REPLY TO REVIEWER #1 (H. BOGENA)

Firstly, we would like to thank you for all the points you have raised as they played a crucial role in the process of increasing the scientific rigor and overall quality of our manuscript.

We are glad that we were able to satisfactorily address many of your comments in the first instance of revision.

We believe that this reply and the proposed changes to the manuscript will properly address the points left unresolved since your previous report as well as those raised in this one.

As we did in the previous reply, for an easier interpretation of the contents we decided to adopt the following colour scheme:

Reviewer comments

Authors reply

Proposed changes (lines refer to the updated marked manuscript)

The authors have addressed many of my comments satisfactorily. However, in my opinion, the revised manuscript is still not ready for publication, as several important issues remain unresolved.

I find it unfortunate that the authors chose not to compare the standard correction method for incoming neutrons with the proposed muon-based correction approach, which has not yet been widely evaluated or established within the scientific community. At a minimum, the authors should provide a clear justification for adopting the muon-based correction method.

We acknowledge your comment as we think that these issues should be addressed in further steps of our research activity. However, we would like to stress that, while the muon-based incoming correction is not the usual approach for CRNS SWE measurements, it is nonetheless the inherent feature of the probes that are deployed in the presented network. Therefore, to the scope of this paper, we opted for assessing the performances of the system as it is provided. In any case we propose to address the limitations and future perspectives of this research in the newly added Subsection 3.3 "Limits of this study and future perspectives".

We understand the interest of the community for the recommended comparison, as well as the importance of an empirical analysis on how the barometric factor varies with elevation. These comparisons can indeed be the scope of further analyses that could be carried out leveraging the unique features of the network such as its elevation range and its spatial extension. However, we believe it is to be done separately, as the current work is intended to provide the community with an assessment on the network measurement performances yielded by its native (and operational) setup. Moreover, we would like to keep into account that the framework of a Brief Communication sets a length and scope limit for submissions that, by definition, should be brief and concise.

To address your major comments, as well as some of the specific ones, and the ones from the other reviewer we propose to add the new Subsection 3.3 as follows:

L283-312:

3.3 Limits of this study and future perspectives

The conversion of raw particles counts into SWE values depends heavily on the choice of the adopted parameters, which are the object of Subsection 2.3, and is subject to the biases that any parameterisation process introduces. In this work, we built upon what was presented in existing literature while trying to preserve the near real-time monitoring capability of the network, which demands solutions that are ready to use and representative of each site's features.

Nevertheless, we acknowledge the limitations introduced by three main factors: (i) the adoption of a single β_N for a wide elevation range, (ii) the choice of correcting the incoming neutron fluxes with muons, and (iii) the inherent variability of snowpack characteristics even at such small scales combined with the uncertainty on the footprint of CRNS probes, which may have introduced some biases in the performance evaluation of the network against manual SWE samples.

One of the main features of the network is its unprecedented elevation range. However, recent work by Davies et al. (2026), who focused on CRNS applications for soil moisture, showed that the barometric coefficient may depend sensibly on elevation. In this work, for β_N we adopted the widely accepted (e.g. Bogena et al., 2022) value of 0.0076 hPa^{-1}. Therefore, further studies shall focus on assessing the effect of an elevation dependent barometric coefficient leveraging the ~1.5 km range offered by this network.

The most common way to perform an incoming flux correction relies on leveraging data from the nearest cosmic neutron observatory (e.g Gugerli et al., 2019; Jitnikovitch et al., 2021). However, the CRNS probes of the network are installed with the native feature of a site-specific incoming flux correction based on muon fluxes (Eq. 4) as presented by Stevanato et al. (2022). This characteristic allows to perform a correction based solely on site-specific fluxes, although depending on a different kind of particles (i.e. the muons) which are correlated with neutrons. Nevertheless, future studies may focus on a comparison between the widely adopted correction based on neutron observatory data and the site-specific one which relies on muon fluxes.

The CRNS probes of the network retain a relatively small footprint whose radius has an upper limit of ~20 m and is inversely proportional to the SWE. Yet, even at such scales snowpack variability plays an important role. In fact, Lopez Moreno et al. (2013) showed that in Alpine environments snow depth and, to a lesser extent, its density can sensibly vary for point scale measurements taken at distances of few meters thus affecting the error associated with SWE estimates. For this reason, we decided to perform comparison of manual SWE data taken where HS was comparable with the one measured by the corresponding AWS as it has been discussed in Subsection 2.2. Still, future works shall focus on the investigation how the snowpack variability affects the footprint of this CRNS setup as it has been done by Schattan et al. (2017), who focused on the above-ground CRNS assessing a footprint radius of ~200 m although with a saturation SWE value of 500-600 mm which renders that setup unapplicable for our study purposes.

