



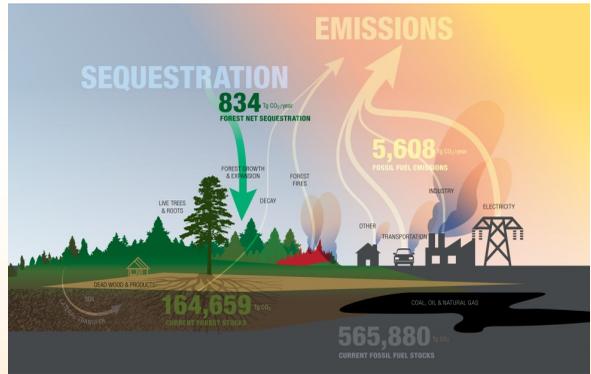
Forests and Carbon

≈ 16%
monitoring change on a
landscape scale with

Forest Inventory and Analysis



16% Annually

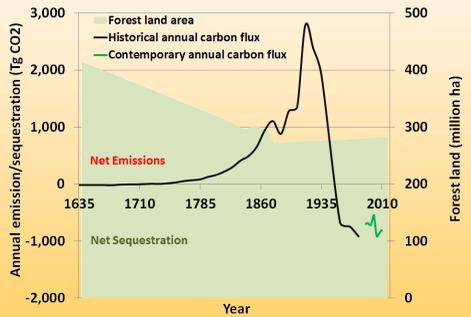


FIA Mission: *Improving the understanding and management of the nation's natural resources by maintaining a comprehensive inventory of the status and trends of our diverse forest ecosystems, their use and health for over 80 years.*

Science Serving Society

What the Current Results Tell Us?

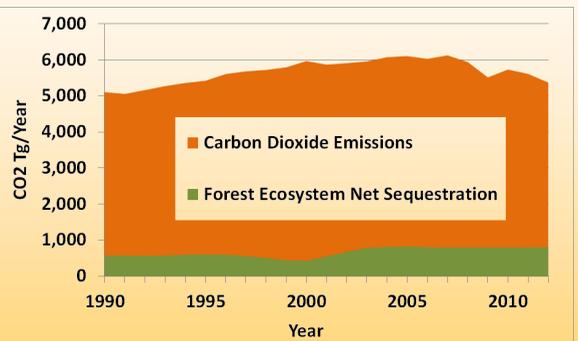
- As the U.S. stopped the loss of forest land at the start of the 20th century, we have gradually gained forest and with wise management have grown associated carbon stocks.
- Forests offer one of the most cost effective ways to sequester additional carbon. The loss of forests could potentially undo efforts to reduce fossil fuel emissions... improved monitoring of US forest carbon is central to any climate change initiative
- Threats of climate change and development may diminish the rate of interest earned (annual carbon sequestration) on our principal of forest carbon stocks. Worse yet, forests could lose area and carbon density and become a net emitter of carbon adding to U.S. fossil fuel emissions.



Investments to Reduce Uncertainty

There is appreciable uncertainty surrounding all forest carbon estimates that comes from sampling, model, and measurement error. To reduce uncertainty several investment options are possible:

- Expand inventory to include interior Alaska
- Increase plot density (e.g. double the number of plots per unit area)
- Reduce remeasurement intervals to 5 years
- Additional measurements of non-live tree pools (e.g., soils, down woody material)
- Refine land use change accounting
- Update tree biomass equations
- Refine remote sensing technologies (e.g. incorporate laser scanning technologies)
- Improve online tools and public data dissemination



For more information on FIA

Visit the FIA national web site at <http://www.fia.fs.fed.us> or contact one of the offices below:



Washington, DC
703-605-4177

North
St. Paul, MN
651-649-5139

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UNITED STATES FOREST SERVICE
Caring for the Land and Serving People



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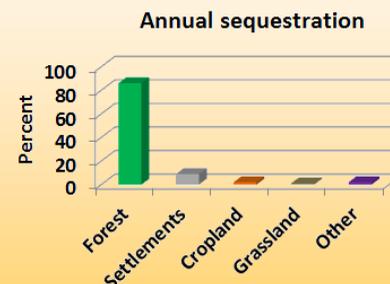
What is the FIA Program?

