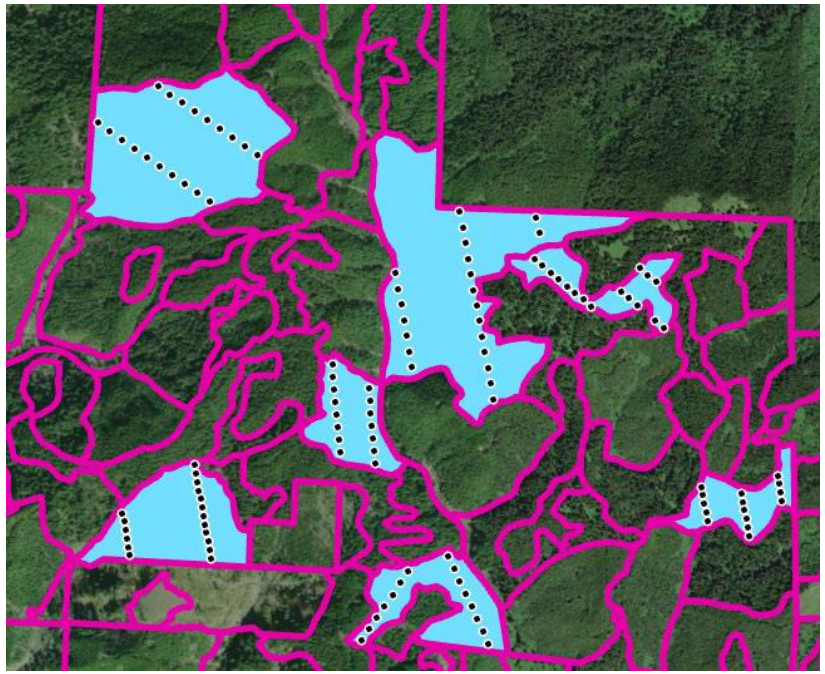
State Forests Inventory and Carbon Trends

Board of Forestry

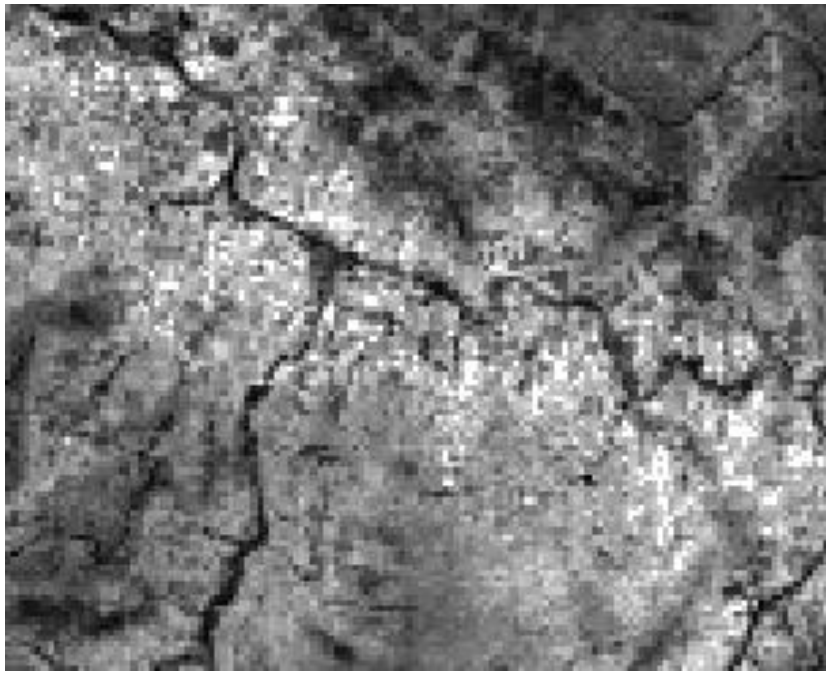
September 7, 2022

Overview of Forest Inventory

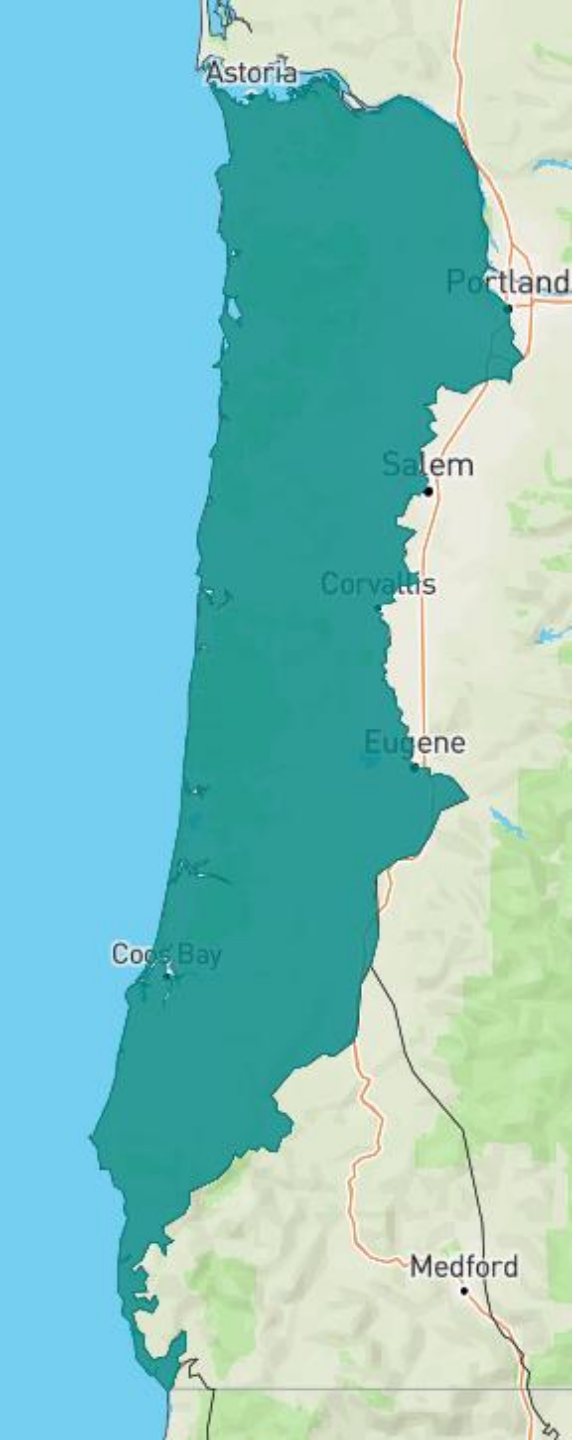
- Forest Inventory Needs Assessment (2017-2019)
- Wall-to-wall lidar and densified plot network initiated in 2020



