

Modeling carbon stores in Oregon and Washington forest products: 1900–1992

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Abstract

A new model, FORPROD, for estimating the carbon stored in forest products, considers both the manufacture of the raw logs into products and the fate of the products during use and disposal. Data for historical patterns of harvest, manufacturing efficiencies, and product use and disposal were used for estimating the accumulation of carbon in Oregon and Washington forest products from 1900 to 1992. Pools examined were long- and short-term structures, paper supplies, mulch, open dumps, and landfills. The analysis indicated that of the 1,692 Tg of carbon harvested during the selected period, only 396 Tg, or 23%, is currently stored. Long-term structures and landfills contain the largest fraction of that store, holding 74% and 20%, respectively. Landfills currently have the highest rates of accumulation, but total landfill stores are relatively low because they have been used only in the last 40 years. Most carbon release has occurred during manufacturing, 45% to 60% lost to the atmosphere, depending upon the year. Sensitivity analyses of the effects of recycling, landfill decomposition, and replacement rates of long-term structures indicate that changing these parameters by a factor of two changes the estimated fraction of total carbon stored less than 2%.

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