As requested, the authors have substantially expanded the methodology section in the revised manuscript. While this has improved the transparency of the study, it has also raised several new questions and concerns (see comments below). Furthermore, a few issues raised in my previous review have not been adequately addressed. These unresolved concerns, together with the newly introduced issues, should be carefully considered before the manuscript can be recommended for publication.

Specific comments

L66-69: This paragraph does not fit well here in terms of content and should be incorporated into the introduction, whilst avoiding repetition.

We thank you for this comment and agree on the fact that it would be better to place this paragraph in the introduction.

L120: It is more common within the cosmic-ray neutron sensing community to use the term N_raw for the uncorrected neutron count rate. I recommend adopting this notation to improve consistency with the established literature.

We agree with your comment and will be using N_raw and μ_raw to refer to the uncorrected neutron and muon count rates.

L123-125: The correction of the count rate to account for the influence of atmospheric pressure differs significantly from the usual methodology, e.g. used in Gugerli et al. (2019). In particular, the authors should explain why p_ref is calculated using Equation (2), which incorporates an exponential function, rather than using the standard reference pressure of 1013.25 hPa. The rationale for this deviation from established practice should be justified.

We thank you for this comment that will help us further improve the clarity of our manuscript on such a critical topic.

The pressure correction is intended to flatten the fluctuations of particle counts due to pressure variations, projecting to a fixed reference value that can, in principle, be arbitrary. In fact, there is no fixed standard choice in literature. While, for soil moisture applications, the article presenting the COSMOS European Network (Bogena et al., 2022) recommends a fixed standard value of 1013.25 hPa, the mentioned Gugerli 2019 adopts a p0 value of 739 hPa (Table 5), obtained as the median value on the reference period. It is a common choice to obtain P_ref as an average or median over a selected period of time, as for example in Gianessi 2024, Stevanato 2022, Gugerli 2022. On the other hand, Jitnikovitch 2021 adopted an arbitrary p0 = 1000 hPa. Finally, Davies 2026 doesn't appear to explicitly specify how the P_ref was set.

For near real-time monitoring purposes, it is preferred to be able to set an a priori reference value when a probe is installed on field. The formula of our choice, i.e. the barometric pressure in standard atmosphere, provides a theoretical value close to the expected average for a given altitude. In this way the corrected neutron count rates are close to their realistic values, avoiding the artificial rescaling to sea-level rates that would happen by adopting the 1013.25 hPa value. Yet again, we would like to stress that, given the relative nature of the atmospheric pressure correction, no choice of p_ref is inherently wrong as long as it is used consistently.

We also propose to add the following:

L131-132: according to the standard hydrostatic atmospheric equation (Wallace and Hobbs, 2006)

Still, we acknowledge that the rationale behind Eq. 2 was not clearly stated and we propose to add a concise paragraph to address this issue.

L138-146: The atmospheric pressure correction is a crucial step in CRNS application as the number of cosmic ray particles reaching the ground is strongly influenced by the number of particles present in the air column they cross (i.e. the atmospheric thickness), which scales with the atmospheric pressure. The choice of p_{ref} is arbitrary and the literature presents various instances of values fixed *a priori* (e.g. the standard sea level pressure of 1013.25 hPa in Bogena et al., 2022; or 1000 hPa in Jitnikovitch et al., 2021) or obtained as the median or average pressure value over a selected period of time (e.g. Gianessi et al., 2024; Gugerli et al., 2019; Gugerli et al., 2022; Stevanato et al., 2022). The rationale behind the adoption of Eq. 2 lies in the fact that the network is intended to allow for near real-time snowpack monitoring starting from the probe's installation. Therefore, the choice fell on an *a priori* value that could still maintain the representativeness of each site's expected average atmospheric pressure.

L135-138: Here the variable name N_apc is used, whereas C_apc was introduced earlier. To avoid confusion, the same variable name should be used consistently throughout the manuscript.

