

General comments

Dear authors, congratulations for this interesting and well-written article! It will serve the scientific community with a valuable dataset of high quality and a detailed description of the data. The presented dataset is both unique and useful and well comprises the existing data sets for the Col de Porte open site. Accuracies of the measurements are well provided. The text is well structured and of appropriate detail and length. The English is very good and there are only few minor language errors in the text.

The published dataset can be rated significant - in terms of uniqueness, usefulness and completeness. Both data and presentation quality are very good.

I only have the following minor specific comments and suggestions for technical improvement. All in all my recommendation is “minor revision”, but all this can be done with modest additional effort.

Thank you for your review. We have taken into consideration all your comments, and a point-by-point response follows.

Specific comments and technical corrections

- 70: since the tree species are listed later (in Figure 3) it could be sufficient here to formulate it in a more general way and distinguish only between coniferous and deciduous trees

We feel that the present formulation provides a concise description of both the size and spatial distribution of the three main species of the forest (spruce, fir, broadleaves). Then, it makes it easier for the reader to consider the spatial information of figure 2 and the height distribution information of figure 3.

- 71: “The smallest one” should probably better be “The smaller one” (if there are only two?)

Changed

- Figure 1: (i) caption: the sentence “The sensors of the open meadow area appear on the left of the picture” would better be something like “On the left is the meadow with part of the long-term instrumentation for the Col de Porte site”?

Changed

(ii) legend: better move to one of the left corners of the picture so that it does not cover trees. Same for the scale bar and the N arrow.

Following the reviewer's suggestions, figure 1 has been modified and now has the same extent as figure 2.

(iii) Rugged laserscan: is it possible to indicate the viewing direction and the scanned area of Figure 8 here (see also comment to Figure 8)?

As the figure shows a lot of information, we think it's difficult to add new information here. Further information on the area scanned by the RLS has been added in paragraph 2.3.5 and figure 8.

- Figure 2: (i) can you adopt the extent of this map to exactly the same as the picture in Figure 1, or alternatively, provide a map inset that shows the two map extents? (I consider the first solution the better one). This would support to identify the location of the devices which are shown in Figure 1 also in Figure 2. (ii) can you indicate the gaps here? Which one is where? (iii) add scale bar and N arrow.

Figures 1 and 2 now have the same extent. The gaps are now indicated in Figure 2, and a scale bar and N arrow have been added.

- Figures 1-4: provide corresponding date in the caption

Done

- 122: “geometric information on”: can you formulate explicitly what can be processed and replace “information on”?

Changed to “The point cloud can be processed to derive forest metrics used to parametrize snow interception, such as leaf area index or canopy closure”

- 123: “a campaign covering 123.5 km²”: where is this area, does it fully integrate the Col de Porte site?

Yes, this area fully integrates the Col de Porte site. This information has been added in the text.

- 127: software packages RiAnalyse, RiWorld and Terrasolid: can you provide version numbers and links?

Unfortunately, version numbers were not provided by the company in charge of this part of the processing. Links to the software web pages have been added in the text.

- 128: “accuracy on elevation measurements” should probably be “accuracy of elevation measurements”

Changed

- 129: “GNSS accuracy is around 2-3 cm”: horizontal or vertical?

“horizontal” added in the text

- 130: “yielded to an altitudinal accuracy”: delete “to”

done

- 131: what is a LAS 1.2 file?

The text now specifies: “The point cloud was delivered as tiled files in LAS format, which is the most common format for LIDAR point clouds exchange and is maintained by the ASPRS (<https://www.asprs.org/divisions-committees/lidar-division/laser-las-file-format-exchange-activities>)”

- 132: with a “200 m buffer”: what does this mean? Maybe that the point cloud covers an area 200 m wider than the site in the N, E, S and W direction?

Buffer is a technical word in geographic information systems that refers to the area that is within a specified distance of a point or surface of interest. The sentence now specifies: “The point cloud extracted on a 200-m radius disk approximately centered on the study site was exported in a single compressed LAS file (v1.1 format 1) [...]”

