



**OPEN SPACE
INSTITUTE**

November 2024

Forest Carbon Data & Tools Webinar: Questions & Answers from Participants

1. It would help to indicate in a table how much carbon is stored for different forest types.

Answer: Thank you for letting us know that would be helpful. We could also add that conversion to the table.

2. We are interested in measuring tools to assess the ecosystem services value of our lands. As a conservation organization most of our lands are held in easement and therefore not publicly accessible, but they're still benefiting the city - what are tools at our disposal?

Answer: The Land Trust Alliance worked with Earth Economics to develop an ecosystem services valuation tool for land trusts. It is available to members only, but more information can be found here <https://landtrustalliance.org/resources/learn/explore/ecosystem-services-valuation-tool?queryID=6f955cae1082e66b4e0e2d1ee8919637>

3. I am not clear on the difference between tons of CO₂e and tons of carbon. What does the tons of CO₂e mean? Is it the amount sequestered? If so, why is it larger than tons of CO₂?

Answer: An atom of carbon in the tree weighs less than a molecule of CO₂, because when the wood decomposes or is burned it is released as CO₂, which weighs more because you have added the two atoms of oxygen. So, they are essentially equivalent - talking about the same amount of carbon, but when people talk about carbon emissions or carbon credits, they always use the CO₂ units. So, we decided to use those units. You can think about it as reporting in acres or hectares - it is the same area, just different units. This is the same atoms of carbon, but expressed in units of CO₂, based on how much emissions it would create if deforested.

4. In the Northeast, forests are drastically changing due to overabundant deer and invasive species, which affects regrowth and composition. Notably, beech, hemlock and ash are on the decline. Is this composition shift considered in any of the projections, or are the projections based on the assumption that existing forests will continue to follow the natural course of growth and succession?

Answer: The NFCMS relies on FIA yield curves in its projections, and as you note, the conditions of the present and future are likely different from those of the past. Also, the NFCMS makes a simplifying assumption that the forest type group (e.g. Maple-Beech-Birch, Oak-Hickory, or Loblolly and Shortleaf Pine) does not change over time. We are eager to incorporate the sorts of changes that

you point to wherever confident assessments are available but have found it difficult to assess when and where these changes are likely to take place, at what rate, and with what magnitude.)

5. I have heard forestry interests suggest that harvesting mature forests can bring carbon benefits by creating young forests that will have higher sequestration rates, while carbon is stored in long-lived forest products. Any perspectives on this as it relates to your distinction between carbon stocks and sequestration?

Answer: It is important to distinguish between forest clearing/harvests (where the forest is allowed to regrow) and conversion to another land use. When you have conversion, you lose both the carbon in the current trees and any new carbon you would get from the future growth of the trees. We think it is important to consider both things, which is why we calculated both of them. Our default numbers report these combined numbers.

The amount of carbon that trees sequester is small at first, and then gets bigger and then goes down again, but it doesn't go to zero for a long time - even old forests sequester some carbon.

Additional Answer: Indeed, this is a common refrain, and we regularly bring our perspectives to address this perspective. We have published this in several ways. Here are a few high-level thoughts. Harvesting of mature forests tends to lead to net carbon releases to the atmosphere and are rarely outweighed by storage in forest products. Much of the wood removed from forests has a fairly short lifetime in use. This varies by forest type and region in ways that we can describe and have. Harvesting involves committed emissions, and those emissions typically leak to the atmosphere as fast or faster than forest regrowth can offset. There is much more to say, but those are a few first ideas, hopefully helpful.

6. Do you expect these inputs to be impacted by the forthcoming land sector guidance associated with the GHG protocols?

Answer: No. For example, if you are talking about IPCC Tier 1 methods that provide default emission values (e.g., all temperate forests have emissions of XX), this better data, and IPCC would appropriately treat this as more site-specific accurate data.

7. Do your measurements differentiate between public and private forest land?

Answer: Yes. We can look separately at the carbon on public and private lands. Presumably the public land is not going to be converted to another land use, so the private lands that are at risk of conversion to development or cropland are the ones that we are focused on - they are the ones in need of protection.

Additional Answer: For other uses it may be helpful to understand the forest carbon on protected lands and the data is available for all forest lands.

8. Are there plans to update this dataset on a regular basis?

Answer: It is funding dependent. But the remotely sensed data are available to do that. However, the carbon data doesn't change that much year to year.

9. Could this be used to develop a system /formula that would allow creation of "carbon sequestration plans" that could be utilized by private landowners (their foresters)? Then for instance, with enabling legislation, in addition to gaining qualified farm assessment from forest management plans and forest stewardship plans, could we allow farm assessment for carbon sequestration plans?

Answer: No. This tells you how much carbon there is but does not give you information such as stand structure that you would need to generate a forest management plan.

Improved forest management is something that can help sequester more carbon. There are protocols that allow you to generate certified carbon credits from improved forest management. They generally require you to delay harvesting or do a selective harvest that harvests fewer trees than is typical.

Here is one such program: https://www.nature.org/en-us/about-us/where-we-work/united-states/family-forest-carbon-program/?gclid=CjwKCAiA3Na5BhAZEiwAzrfagD3wv9j7Nychwvq01AogGzHeaNNNo_RVOFIYhufL6eMpSa8HnXcVapxoCHNcOAvD_BwE

10. This tool looks great and seems to be at a county level. Would someone be able to upload an area of interest and get similar output estimates?

Answer: Yes!

11. Even if you don't get the parcel layers soon, one could still theoretically draw a polygon along parcel lines or set of parcels, correct? And would it tell you for that small space, the CO2 emissions avoided by protection? Or just the risk of conversion?

Answer: Yes of course; users could draw a polygon anywhere and we'll analyze the results. The tough thing about getting parcel data is that it's pretty expensive and I don't think we have money set aside to pay for it on an ongoing basis. Users could upload a shapefile if they have it. All of the metrics I showed should apply to custom data too, with some caveats that trying to characterize the threat to a very small polygon is really tough!

12. I have a 160-acre tract that is about 40 percent grass hay. If we wanted to plant the grass to oak-chestnut-pecan forest how would these programs quantify very young plantings?

Answer: These data can't be used for that. We have other efforts that are working on carbon accounting for individual tree plantings. Here is one cost-share program for agroforestry plantings: <https://www.nature.org/en-us/what-we-do/our-priorities/provide-food-and-water-sustainably/expanding-agroforestry-production/>

13. Obviously, this is a forest carbon webinar, but I'm also really interested in quantifying storage and sequestration at a landscape/ community scale for other non-forested natural land uses. Are there efforts or tools that can be used to understand the storage and sequestration of different non-forested natural lands?

Answer: This is one tool that you could use: <https://www.naturebase.org/>

14. Is the underlying forest carbon layer/data the same across these tools (e.g. TPL Conservation Carbon Map, TNC Resilient Land Mapping Tool, the ArcGIS Online tool, and the yet-to-be-developed site)?

Answer: Yes

15. Thank you. Links to your published research in this area would be helpful and appreciated.

Answer: There are a variety of answers to this question, depending on how narrowly or broadly you define "this research."

This looks at all Natural Climate Solutions for the United States:
<https://www.science.org/doi/10.1126/sciadv.aat1869>

Here is one that looks at avoided deforestation in New England:
https://media.wbur.org/wp/2021/09/USCA_final_report_avoided_defor_NENY-1.pdf