We thank you for highlighting this potential source of inconsistency. We intended C (as in "counts") to be representative both of neutrons and muons, as Eq. 1 is applied in the same fashion to both kind of cosmic particles. However, we realize that our choice may lead to confusion, therefore we propose to split Eq. 1 into Eq. 1a and Eq. 1b for the neutrons and muons respectively.

L128-129:

$$N_{apc} = N_{raw} * \exp[\beta_N(p - p_{ref})] , \quad (1a)$$

$$\mu_{apc} = \mu_{raw} * \exp[\beta_\mu(p - p_{ref})] , \quad (1b)$$

L143: The parameter β should be referred to as the "barometric coefficient", which is the scientifically accepted term. In addition, my previous comment was not adequately addressed:

We thank you for pointing this out, we propose to refer to the β parameter with the correct "barometric coefficient" terminology.

"Recent work by Davies et al. (2026) demonstrates that the barometric coefficient is strongly dependent on-site elevation. Given that the network in this study spans a wide elevation range (1422–2901 m a.s.l.), it remains unclear whether elevation-dependent variations in the barometric coefficient were considered. If a single coefficient value was used, the authors should justify this choice and explain why they are confident that it does not introduce systematic bias across the network."

As the authors apply a single β value for neutron corrections, they should explain why this value was selected (even if recommended by the manufacturer) and discuss the uncertainty associated with neglecting altitude-dependent variations. Previous studies have shown that β generally increases with elevation (Davies et al., 2026), and this effect may influence the comparability of SWE estimates among stations.

We acknowledge that the reported results constitute an interesting development. However, we would like to point out that the work of Davies et al. (2026) was published after the original submission of this manuscript and, in addition, does not provide a scaling formula for β.

While we agree that a retrospective analysis on the neutron count rate time series collected by the presented network could provide relevant information to improve the understanding of the beta scaling with elevation. However, we would like to note that the presented network, which was established to allow near real-time monitoring of SWE, was originally meant for operational purposes. Therefore, for the sake of the out of the box operability of the probes, the standard, widely used (e.g. in the COSMOS network presented in Bogena et al. 2022 as it is also acknowledged by Davies et al. 2026), fixed β_N value of 0.0076 hPa^{-1} was established and we believe that the scope of this work is to assess the performances of the network as it was originally intended.

Nevertheless, we consider the empirical assessment of the beta variation with elevation a worth focus for further investigation, together with a comparison between muon-based and JUNG-based incoming correction. We propose to stress this in the additional Subsection 3.3

In addition, method for the scaling of β for muons should be explained in greater detail.

We acknowledge your comment and propose to add to the manuscript Equation 3 to describe in further detail how β_μ is derived. This empirical linear relation between the barometric factor and elevation has been given by the manufacturer and was object of a thesis which is in the process of being published.

L135-137: as described in the empirically derived Eq. (3):

$$\beta_\mu = 0.019 * 0.007 \frac{H}{10000}, \quad (3)$$

L147: My previous comment was also not adequately addressed:

“Please explain in greater detail how the baseline neutron count rate was determined. In addition, the use of the symbol N_0 may lead to confusion with the widely established N_0 calibration parameter used in CRNS soil moisture applications. Since the present study defines a conceptually different baseline quantity, a different symbol should be adopted.”

The authors argue that Schattan et al. (2017) also used N_0 as a baseline quantity. However, this interpretation is not correct. In Schattan et al. (2017), N_0 represents the calibration parameter of the standard N_0 equation (see their Equation 8). The overwhelming majority of CRNS studies use N_0 in this established sense. I therefore reiterate my recommendation to adopt a different variable name (e.g., N_ref or N_base) to avoid confusion and facilitate interpretation by the CRNS community.

We acknowledge your comment and regret that we were not able to adequately address it in the first round of revisions. We would also like to thank you for pointing out our misinterpretation of Schattan et al. (2017).

Nevertheless, we adopted the symbol N0 in line with the main literature related to this specific application (i.e. CRNS applied to SWE measurements), notably Gugerli 2019, Jitnikovitch 2021, and Gugerli 2022.

However, we kindly accept your suggestion and propose to adopt the N_ref notation to distinguish it from the symbol commonly used in other applications for we aim to retain the maximum interpretability for the scientific community.

Regarding the explanation on how the baseline count is assessed, we provide it in the reply to your next comment.

L148: Please provide a quantitative definition of “stable” (e.g., based on a standard deviation threshold or another statistical criterion). In addition, other studies have adopted different approaches. For example, Gugerli et al. (2019) used a median value to define the reference count rate. The authors should explain why they selected a different methodology and discuss its implications.