Stand Level Inventory (SLI)



Enhanced Forest Inventory (EFI)

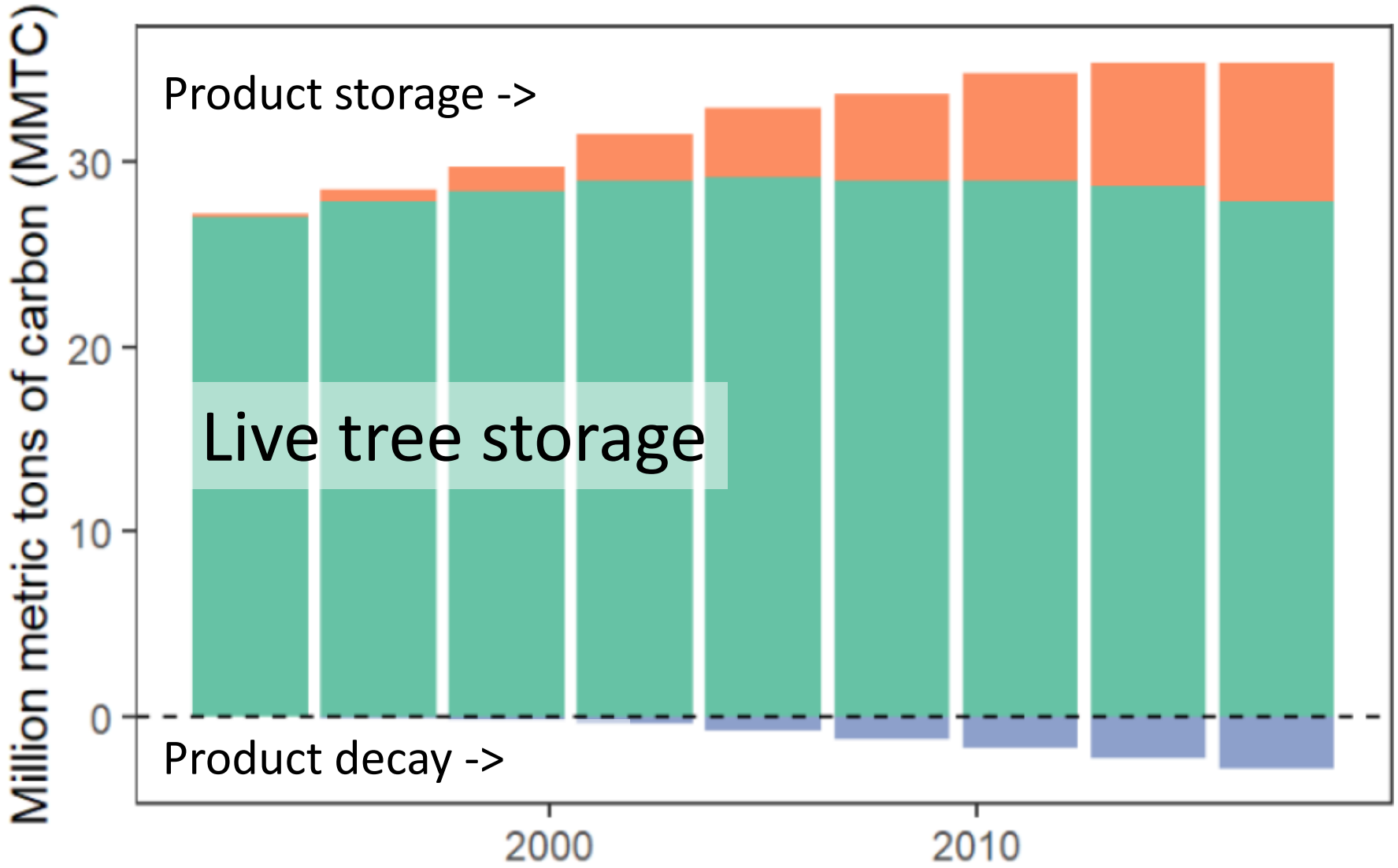


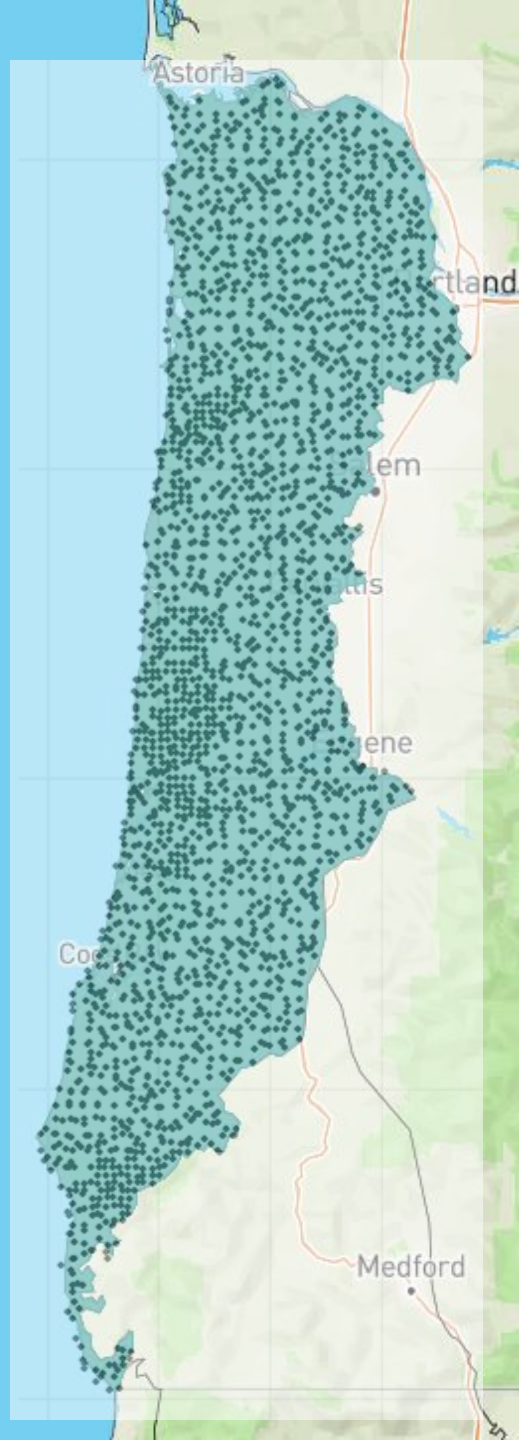
Live Tree Carbon in the Oregon Coast Range

Ownership	Average US tons/acre	Total tons	Total acres
Federal	80.7	128 million (43%)	1.6 million (27%)
Private	37.7	141 million (47%)	3.7 million (63%)
ODF-managed	56.5	31 million (10%)	0.54 million (9%)

LEMMA estimates for 2017
Percentages only count these 3 ownership groups.

Carbon Trends in Live Trees and Harvested Wood Products in Oregon Coast Range for ODF





