

SiDroForest ESSD review responses and changes

Dear Editor,

This document contains the answers to the editorial request (minor revisions) related to the anonymous reviewer's comments (reviewer N°4) in response to the SiDroForest manuscript. Each reviewer's statement is included in regular text and the responses are written below each point in *cursive*.

I, Femke van Geffen would like to, also on behalf of my team, thank the reviewer very much for the careful examination of the data. The reviewer found by this that one of the subsets of the bigger data sets was erroneous. We downloaded and checked all other published data sets - they are correct. We corrected the erroneous subset files and published the corrected files as version 2. It seems that a large share of the reviewer's ranking and comments (e.g. related to 'carbon source', or to the repetition of technical details, and the usefulness of the dataset) refer to the first version of the discussion manuscript (that is also visible by the use of the old line numbers of the first version of the manuscript), and have already been corrected for in the latest uploaded version of the manuscript that was uploaded in the system (manuscript and tracked change manuscript). The new edits related to the reviewer's comment (N°4) make the manuscript and dataset (including the updated read me files in the data publications) further clearer and still more user friendly. The reviewer's comments improved the work and are well appreciated. Please find point by point responses below.

Kind regards,

Femke van Geffen

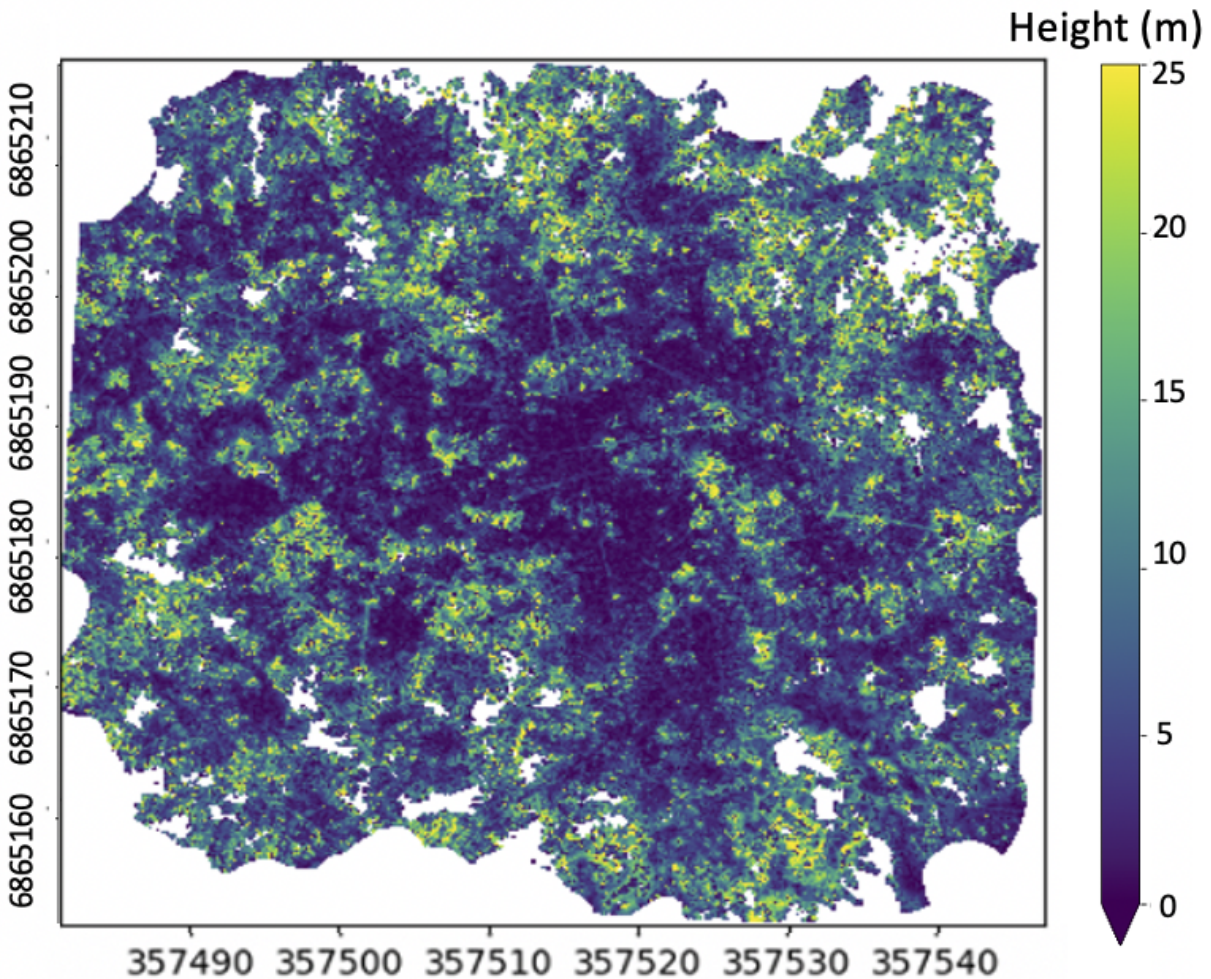
Dear Reviewer

Response to Figure 13 comments:

In fact one of the subsets of the UAV product data collection Kruse et al. 2021, <https://doi.pangaea.de/10.1594/PANGAEA.933263> missed the elevation information per pixel in the geotiff files. This refers to the subset of the canopy height model CHM files, we had uploaded the wrong process level of the CHM files and apologize sincerely for this. We have carefully checked every file of the published products - the other data subsets are correct. We have uploaded a corrected CHM version 2 that are now linked via the original dataset:

<https://doi.pangaea.de/10.1594/PANGAEA.933263>

The CHM files now are the right files and are the same as the images shown in the paper. Thank you so much for pointing it out.



Response to the specific comments:

L82. Forest could also be a C source especially has been disturbed recently.

*Response: Yes, this statement was already corrected in the previous iteration of the reviews: L74 in the latest version of manuscript: "Forest structure is a crucial component in the assessment of whether a forest is likely **to act as a carbon sink or source** under changing climate (e.g., Schepaschenko et al., 2021)."*