We thank you for this comment and apologise for the lack of clarity on the definition of what is considered “stable” in this instance.

While there is a general agreement that the N0 is a reference value to be set before the first snow, we would like to stress that, as far as the published literature goes, there is no established standard approach to define this parameter. For example, while Gugerli 2019 adopted the median over 24 h, we observe that Jitnikovitch 2021 chose the "averaged neutron count 7–14 d prior to the initial snow accumulation of the season" and Pokhrel 2024 went for the average counts over only one hour.

Our choice is to take the average over a period of minimum 24 h to suppress fluctuations. The stability of the signal in the reference period is defined as not having reboots, trends or outliers that overcome the random fluctuations.

L149-150: (i.e. without ~~discarded data~~ probe’s reboots, outliers, or evident trends that overcome the random fluctuations)

It is difficult for readers to directly compare the results of the analogous analysis performed on the N_r time series with those obtained for SWE_CRNS, as the results are presented in separate figures. I therefore recommend incorporating the results currently shown in Figure 3 into Figure S4 (or vice versa), thereby enabling a direct comparison of the two approaches within a single figure. Such a presentation would facilitate interpretation and help readers assess the consistency of the observed relationships across both datasets.

Thank you for this comment, as we aim to improve the interpretability of our results, we propose to update Figure 3 including the contents that were previously displayed in Figure S4.

Old Figure 3:

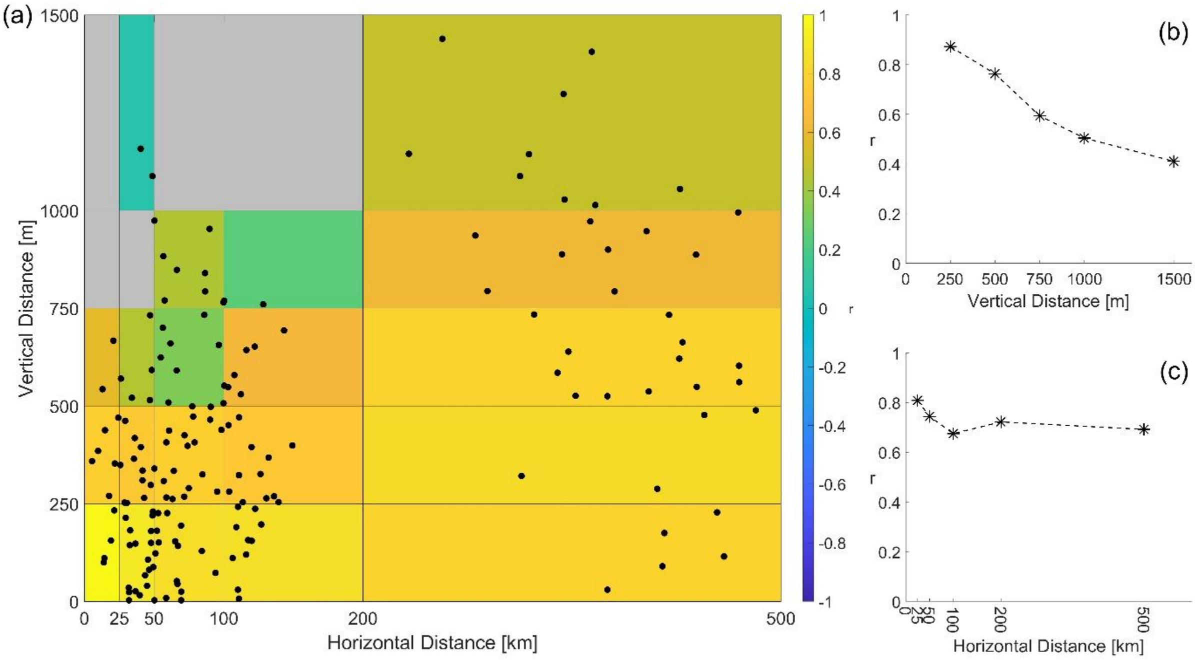

Figure 3: (a) Heatmap of the average correlations of the SWE_{CRNS} time series classified by the horizontal (x-axis) and vertical (y-axis) distances between unmonitored and monitored stations. The black dots represent each pair of monitored-unmonitored stations for which r was computed for a total of 78 pairings. Average r values computed for each vertical (b) and horizontal (c) distances classes. The x coordinates of each point represent the upper limit of its distance class.