Carbon Data Sources

Forest Inventory and Analysis (FIA) base

- 10-year stocks
- Remeasurements

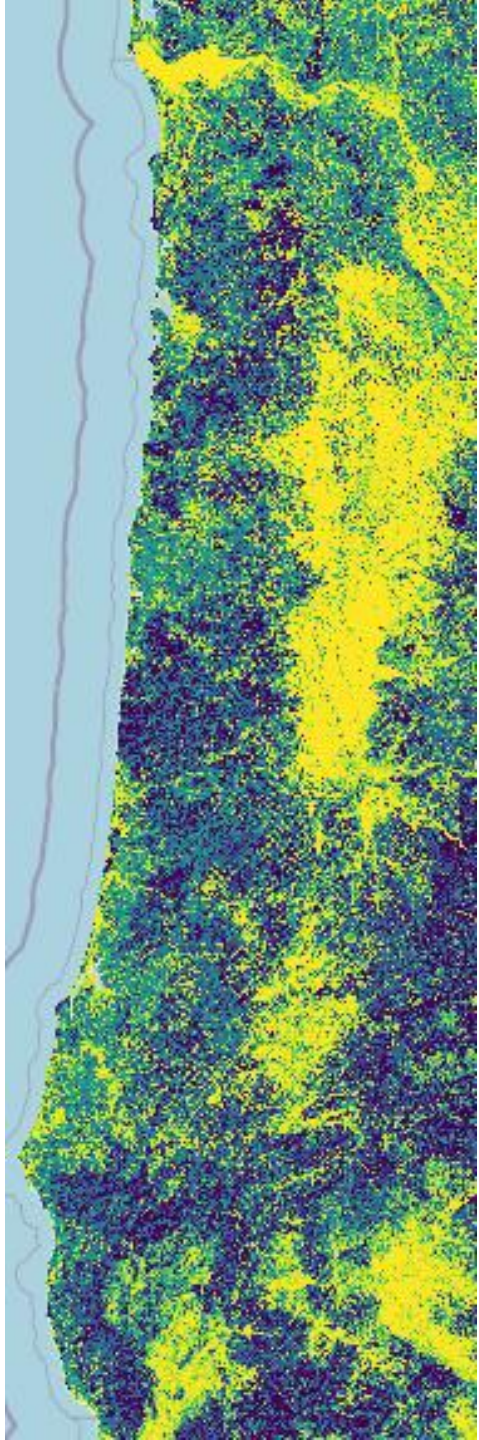
Remote-sensing products