L224, it will be great to provide the specific measurement dates for each plot or least given date range for these two transition zones. Time information sometimes is equally important as geographical coordinates.

Response: Good point. In fact we realized now by your comment that we did not include a table with the acquisition dates. We now have added the acquisition date to table A1.

L245, what rules were used to select the minimum of 10 individuals. considering the largest 10 ones?

Response: The selection of trees was based on how representative those tree types were for this forest type so that it represents the vegetation as well as possible. To make sure that the data is evenly distributed, we included at least 10 trees per species (if there were as many of these species on the plot).

L246, EN1814 and EN1865 are not found in Table 1. Are they EN18014 and 18065?

Response: Yes, thank you for pointing this out. It is now corrected to EN18014 and EN18065.

L303, "... using a Cloth Simulation Filter (Zhang et al., 2016) ..." has been explained in L273. Please describe the generation of groundonly and treeonly processes only once. Same thing to "Agisoft PhotoScan Professional" in L289 and L267.

L310, 'in R..' is also mentioned in L290. Please remove the repeated information.

L348, why mention "... during the two-month fieldwork expedition in 2018 (Kruse et al., 2019).." here again since it has been introduced in L224? Were they different expeditions?

Response to the comments: We assume that these repetitions mentioned (and that all show the old line numbers from the original version of the discussion paper), have been already corrected in our previous iteration of the reviews: the latest submitted manuscript underwent a lot of cleaning and these changes (like the carbon sink, in the first comment) have already been made (in the previous review round).

L323-330, were photos of all plots taken the same day? If not, were there any corrections to photos to match color histogram between plots? Please make this clear.

Response: No, the UAV camera acquisitions were taken on different dates during the 2-month long expedition, when visiting the vegetation plots. The dates of the field work are now added in table A1. There was no 'color matching between acquisitions' as these were acquisitions in the field under different illuminations: overcast with now shadows as best condition for spectral imaging, and sunny with strong shadow formation (of the trees) as the least favorable condition. The cameras of every acquisition were calibrated and referenced to photo panels, however this not yet a normalization such as transferring the DN data into quasi-reflectance data that would allow to have absolute color values between acquisitions.

