Forest ecosystem and harvested wood product carbon updates

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Caldor Fire, South Lake Tahoe, CA
General updates

• AB 1504 2020 report
• Pacific Coast Temperate Forest Regional Carbon report
• Forest management and wood utilization carbon modeling
• Harvested wood product carbon estimation tool – Live demo
Pacific Coast Region (PCR) Forest Area

Forest Land Area, 2019

<table>
<thead>
<tr>
<th>Location</th>
<th>Hectares (x1000)</th>
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<tbody>
<tr>
<td>California</td>
<td>12.8 Million</td>
</tr>
<tr>
<td>Oregon</td>
<td>12.0 Million</td>
</tr>
<tr>
<td>Washington</td>
<td>8.9 Million</td>
</tr>
<tr>
<td>British Columbia</td>
<td>60.9 Million</td>
</tr>
</tbody>
</table>

Map showing forest land area in the Pacific Coast Region with data for California, Oregon, Washington, and British Columbia.
PCR Forest Carbon Stocks

Forest Carbon Stocks by Pool, 2019 [Preliminary]
*Metric Tonnes CO2e/Hectare*

- **British Columbia**
  - Live Trees & Understory: Approximately 900
  - Dead trees: Approximately 100
  - Down Wood: Approximately 50
  - Soil & Forest Floor: Approximately 500

- **CA/OR/WA**
  - Live Trees & Understory: Approximately 900
  - Dead trees: Approximately 100
  - Down Wood: Approximately 50
  - Soil & Forest Floor: Approximately 500
PRELIMINARY RESULTS - Origin (for exports) and destination (for imports) for primary wood product trade flows in the PCR.
CA import origins

California - imports [preliminary]

- Oregon
- Washington
- British Columbia
- Other US
- Other Intl.
- Total Imports

Tg CO2e
CA import(exports) (preliminary results)
Effects of forest management and wood utilization scenarios on carbon sequestration and storage in California

Slide adapted from C. Smyth, Natural Resources Canada
Live Demo: HWP C vR estimation tool
(expected public availability later this year)
Evolution of the USFS HWP Carbon inventory tool

**USFS HWP-C Excel Spreadsheet**
- For USFS National Forest System Northern Region HWP C inventory
  - e.g., Stockmann et al. (2012), Anderson et al. (2013)

**USFS HWP-C v1**
- For all USFS National Forest System Regional HWP C inventories
  - e.g., Stockmann et al. 2014
  - No longer available online

**USFS HWP-C v2**
- In development, builds from CA variant of USFS HWP-C
  - Expected public availability 2022

**California variant CA USFS HWP-C**
- For state-level HWP C inventory in CA
  - e.g., Loeffler et al. (2018)
  - Not available online

**HWP-C vR**
- For state-level HWP C inventory in CA, OR, WA
  - e.g., Christensen et al. (2020, 2021), Morgan et al. (2021), Nichols et al. (2020)
  - Expected public availability 2022

*Note: All model names made up by me rather than original USFS researchers*
Annual Harvest

Harvest Data Source: http://www.bber.umt.edu/FIR/HarvestCA.aspx
Annual harvest by end-use functional lifespan

Harvested carbon utility halflife category

California

Harvested carbon utility halflife category

Oregon

- Fuel (burned immediately)
- Short (1-6 years)
- Medium (7-30 years)
- Long (31+ years)
Proportion of annual harvest by functional lifespan

Proportional allocation of harvested carbon to instant oxidation or short, medium, and long-lived end-uses.

- **Fuel (burned immediately)**
- **Short (1-6 years)**
- **Medium (7-30 years)**
- **Long (31+ years)**
Sankey Diagram – fate of single harvest year
Sankey Diagram – fate of single harvest year

Sankey diagram of carbon fate from harvest in 1952 after 100 years.
Sankey Diagram – fate of single harvest year
Sankey Diagram – fate of single harvest year
Carbon storage by owner

Cumulative carbon stored in products in use and solid waste disposal sites by ownership

Carbon Pools to Display
- Products in Use & SWDS
- Products in Use
- SWDS

Select Ownships
- BLM
- PVT
- STATE
- USFS
- Tribal

Select Metric
- Tg C
- Tg CO2e
Cumulative carbon stored in products in use and solid waste disposal sites by ownership

- Harvest Year
- Tg C

Select Metric:
- Tg C
- Tg CO2e

Select Ownerships:
- BLM
- PVT
- STATE
- USFS
- Tribal

Carbon Pools to Display:
- Products in Use & SWDS
- Products in Use
- SWDS
Cumulative storage and emissions

Cumulative total carbon in harvested wood product storage pools (positive values) and emission categories (negative values)

Storage

Emissions
Cumulative storage and emissions

Cumulative total carbon in individual harvested wood product storage pools (positive values) and emissions categories.
Cumulative storage and emissions

Distribution of carbon from products with short (1-6 years), medium (7-30 years) and long (31+ years) term Products in Use (PIU) half lives and the carbon’s fate in Solid Waste Disposal Sites (SWDS) and Emissions (E)
Monte Carlo

Monte Carlo mean (yellow line) and 90% confidence intervals (black shading) for carbon in storage pools combined (products in use and solid waste disposal sites)
Monte Carlo mean (yellow line) and 90% confidence intervals (black shading) for carbon in storage and emission pools
Run your own data!

Select model data file for input

<table>
<thead>
<tr>
<th>Browse...</th>
<th>Inputs_HWP_Model.xlsx</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Upload complete</td>
</tr>
</tbody>
</table>

Run data file quality control

Upload Data
California

Download QA Output Table
Download HWP Tables

Run HWP Model
Run Monte Carlo

Model Status

MODEL RUN SUCCESSFUL!
Questions?
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