- Landsat imagery calibrated with FIA

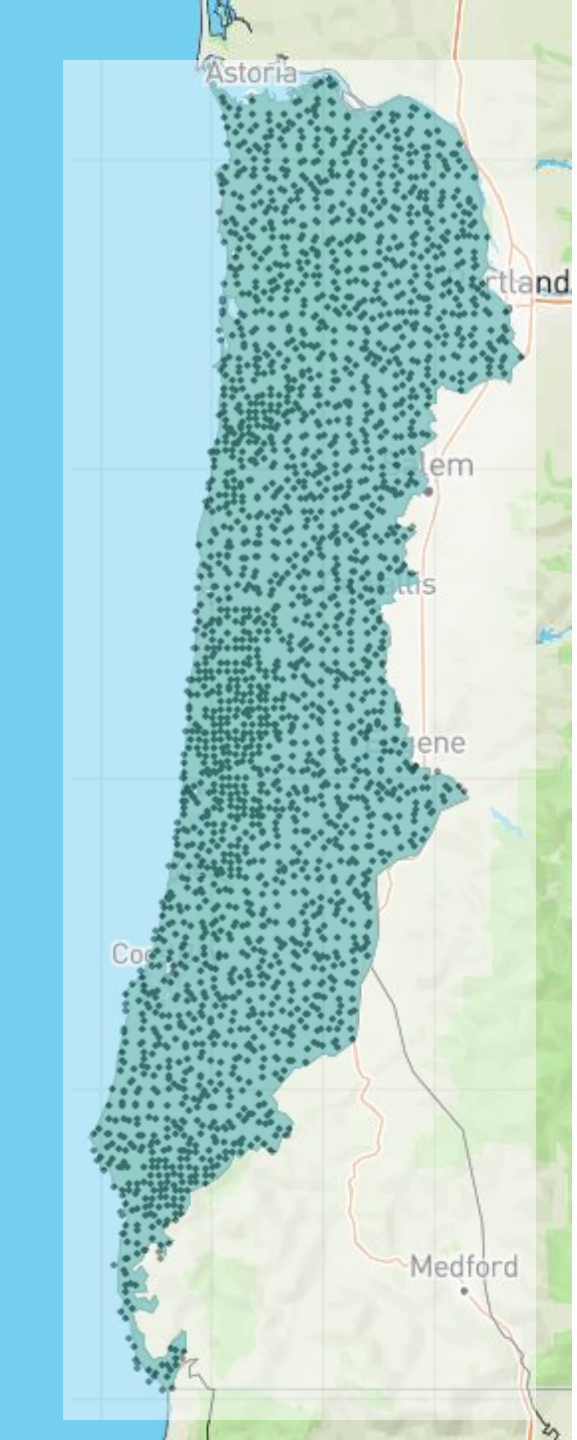
ODF Inventory

- Stand cruises
- FIA densified
- Lidar

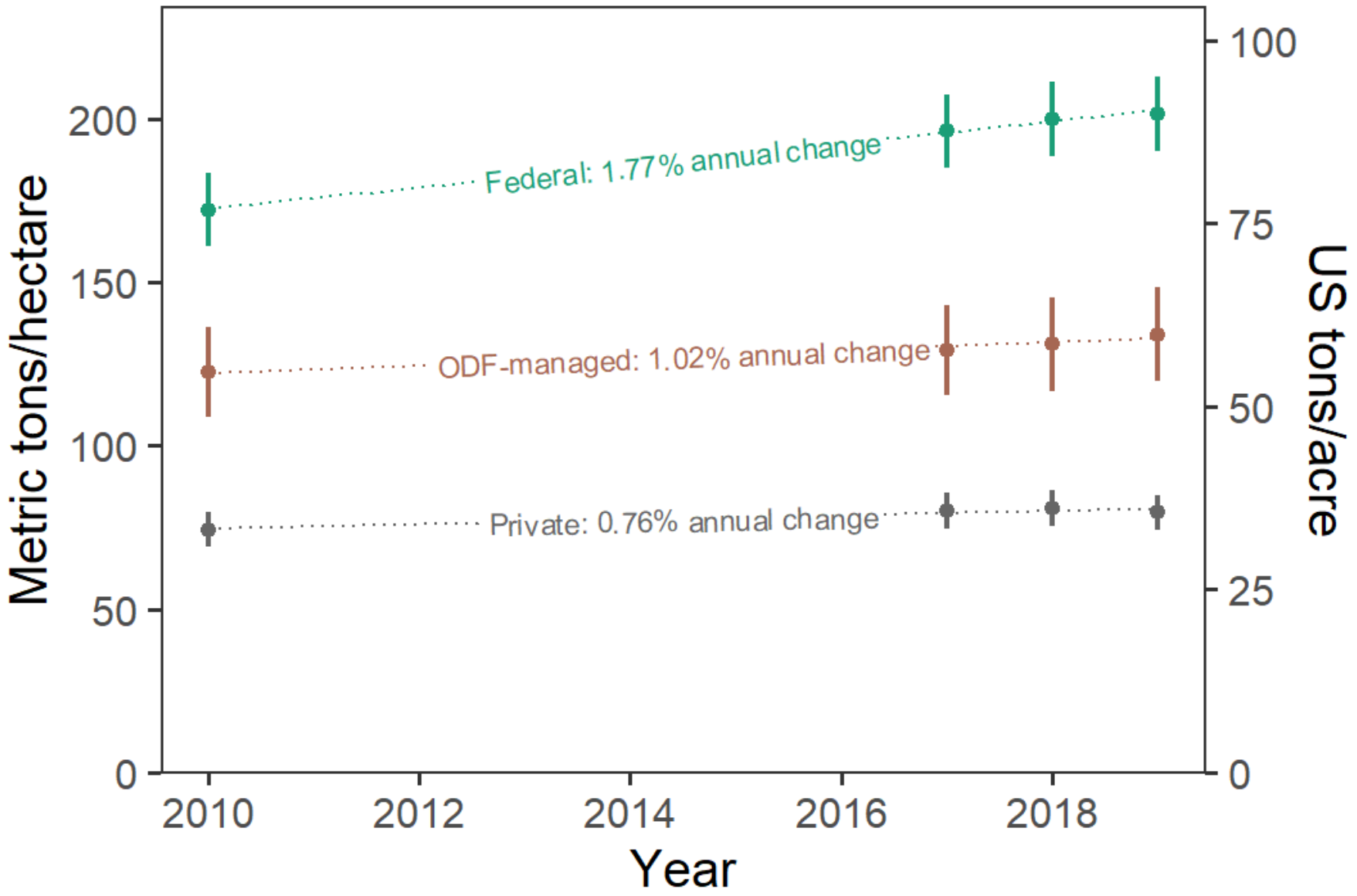
FIA base grid