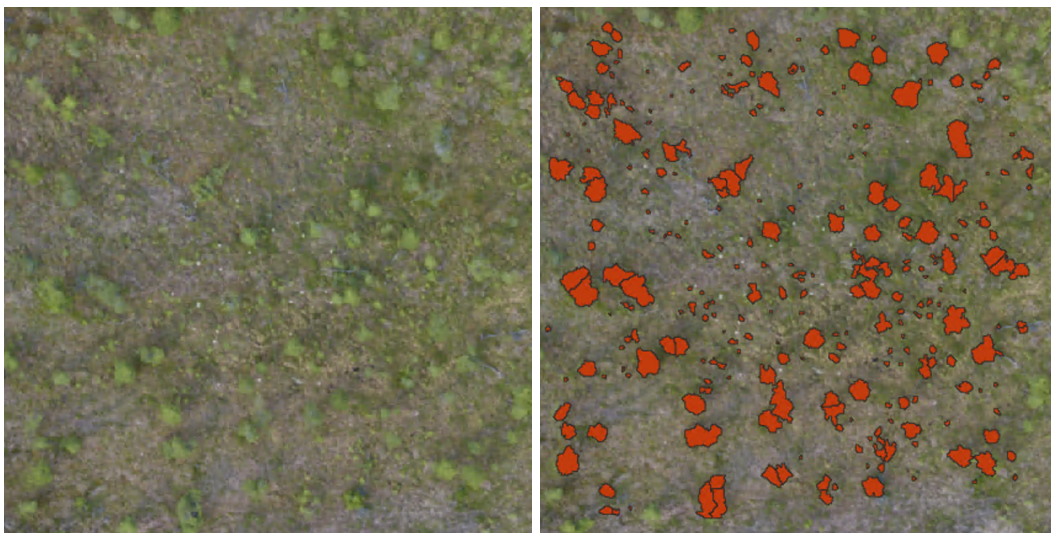
L334, I think the affected plots are not just these three. For example, RGB orthomosaics for plot EN18000 have many blurry parts over the canopy of some trees. BTW, EN1878 and EN1879 are not listed in Table 1. Missing a digit?

Response: Yes, the names were missing a 0. They are now corrected. Thank you. As for the data quality, EN18030, EN18078, and EN18079 are clear examples as is also mentioned in the paper. We describe that some sites have some parts of blurred areas in trees. This is usually related to canopy movements due to wind and cannot be avoided in the acquisition process at high latitudes in the field, where there are nearly never wind free time slots. We added this sentence.

'Not all RGB orthomosaics have the same high quality, as varying flight or weather conditions affected the construction of the final products. The canopy moved due to wind that cannot be avoided in the acquisition process at high latitudes in the field, where there are nearly never wind free time slots.'

L343, please mention that some plots do not have even Q1 shapefiles (e.g., EN18007).

Response: We downloaded the data from PANGAEA and found that EN18007 has the Quality file, in this case Q2. (As you can see in the image below). If Q1 files are not present, the Q files are of the other, lower Quality categories 2 and 3. Not all plots have trees, the tree crown product and Q files could be only produced when vegetation height was adequate. We added an overview table in the read me file in the 2nd version of the PANGAEA data publication for a more user friendly overview.



Left: orthoimage without crown polygon. Right: detected tree crowns with Q2, most crowns have been detected.

L460, what is the unit of RGM_CHM file? I checked the EN18077_RGB_CHM.tif file and the pixel value ranges from 0.0108667 to 0.637536, which is quite different from Figure 13.

Response: Yes in this subset of the data publication incorrect CHM files had been regrettably included and are now corrected (see explanation above). The range of EN18077 is now up to 19 m canopy height and the figure 13 showing the color coded CHM in the manuscript is also updated. Thank you very much for checking the data! This was a lot of reviewer work.