

Biogeosciences Discuss., author comment AC1  
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## Reply on RC1

Clement Jean Frédéric Delcourt and Sander Veraverbeke

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Author comment on "Allometric equations and wood density parameters for estimating aboveground and woody debris biomass in Cajander larch (*Larix cajanderi*) forests of northeast Siberia" by Clement Jean Frédéric Delcourt and Sander Veraverbeke, Biogeosciences Discuss., <https://doi.org/10.5194/bg-2022-80-AC1>, 2022

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Dear reviewers and editor,

Thank you for considering our manuscript for publication in Biogeosciences. We appreciate your valuable comments.

First, we explain which major changes we plan in the revision and respond to some of criticisms of reviewer 1. Second, we highlight the major contributions of our paper. Third, we respond point-by-point to the reviewers' comments.

Reviewer 1 and 2 both commented that it may not be feasible to pool the data from the two different sites given the differences in stand age and structure between the sites. After considering this comment, we agree with the reviewers. We will therefore remove the site-common allometry in the revision.

Reviewer 1 asserts that our paper may not fall within the scope of Biogeosciences. We respectfully disagree with this assessment. On the webpage of Biogeosciences, the aims and scope of the journal states an interest in work on '*all aspects of the interactions between the biological, chemical, and physical processes in terrestrial or extraterrestrial life with the geosphere, hydrosphere, and atmosphere*' ([https://www.biogeosciences.net/about/aims\\_and\\_scope.html](https://www.biogeosciences.net/about/aims_and_scope.html)). Aboveground forest biomass and carbon storage are critical components at the interface of the biosphere and atmosphere, and further influence processes in the hydrosphere (e.g., through plant-water interactions), pedosphere (e.g., through nutrient cycling) and cryosphere (e.g., through influences on snow cover) among others.

The major contributions of our paper are (including the planned revisions):

- The first ever published wood density measurements that allow to calculate fine woody debris biomass in Cajander larch forests of Northeastern Siberia.
- A significant increase (from 3 to 5) in the number of available allometric equations to calculate tree biomass in Cajander larch forests of Northeastern Siberia. The previously published equations (Kajimoto et al., 2006; Alexander et al., 2012) do not include bark as a biomass pool. This is another important addition of our work, as quantifying bark biomass is important (e.g., bark and wood have different combustion processes; Lestander et al., 2012).

We want to stress that our contributions are focused on an extremely data-poor region, Northeastern Siberia larch forests, which encompass about 20 % of the boreal forest and are of global importance. Unfortunately, with the current political situation, it may not be easy for scientists to make measurements in Russia or exchange data with scientists from Russian institutes in the near future. Our paper provides a number of equations and parameters, in easily accessible manner, that will be of interest to anyone studying biomass and carbon stocks of Sibirian larch forests in Siberia, and more broadly the boreal forest. We sincerely hope that more data on Sibirian larch forests will become available in the future, so that this work can further be advanced. We have nuanced our statements with regards to the use of the data and equations in our paper and included this future perspective.

The point-by-point responses are given in the attached pdf.

Sincerely,

Clement Delcourt & Dr. Sander Veraverbeke

Lestander, T. A., Lundström, A., and Finell, M.: Assessment of biomass functions for calculating bark proportions and ash contents of refined biomass fuels derived from major boreal tree species, *Can. J. Forest Res.*, 42, 59–66, doi:10.1139/x11-144, 2012.

Please also note the supplement to this comment:

<https://bg.copernicus.org/preprints/bg-2022-80/bg-2022-80-AC1-supplement.pdf>