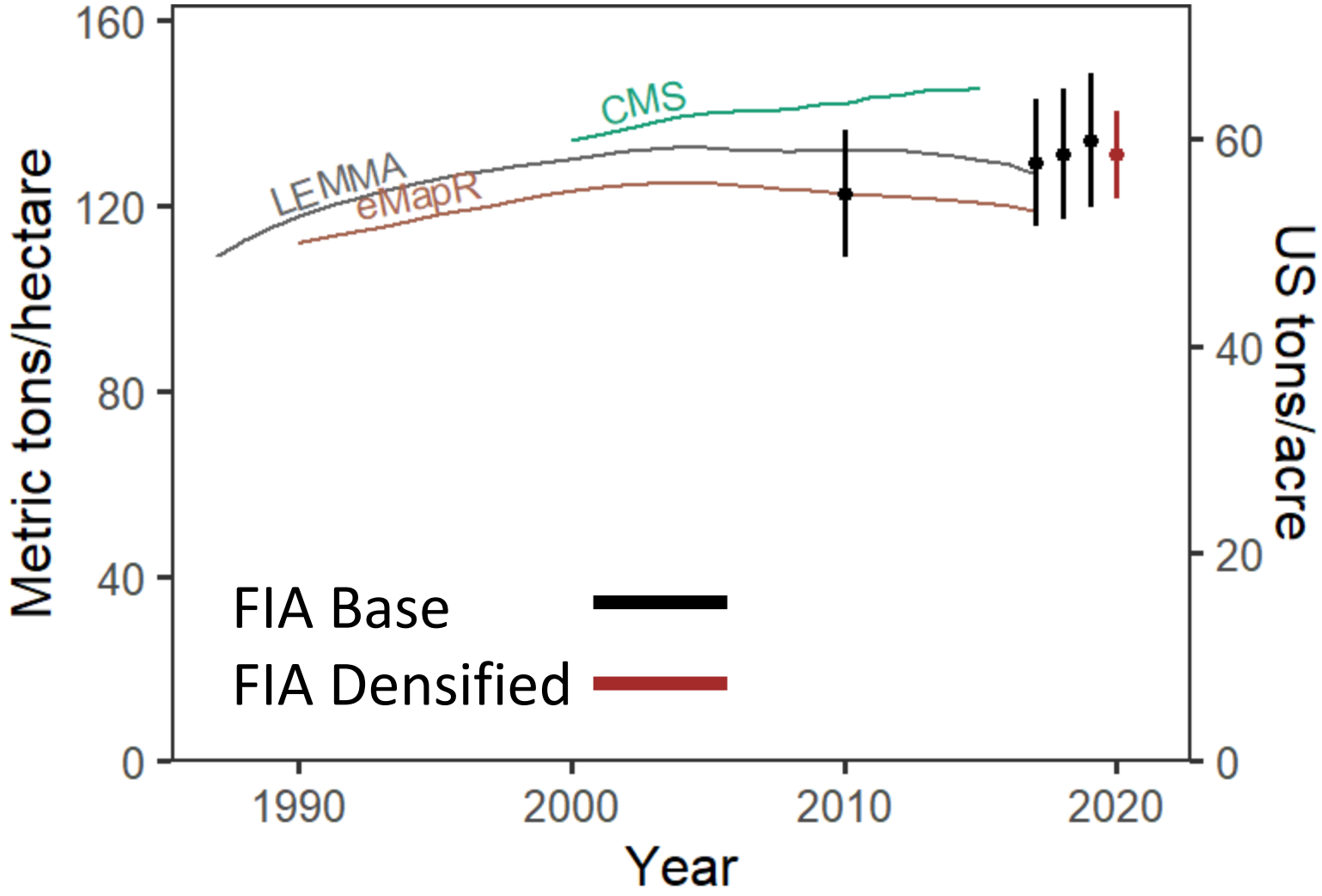
eMapR biomass



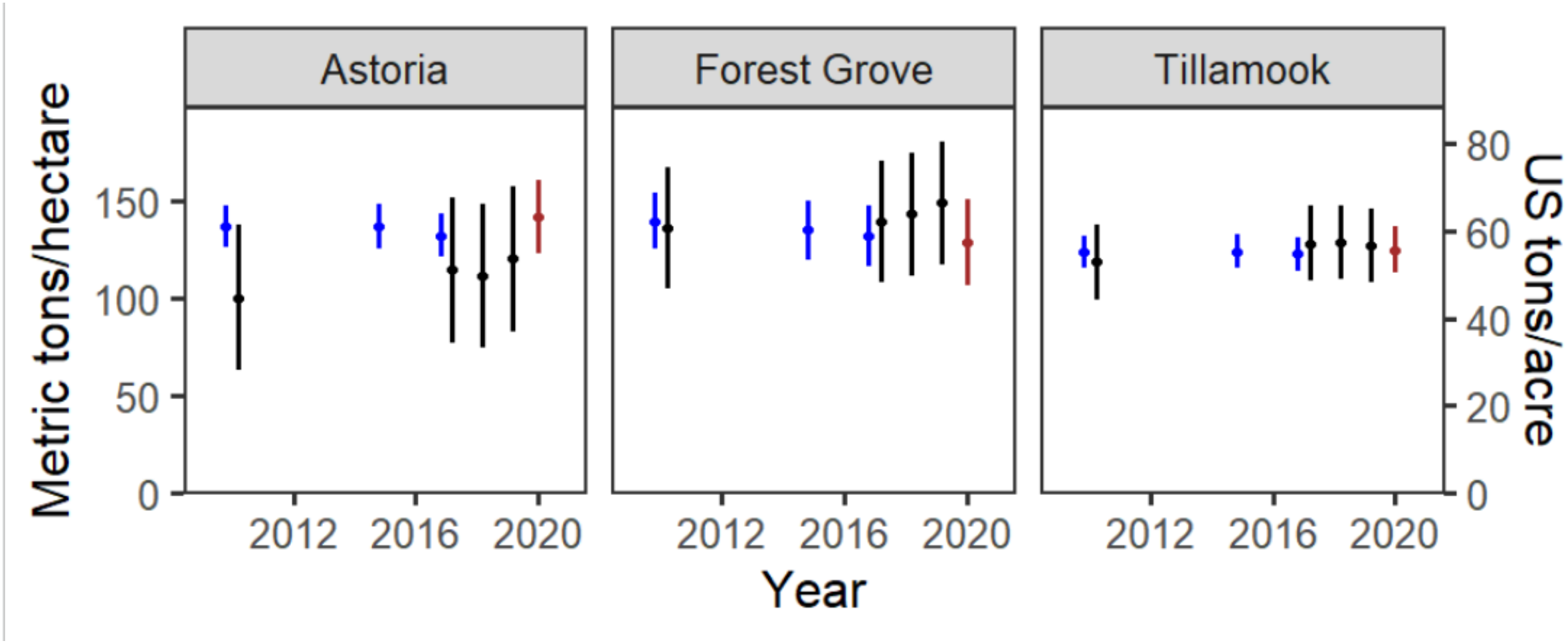
Average Live Tree Carbon in the Oregon Coast Range on FIA base plots