New Figure 3:

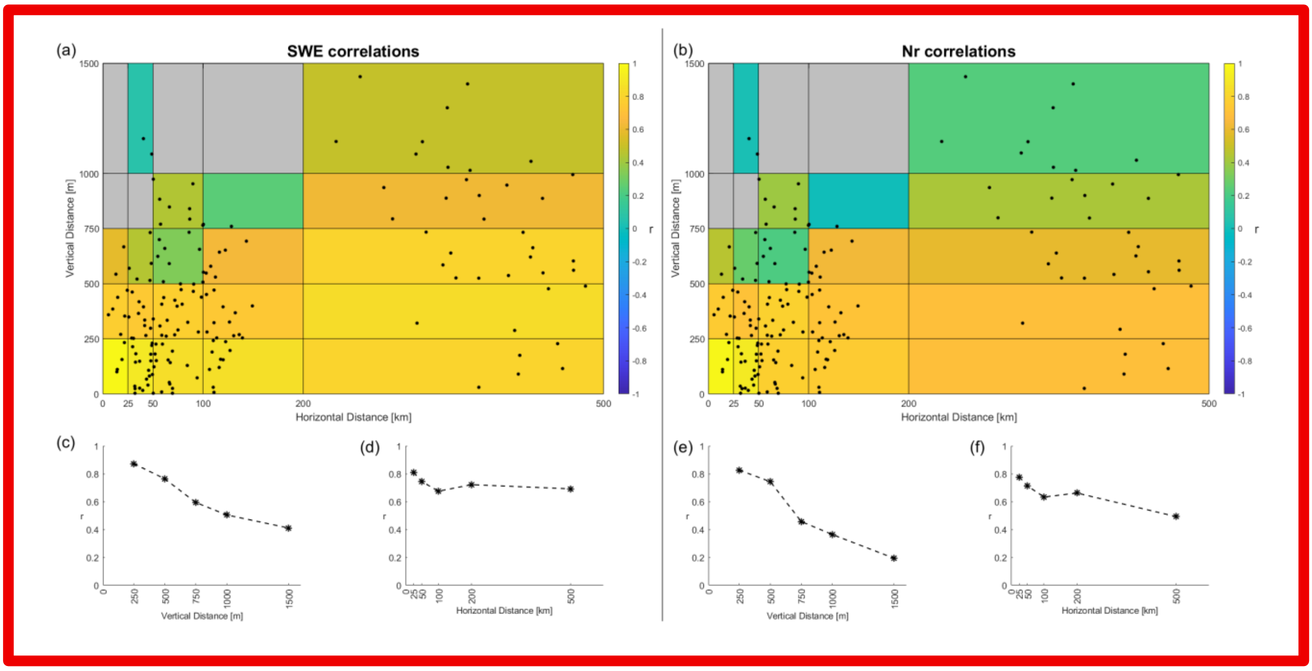

Figure 3: (a) Heatmap of the average correlations of the SWE_{CRNS} (a) and N_r (b) time series classified by the horizontal (x-axis) and vertical (y-axis) distances between unmonitored and monitored stations. The black dots represent each pair of monitored-unmonitored stations for which r was computed for a total of 78 pairings. Average r values computed for each vertical (panel c for SWE_{CRNS} and panel e for N_r) and horizontal (panel d for SWE_{CRNS} and panel f for N_r) distances classes. The x coordinates of each point of panels c to f represent the upper limit of its distance class.

We also propose to add a brief comment on the results showed in the newly added panels of Figure 3 concerning Nr.

L276-279: As it was the case for SWE_{CRNS}, the average correlation decreases monotonically with vertical distances (Fig. 3e), ranging from a maximum value of 0.83 to a minimum of 0.19. As the horizontal distance varies, the average r for the N_r time series (Fig. 3f) yields the highest value (0.78) for the 0-25 km class and the lowest (0.49) for the 200-500 km class.

Reference

Davies, P., Baatz, R., Schattan, P., Quansah, E. K., Amekudzi, L. K., and Bogena, H. R. (2026). On the Variability of the Barometric Effect and Its Relation to Cosmic-Ray Neutron Sensing. Sensors, 26(3), 925.

