Tree mortality from harvest, bark beetles, and fire across the western United States
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Background
• Forests help regulate Earth’s climate by sequestering carbon
• Forest disturbance accelerates carbon release from ecosystem → atmosphere
• Extensive forest disturbance from fires and bark beetles during 2000s in western US

Research Question
How much tree mortality was caused by fires, bark beetles, and timber harvest (2003-2012)?

Study Area

General Approach
• Focused on carbon in tree aboveground biomass
• USFS timber product output
• Geospatial biomass, fire, and beetles data sets

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\text{% mortality} \times \text{AGC} = \text{mortality}
\]
Regional tree mortality

- Averaged 45.8±16.0 Tg AGC yr\(^{-1}\) (± 95% CI)
- Harvest > bark beetles > fire
- Equivalent to 18% of regional f.f. emissions

State tree mortality

Fire
Bark beetle
Harvest