Comparing Remote-sensing and FIA Carbon Estimates for ODF-managed Land in the Oregon Coast Range

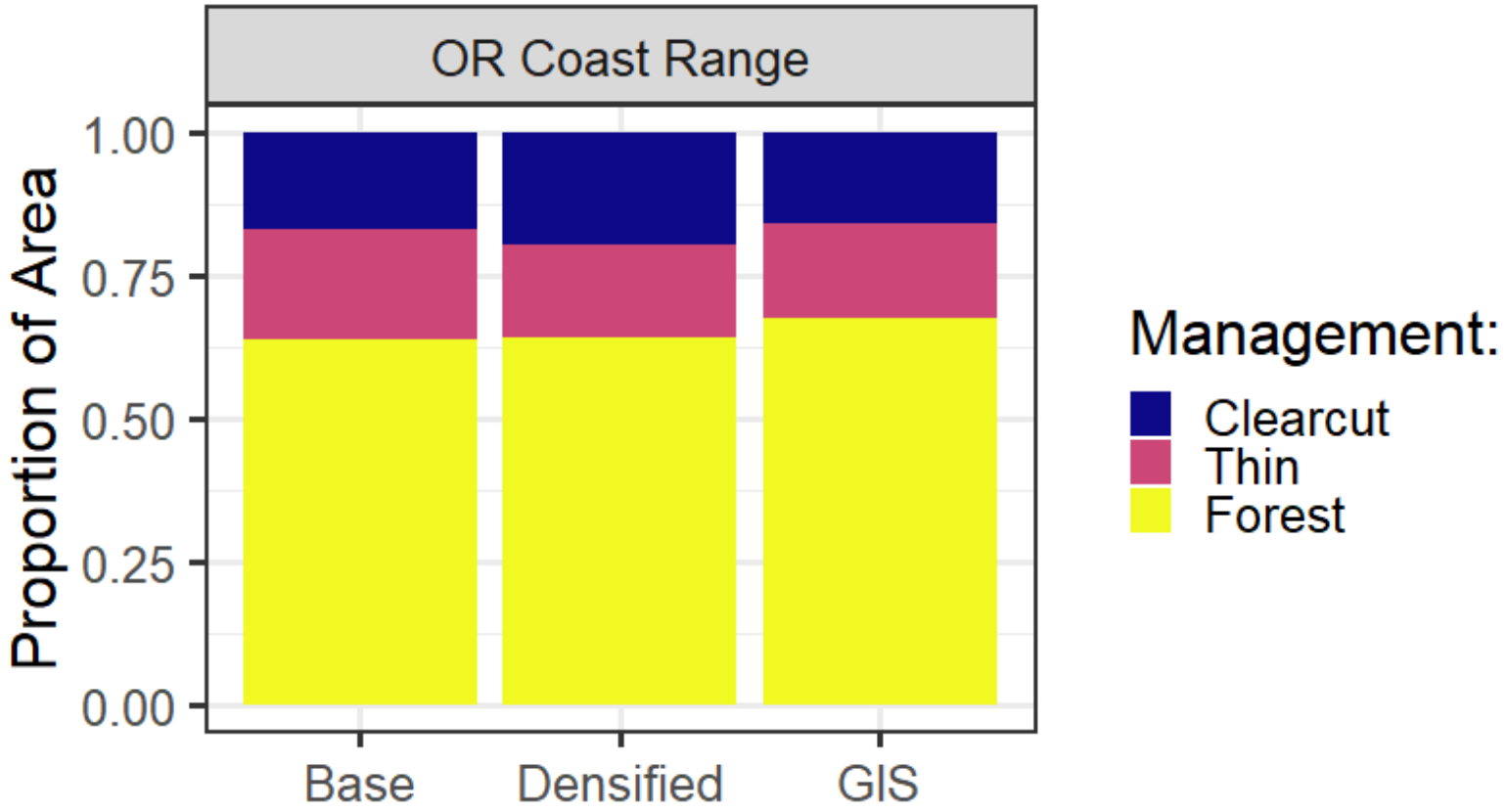


Comparing LEMMA and FIA Carbon Estimates for ODF North Coast Districts



Potential Reasons for Trend Differences

1. FIA representation of management areas



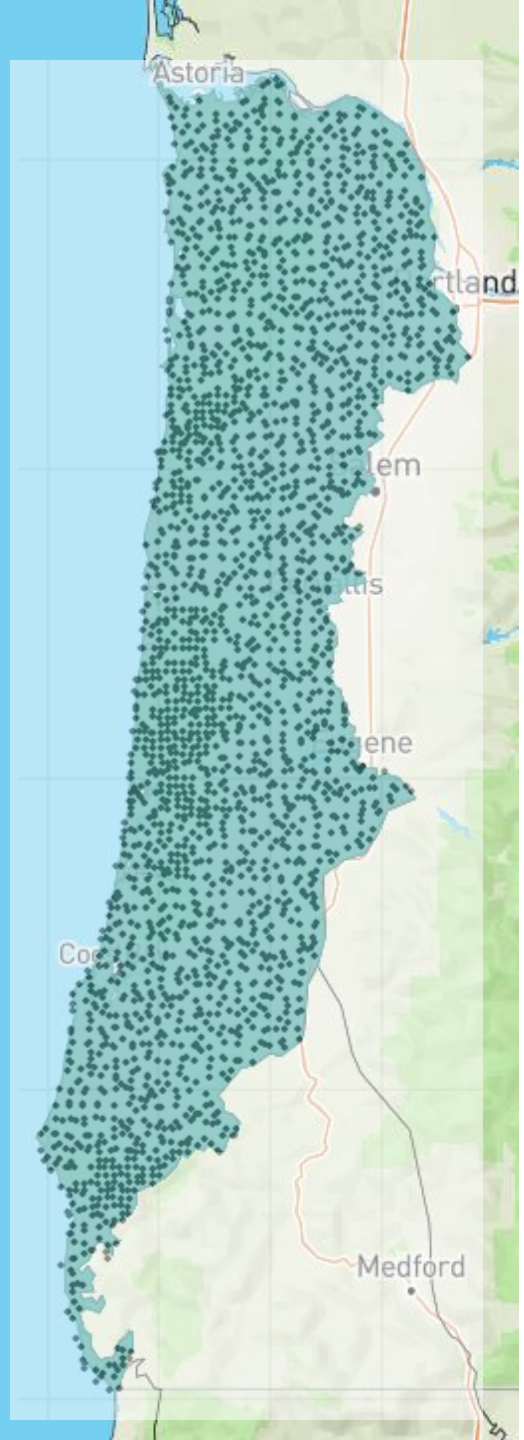
Potential Reasons for Trend Differences