Gugerli, R., Salzmann, N., Huss, M., & Desilets, D. (2019). Continuous and autonomous snow water equivalent measurements by a cosmic ray sensor on an alpine glacier. The Cryosphere, 13(12), 3413-3434.

Moreover, to address your comments and the ones from the other reviewer, we added the following references:

1) Bogena, H. R., Schrön, M., Jakobi, J., Ney, P., Zacharias, S., Andreasen, M., Baatz, R., Boorman, D., Duygu, M. B., Eguibar-Galán, M. A., Fersch, B., Franke, T., Geris, J., González Sanchis, M., Kerr, Y., Korf, T., Mengistu, Z., Mialon, A., Nasta, P., Nitychoruk, J., Pisinaras, V., Rasche, D., Rosolem, R., Said, H., Schattan, P., Zreda, M., Achleitner, S., Albentosa-Hernández, E., Akyürek, Z., Blume, T., del Campo, A., Canone, D., Dimitrova-Petrova, K., Evans, J. G., Ferraris, S., Frances, F., Gisolo, D., Güntner, A., Herrmann, F., Iwema, J., Jensen, K. H., Kunstmann, H., Lidón, A., Looms, M. C., Oswald, S., Panagopoulos, A., Patil, A., Power, D., Rebmann, C., Romano, N., Scheiffele, L., Seneviratne, S., Weltin, G., and Vereecken, H.: COSMOS-Europe: a European network of cosmic-ray neutron soil moisture sensors, Earth Syst. Sci. Data, 14, 1125–1151, https://doi.org/10.5194/essd-14-1125-2022, 2022.
2) Davies, P., Baatz, R., Schattan, P., Quansah, E. K., Amekudzi, L. K., and Bogena, H. R.: On the Variability of the Barometric Effect and Its Relation to Cosmic-Ray Neutron Sensing. Sensors, 26(3), 925, doi:10.3390/s26030925, 2026.
3) Gugerli, R., Desilets, D., and Salzmann, N.: Brief communication: Application of a muonic cosmic ray snow gauge to monitor the snow water equivalent on alpine glaciers, The Cryosphere, 16, 799–806, https://doi.org/10.5194/tc-16-799-2022, 2022.
4) López-Moreno, J.I., Fassnacht, S.R., Heath, J.T., Musselman, K.N., Revuelto, J., Latron, J., Morán-Tejeda, E., Jonas, T.: Small scale spatial variability of snow density and depth over complex

alpine terrain: Implications for estimating snow water equivalent, Advances in Water Resources, 55, 40-52, doi: 10.1016/j.advwatres.2012.08.010, 2013.

5) Schattan, P., Baroni, G., Oswald, S. E., Schöber, J., Fey, C., Kormann, C., Huttenlau, M., and Achleitner, S.: Continuous monitoring of snowpack dynamics in alpine terrain by aboveground neutron sensing, Water Resour. Res., 53, 3615–3634, doi:10.1002/2016WR020234, 2017.
6) Wallace, J. M. and Hobbs, P. V.: Atmospheric Science: An Introductory Survey: Second Edition, 1–488 pp., doi:10.1016/C2009-0-00034-8, 2006.

REPLY TO REVIEWER #2 (S. FASSNACHT)

First of all, we would like to thank you for your comments as they gave a great contribution in the process of enhancing the quality of our manuscript.

We are glad that we were able to satisfactorily address most of your comments in the previous round of revision, as we hope that this reply will do the same for the remaining points that were raised in your second report.

As we did in the previous reply, for an easier interpretation of the contents we decided to adopt the following colour scheme:

Reviewer comments

Authors reply

Proposed changes (lines refer to the updated marked manuscript)

I appreciate that the authors have addressed most of my comments and those of the other reviewer. My remaining general concern is the authors' response that the "network's sensors have a limited footprint with a radius of ~20 m as declared by the probe's manufacturer." That may be a declaration by the author, but is this true? Other CRN sensors tend to have a larger footprint. The authors could at least discuss the possible variation in SWE across larger footprints.

We thank you for this comment as it helps us to further expand on this important point. We think that your statement that other CRNS tend to have a larger footprint may be influenced by works published with a different setup of CRNS: the above-ground CRNS (e.g. Schattan et al., 2017).

We would like to stress that other CRNS with the same setup as the ones that are employed in the presented network (i.e. ground based CRNS) do not have a larger footprint.

