MANUSCRIPT - ERC-100072

Title: Trees in many US cities may indirectly increase atmospheric carbon

Review report 3.5.2019

Comments:

1. The results of yours are so strongly dependent on the number of heating and cooling degree days and the fuels/technologies utilized for electricity and heat production, that it does not make sense presenting the results without this information presented first.

2. You should not satisfy with your case results, but look at the conditions in which the balance is turned other way round (referring to the first comment).

3. You should discuss the distance issue in the introduction. Now you are sort of partially discussing all urban trees, but then continuously referring to “shade trees”. You also refer to energy need reduction as the primary gain from tree planting programs, which points at these shade trees rather than all urban trees.

4. You go deep into the previous studies in the introduction. I suggest splitting up the section to a shorter and simpler introduction and previous literature gap analysis.

5. Don’t limit your generalizability discussion to just the U.S.

6. I wonder why you don’t mention building types at all in the introduction. It is not uniform how the shading effect works with buildings of different types, and presumably in cool climates the buildings are on average better insulated.

7. Extend the study description from the current one short sentence on lines 107-108. Even if the paper follows the style guideline placing the methods and data descriptions to the end, you must briefly tell to the reader what was done.

8. Please explain better how only north side cover can lead to an increase in the need for warming. Shouldn’t tree coverage lead to lower heat loss through the north wall?

9. Extend the C storage comparison section with the actual outcome numbers and meaning.

10. In the “considering the larger C cycle”, I would find it appropriate to notice that hundreds of years of storage can be very important in mitigating climate change now and allowing for energy system transition to take place.

11. You are making several assumptions yourselves, but don’t discuss much this aspect of your study (you point out some weak assumptions in previous studies).