2. Satellite imagery “saturates” in closed canopy forest

Compared to ground measurements of carbon, remote sensing:

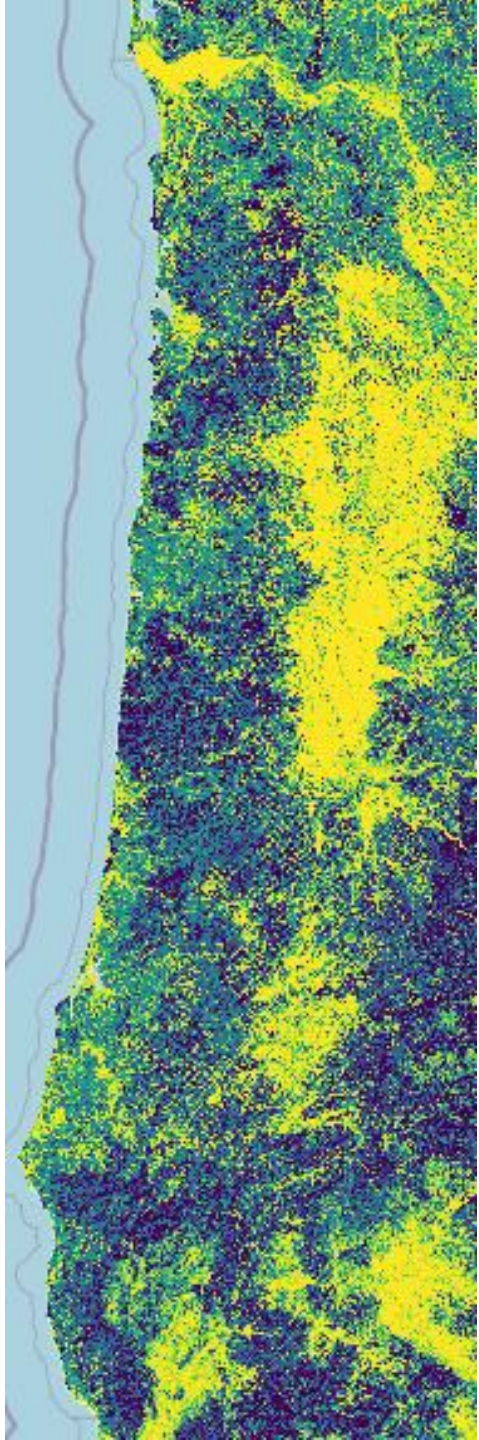
- Underestimates 10-year growth in unmanaged forest
- Overestimates young stands/underestimates mature stands

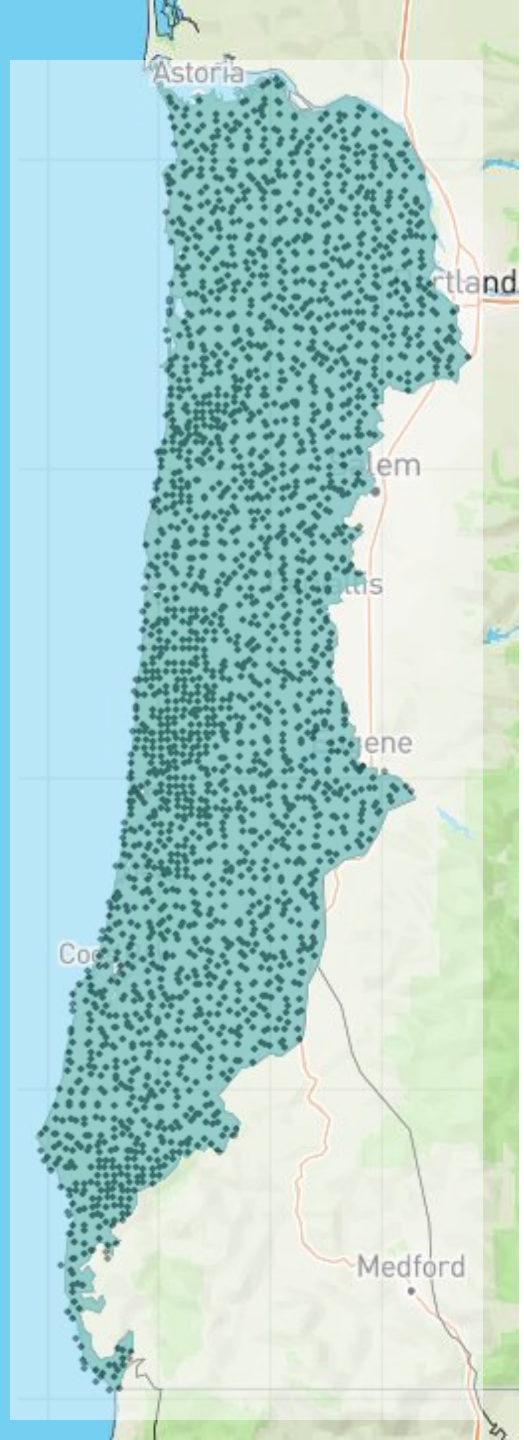
Examples by clicking locations on eMapR biomass map
http://emapr.ceoas.oregonstate.edu/pages/data/viz/index.html



