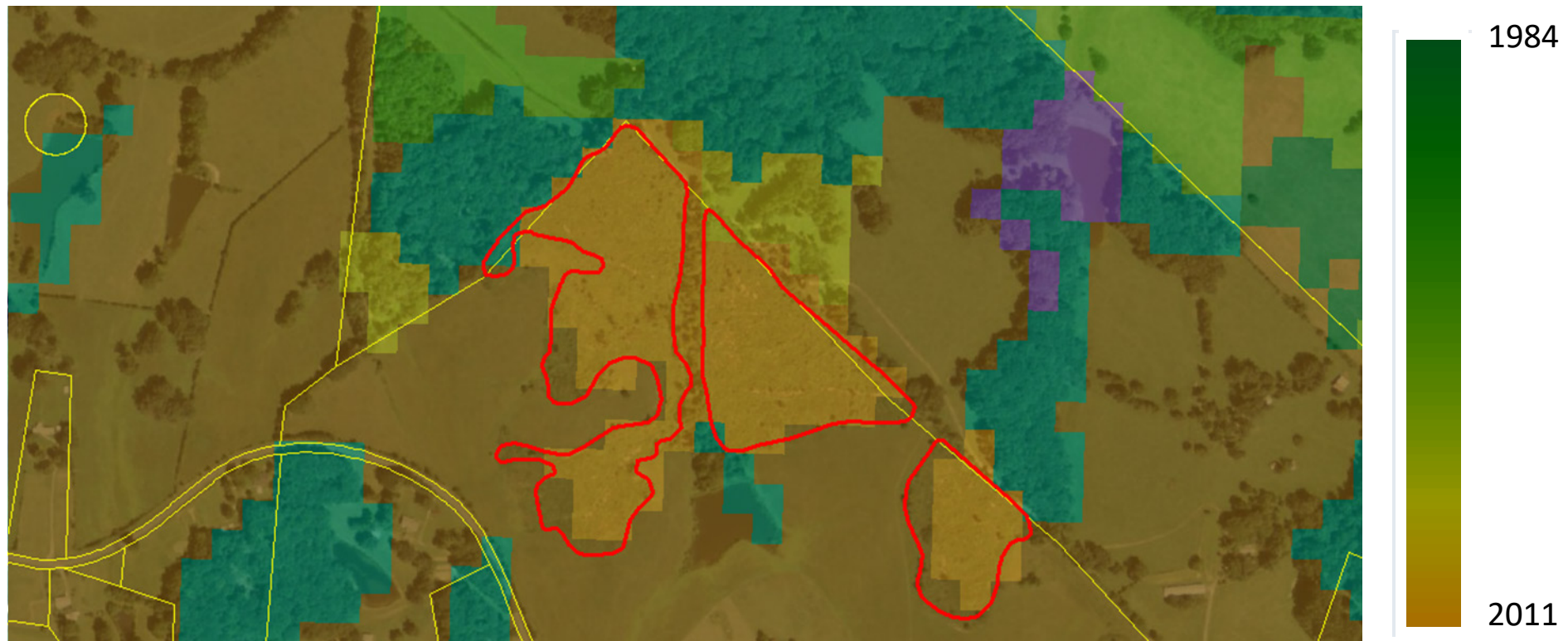
Goals for high-precision inventory

- Product-level volumes/weights (HW/SW Pulp/Saw),
- For specific forest areas (e.g., stands or forest patches),
- By forest type,
- At a resolution that can be combined with variables affecting availability (ownership, slope, proximity to roads/developments, soils, etc.),
- With a quantifiable precision of inventory estimates for aggregates (say, a 50-mile radius) that is better than FIA plot data alone

Is this even possible?

- We have:
 - Aerial photography and Landsat imagery
 - Time series of Landsat data to determine age of even-aged stands (up to 33 years)
 - Increasing availability of LIDAR for height
 - Numerous geospatial layers that relate to forest productivity and timber availability
 - Increasing access to digital ownership (parcel) data
 - FIA plot data

Is this even possible?