- FIA is an 80+ years strong forest inventory working in partnership with the nation's state forestry agencies, universities, and NGOs.
- FIA is the only comprehensive field-based inventory of all forest ownerships for each of the 50 states, affiliated Pacific Islands, Puerto Rico, and the US Virgin Islands (*since 1928*).
- FIA is responsible for providing scientifically sound carbon estimates for all U.S. forests annually to the Intergovernmental Panel on Climate Change (*since 1994*).
- FIA conducts wood flow surveys of all primary wood-using facilities in the U.S. (*since 1947*), which along with planting and regeneration monitoring, track the use, sustainability and competitiveness of our forests to support the 2.4 million jobs dependent on them.
- FIA conducts surveys of the management objectives and value of forests of over 10 million private forest landowners in the U.S. (*since 1953*). *Results are* critical to understanding the sustainability of 58% of the nation's forests that supply 90% of the nation's forest products.
- FIA conducts extensive collaborative research to develop and use the latest technology in remote sensing, field measurement and information management. This research has increased estimation efficiency 10-fold over the past 65 years.
- Since 1992, FIA has provided public access to current and historic resource data through online tools, pioneering concepts in the President's 2013 Executive Order on Open Data.



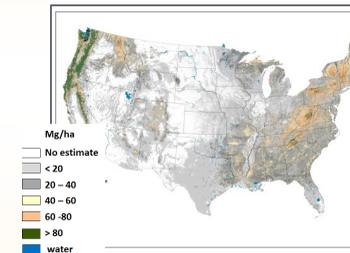
A Cornerstone of President's Climate Action Plan

- The National FIA program empowers the assessment of carbon fluxes within forests over time and across land uses, which is a cornerstone of the President's Climate Action Plan.
- A national systematic grid of annually remeasured points provide current information.
- Field-based inventory of sites and vegetative attributes— trees, shrubs, herbaceous, etc.
- Sub-sets of plots measured for diverse carbon pools (e.g., soils, litter, dead wood, etc.)
- Land use identified on all plots allowing improved land-use change research
- Interagency remote sensing research using plot networks to leverage investments (e.g., NASA CMS)
- National grid and expert field crews allows expanding vegetation carbon assessment into urban and woodland land uses
- Database and online tools allows rapid data assimilation and dissemination to government agencies, the United Nations, and the public.



Why do we need Carbon Statistics?

- Reduce uncertainty regarding status of sinks and fluxes
- Foundation for international reporting (UNFCCC, FAO FRA, Montreal Process C&I)
- Only way to make informed decisions based on objective data
- Most other nations depend on simulations of their forest carbon while US has an advantage in negotiations due to real data collected in our forests. We must maintain this advantage to protect U.S. interests.
- As we reduce fossil fuel emissions in the U.S. the role of U.S. forests in carbon emission reductions will grow.



Remote Sensing Alone is Biased

Without field verification, remote sensing views land cleared of trees as deforestation. In fact, over 90% of harvested forests in the U.S. are regenerated either through planting or natural means. Only long time series remote sensing coupled with field observation produces the correct evaluation. In the simplest terms, remote sensing without field observation produces biased results. Deforestation is defined as permanent clearing of forest for another land use. But regenerated harvested land keeps it as forest which is difficult to discern on remote sensing without ancillary field validation data.



U.S. Forests and Carbon Storage

- As U.S. forests expand/grow across the US they remove carbon from the atmosphere.
- Annual growth of forests and associated wood products offset approximately 16% of all annual US CO₂ emissions from fossil fuels.
- Carbon stocks in U.S. forests/and wood products are approximately equal to 25 years worth of total annual U.S. fossil fuel CO₂ emissions.
- Forest carbon stocks are a “savings account” of carbon that has increased over a century of U.S. forest conservation and management. The rate of interest in the future (i.e., additional carbon sequestration) depends on future management, disturbances, and climate changes
- Forests may be viewed as a buffer to climate change events by providing soil stability, clean water, and perennial vegetation cover across our Nation.

How we Estimate Forest Carbon

- The U.S. has established a systematic network of forest inventory plots across U.S., and we built upon this tremendous amount of data to develop our estimates of forest carbon storage and associated dynamics for the U.S.
- Forest carbon is represented by a diversity of pools such as aboveground live biomass, dead wood, and soils.
- The diversity of carbon pools necessitate a diversity of measurements and models to monitor these pools.