Summary of Analysis

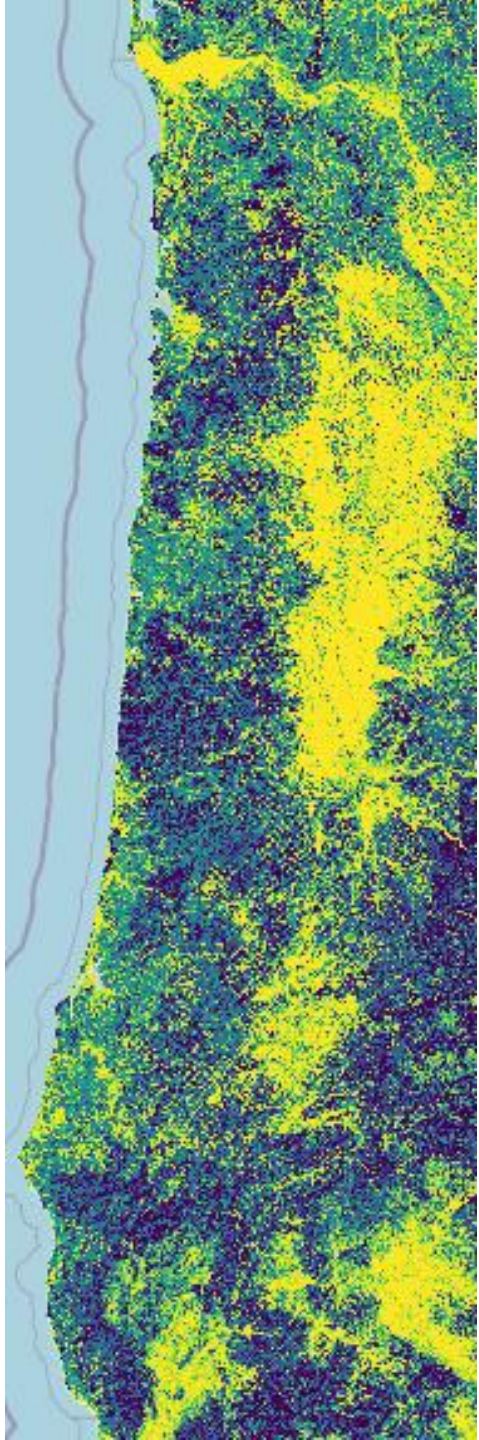
- Trends different for FIA and remote-sensing products
- Alignment on recent aboveground carbon estimates
- Implications of long-term trends

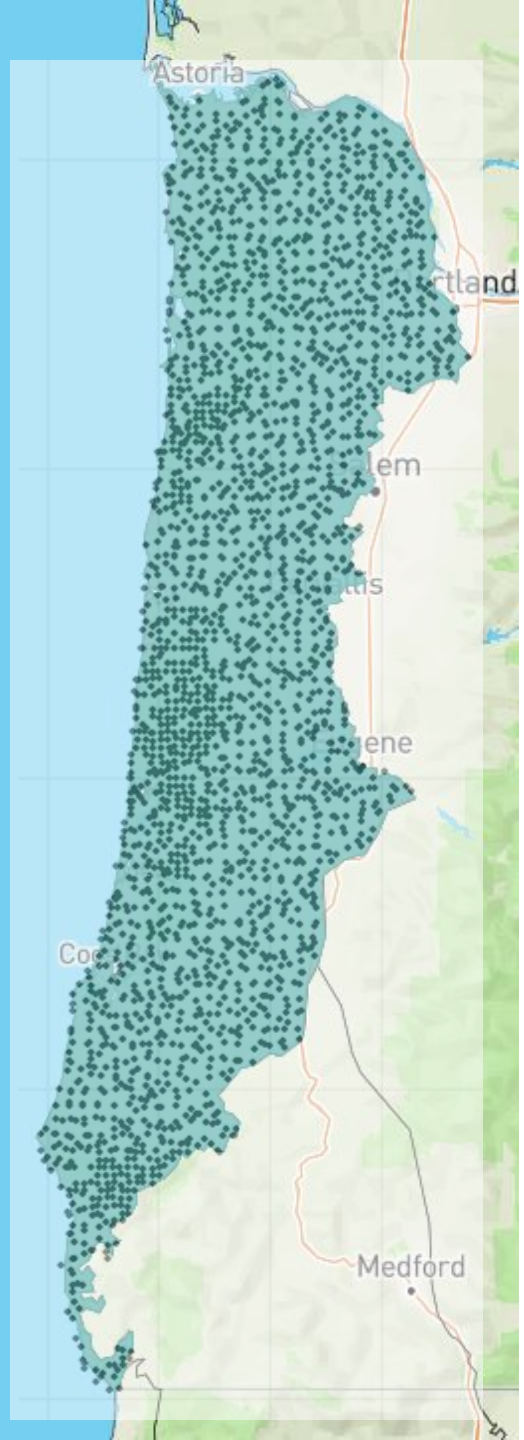




Conclusions and Next Steps

- Enhanced Forest Inventory improves precision and accuracy
- Ongoing improvements such as supplemental and validation plots





Next Steps

Integration with remote-sensing products validates inventory changes

- Assess disturbances
- New technologies
- Track metrics across ownership
- Model-assisted inventory estimates