CeNRADS Efforts

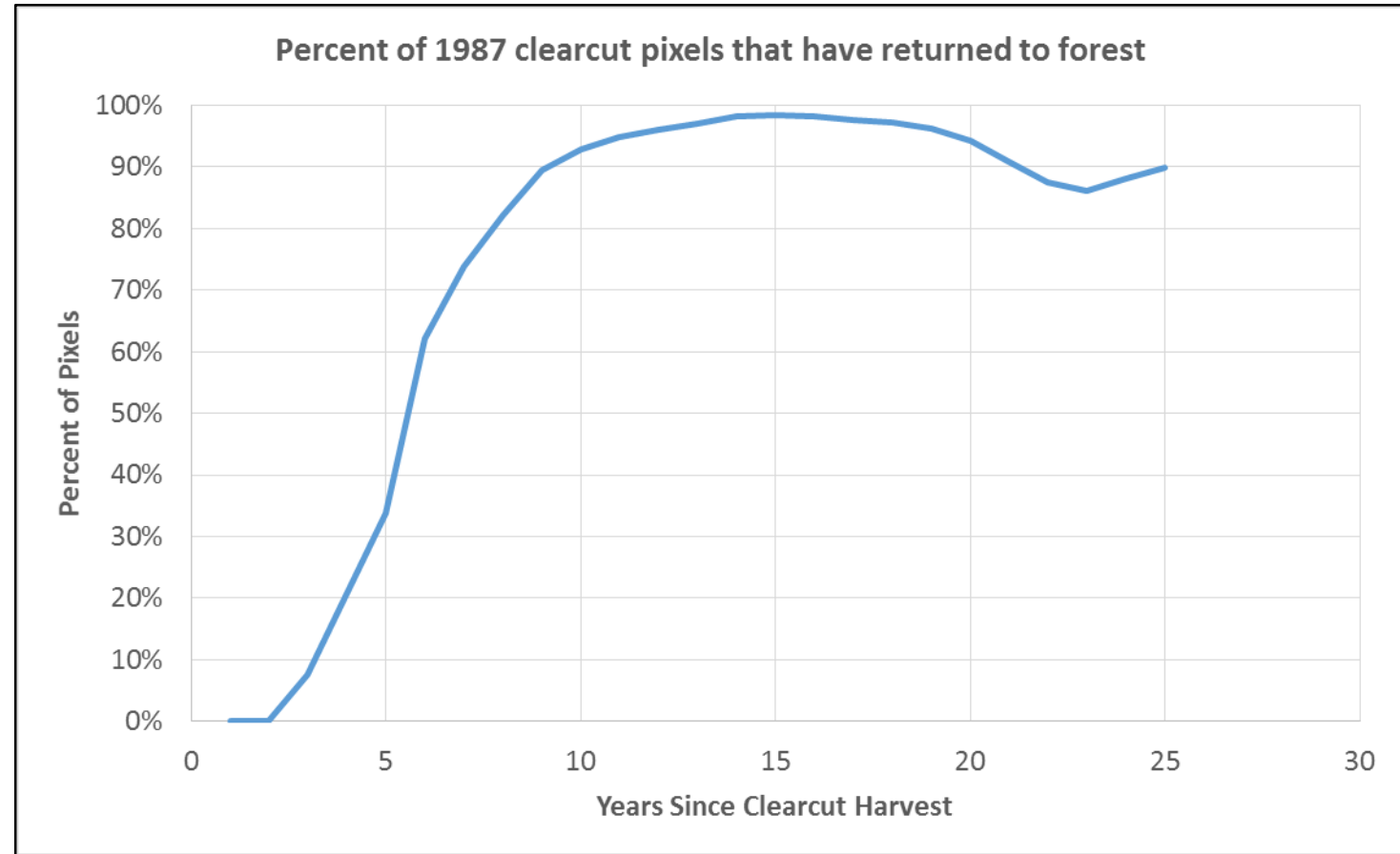
- Wood supply modeling using agent-based simulation models
- Operates at stand level (timber sales)
- Currently uses “pseudoplots” for stands
 - Parcel datasets and forest cover maps (NLCD) provide a forest parcel size distribution by FIA unit
 - FIA plots are split into pseudoplots following parcel size distribution for private ownerships within each FIA unit
 - Pseudoplots are randomly scattered within a hexagon
- Availability is modeled based on observed forest harvests and relevant spatial layers analyzed with logistic regression

CeNRADS Efforts

- Working towards “real” stand-level inventory information
- Using for Vegetation Change Tracker (VCT) data (Landsat time series maps of forest disturbance)
- Using additional layers to classify VCT disturbances as
 - Clearcut harvest
 - Partial harvest
 - Non-harvest disturbance (fire, insect, weather, development, etc.)
 - We call this “enhanced” VCT
- Result: forest age-class map with forest types

Data from enhanced VCT

- One Landsat scene in SE VA
- All 1987 clearcuts (as identified by eVCT) that have regenerated to forest and were classified as coniferous by 2011 NCLD
- Find the first year that eVCT classified pixels as post-disturbance forest again
- Improve estimates of true forest loss?
- Q: What proportion of 5-year old regenerated clearcuts will Landsat see as forest?
- A: 33%



CeNRADS Efforts

- Plan:
 - Build on work by USFS and others on imputation
 - Use forest age, forest type, ownership, other data in an imputation process to assign FIA plot volumes to stands

Wish List

- National map of
 - forest types,
 - ages for even-aged stands,
 - time since harvest disturbance for uneven-aged stands
- “Best practices” methodologies for imputation of FIA plot data to stands
- Periodic updating of the national map
 - (Which would answer forest regeneration questions)