- 133: “LAS file (v1.1 format 1)”: why different versions (see comment on 131)? Is the LAS version issue of any interest here? If yes, it could be explained here. If not, maybe this would be better formulated in the caption of table 2 or eventually even in a small appendix?

The format version of files from the data provider (v1.2) was removed from the text. An older format was chosen for the dataset file to ensure compatibility with most software. We think it is useful to specify the version of this file to make it easier for users to identify potential issues when importing the data in their software.

- 134: “The area located more than 30 m to the SE of the study area was not covered by the acquisition”: what should be expressed here, which area? Is there something missing? How does this correspond with the 200 m buffer? This should be made clear here.

The acquisition did not extend further than 30 m to the southeast of the study area. A part with missing data thus appears in the provided point cloud, but the available area covers the open meadow and the forested site with enough range to compute relevant forest metrics. We think that this information might be confusing for the reader and the sentence was removed.

- 166: “13 ... pyranometers and 11 ... pyrgeometers”: how does this match what is visible in Figure 1 (11 locations for SW and LW plus 4 locations for SW), shouldn't it be 15 pyranometers? Comparison with the sensor_plan.pdf file (online with the data) suggests that the SW2 and SW3 devices in Figure 1 should be deleted?

The confusion arises from slight changes in instrumentation between the two field campaigns. The text now mentions 15 pyranometers, as shown in Figure 1 (which is correct).

- 196: maybe better “until” instead of “through”?

Changed

- Figure 6: maybe better make two panels in this figure, one for (i) temperature and snow depth, and a second one for (ii) soil temperatures? Adding a legend with the different colors for the soil temperatures would probably also be a benefit. What about the data gaps in the snow depth time series, where is this explained at least briefly?

After a few attempts, we feel it's clearer and more concise to show these variables on a single panel. The caption explains the color coding of soil temperature measurements.

We added in the caption: “The data gaps in the snow depth time series are mainly due to snowfall events that disrupted the measurements”.

- 208, 211, 213: is the differentiation between snow height and snow depth based on a purpose and carried out consistently all through the text?

We now use “snow depth” consistently in the text

- 224: how was the mass of the precipitation tanks measured?

We have modified this sentence to explain the method more clearly

- 234: “azimuth angles varying from -90° to $+90^\circ$ ”: are you sure, where is zero (usually N or S)? Maybe you can add the viewing field of the RLS into Figure 1 (see respective comment there)?

We added the information that the RLS azimuth angle 0° points towards 225° (south-west)

- 254: find a better formulation than “uncertainties on the sensors” (“of”?)

Done

- 256: “reliable information on sensor accuracy”: can you formulate explicitly what the manufacturers generally provide, and replace/delete “information on” (probably it is the accuracy itself which is provided)?

Table 2 (last column) explicitly states what the manufacturers provide for accuracy estimates.

- 263: do you mean “relation to the canopy...” instead of “relation with ...”?

Changed

- 264: “In clear sky”: maybe better “In clear sky conditions”

Changed

- Figure 10: add a), b), c) and d) in the four panels

Done

- 281: what is “0.2°CK”? (probably it is either degree Celsius, or Kelvin)

Changed to 0.2°C

- Figure 11: colors in the left panel are orange, red and purple (on the screen), not red and blue as indicated in the text of the caption. Red seems to be the color resulting from the overlay of orange and purple. Printer output may again look different than screen display. Can one improve this for the sake of clarity?

For the sake of clarity, we changed the colors in the Figure

- 300: here would be an appropriate place to add 2-3 sentences about existing modelling studies (and some references) which show how the forest canopy processes mainly depend on LAI, exposition and amount of snow precipitation, amongst other effects. Readers might be interested in this

Relevant references are already cited in the introduction. More about modelling studies would be out of place in this data paper.

- Figure 12: add the explicit years to the panels a) and b), and also a complete legend; is it possible to mark the poles such that they can be identified in Figure 1?

Done

- Figure 13: add the explicit years to the panels a) and b), and also a complete legend

Done

- 311: can table 2 be moved to the end of the text (after “Data availability”)?

Done