REVIEW: Individual tree point clouds and tree measurements from multi-platform laser scanning in German forests

General comments:

In this data description manuscript the authors present a dataset of spatially overlapping and georeferenced ALS, ULS and TLS tree point clouds (and their corresponding tree metrics) for 12 plots spread over 2 German mixed forests.

In general, the manuscript includes all the necessary information on how the dataset was acquired and how it can be used. This type of open access dataset containing co-registered point clouds from three different platforms (TLS, ULS and ALS) is new and certainly contributes to the research community. As the authors mention, the data can be used for a range of purposes including calibration and validation. The methods and materials are described in sufficient detail and are well written.

But the writing of the abstract and introduction should be improved. In the specific comments you can find some comments regarding the abstract. Regarding the introduction, it seems to focus on 3D modelling (from line 13 till line 38) which doesn't seem the right focus in my opinion. You don't provide 3D models in your dataset, and this is only one aspect the dataset could be used for. If the data is to be used by ecologists in general (not just LiDAR users), the introduction should introduce ALS, ULS and TLS (discuss their different perspectives) and what their spatially overlapping data and individual tree point clouds can be used for and why open access datasets with co-registered ALS, ULS and TLS are important.

In summary, my suggestion is that this manuscript needs minor revisions before publication.

Specific comments:

Abstract:

- The first two sentences should be rewritten, for example:
    - Line 2 (p1) "Such point clouds allow us to e.g., retrieve …" → "These point clouds allow us to retrieve detailed information on the individual tree and forest structure."
- I would like to see more specific information on the number of plots and forests, for example:
    - "We conducted airborne laser scanning (ALS), UAV-borne laser scanning (ULS), and terrestrial laser scanning (TLS) in two German mixed forests with species typical for Central Europe. We provide spatially overlapping, georeferenced TLS, ULS and ALS point clouds for 12 hectare plots."
- Line 5-7 (p1) You mention the tree metrics are derived from the point clouds and measured in the field. Yet, only for half of the plots the metrics are measured in the field. This should be mentioned here.

Introduction:

- Line 41 (p2), this sentence suggest 1491 trees were extracted from all the scanning platforms (which is not the case). So maybe start with:
    - "249 trees were extracted from both ALS, ULS and TLS. Another 1036 trees were extracted from both ALS and ULS, and xxx only from ALS."

Methods:

- It would be nice to have a table with for each plot (like Table 3) the availability of the data sources (with for example also the number of trees scanned in each plot as this is not clear from the manuscript). This will help the user to choose the plots their interested in because of the availability of certain data sources and number of trees.

Plot	ALS	ULS (leaf-on)	ULS (leaf-off)	TLS	Field measurements
BR01	300	250	250	10	10
BR02					-
BR03					
BR04		-	-		-
BR05					
BR06					-
BR07					-
BR08					-
SP02					-
KA09					
KA10			-		
KA11			-		

Data:

- It would be really nice for the users if there were a file available with a table with for each tree information on the data which is collected for it. In this way the users could write a quick script to determine which trees they wants to use (e.g. only trees where of a certain species, of which there is quality 2 ALS, ULS, TLS and field data).

tree	species	Plot	ALS q1	…	ALS q6	ULS (leaf-on) q1	ULS (leaf-off) q1	TLS Q1	Field measurements
P17T34	PicAbi	BR01	FALSE	…	TRUE	FALSE	FALSE	FALSE	FALSE

Technical corrections:

Line 7 (p1) "Our dataset may be used for the creation of 3D tree models for radiative transfer modelling or LiDAR simulation studies or to fit allometric equations between point cloud metrics and forest inventory variables" → "… creation of 3D tree models for radiative transfer modelling, LiDAR simulation studies or to fit allometric equations between point cloud metrics and forest inventory variables."

Line 301 (p19) "A visual inspection of the the wooden target …". Remove one the.

Line 306 (p19) "… and 0.3 m(Karlsruhe)." Add a comma between 0.3 m and (Karlsruhe).

Line 347 (p21) "… point clouds as fix point clouds." Shouldn't fix be fixed?

Line 431 (p29) " … and AdTree(Du et al., 2019…)." Add a comma between AdTree and (Du.