As the footprint depends on the neutrons dynamics in the environment, when a CRNS is mounted on a mast (for measurement of Soil Moisture or the so-called above-ground measurement of SWE), backscattered neutrons can reach it by travelling mostly through air. However, when a sensor is buried in ground, as it is the case for our probes, not only there is a more limited "line of sight" compared to an airborne sensor, but also the fact that neutrons need to travel through snow (which is extremely denser than air) to reach it.

This configuration is needed because the above-ground SWE measurement shows a saturation of a few hundreds of mm SWE (possibly up to 500 - 600 mm according to Schattan et al., 2017). While studies on the uncertainties of the footprint of a buried CRNS are yet to be published. The saturation level provided by Schattan et al., 2017 gives an indication of the limited amount of snow that thermalized neutrons can cross. Therefore, while the buried sensor may still initially have a large footprint before snow deposition, it will significantly shrink as snow accumulates. In this sense, the claim of a footprint of ~20 m is intended to be an indication of an intermediate scale footprint.

In any case, the presence in some sites of both the ground and the above-ground neutron sensors will allow to have a better insight on this topic as investigations continue, but it's beyond the scope of the present paper.

To address these points and to acknowledge the important role played by snowpack variability we propose to introduce in the newly added subsection 3.3 “Limits of this study and future perspectives” the following:

L288-291: Nevertheless, we acknowledge the limitations introduced by three main factors: (i) the adoption of a single β_N for a wide elevation range, (ii) the choice of correcting the incoming neutron fluxes with muons, and (iii) the inherent variability of snowpack characteristics even at such small scales combined with the uncertainty on the footprint of CRNS probes, which may have introduced some biases in the performance evaluation of the network against manual SWE samples.

L304-312: The CRNS probes of the network retain a relatively small footprint whose radius has an upper limit of ~20 m and is inversely proportional to the SWE. Nevertheless, even at such scales snowpack variability plays an important role. In fact, Lopez Moreno et al. (2013) showed that in Alpine environments snow depth and, to a lesser extent, its density can sensibly vary for point scale measurements taken at distances of few meters thus affecting the error associated with SWE estimates. For this reason, we decided to perform comparison of manual SWE data taken where HS was comparable with the one measured by the corresponding AWS as it has been discussed in Subsection 2.2. Still, future works shall focus on the investigation how the snowpack variability affects the footprint of this CRNS setup as it has been done by Schattan et al. (2017), who focused on the above-ground CRNS assessing a footprint radius of ~200 m although with a saturation SWE value of 500-600 mm which renders that setup unapplicable for our study purposes.

It may be useful to revisit my comment from the original Line 91: "why does N0 vary as a function of elevation?" The response is "The number of neutrons reaching the ground (in absence of snowpack or other obstacles), strongly depends on atmospheric thickness which diminishes with elevation." Was station pressure used, or is it necessary? It seems to be a measure for the "atmospheric thickness."

Thank you for pointing this out. To further clarify the importance of the atmospheric pressure correction we propose to add the following paragraph:

L138-140: The atmospheric pressure correction is a crucial step in CRNS application as the number of cosmic ray particles reaching the ground is strongly influenced by the number of particles present in the air column they cross (i.e. the atmospheric thickness), which scales with the atmospheric pressure.

Moreover, to address your comments and the ones from the other reviewer, we added the following references:

1) Bogena, H. R., Schrön, M., Jakobi, J., Ney, P., Zacharias, S., Andreasen, M., Baatz, R., Boorman, D., Duygu, M. B., Eguibar-Galán, M. A., Fersch, B., Franke, T., Geris, J., González Sanchis, M., Kerr, Y., Korf, T., Mengistu, Z., Mialon, A., Nasta, P., Nitychoruk, J., Pisinaras, V., Rasche, D., Rosolem, R., Said, H., Schattan, P., Zreda, M., Achleitner, S., Albentosa-Hernández, E., Akyürek, Z., Blume, T., del Campo, A., Canone, D., Dimitrova-Petrova, K., Evans, J. G., Ferraris, S., Frances, F., Gisolo, D., Güntner, A., Herrmann, F., Iwema, J., Jensen, K. H., Kunstmann, H., Lidón, A., Looms, M. C., Oswald, S., Panagopoulos, A., Patil, A., Power, D., Rebmann, C., Romano, N., Scheiffele, L., Seneviratne, S., Weltin, G., and Vereecken, H.: COSMOS-Europe: a European network of cosmic-ray neutron soil moisture sensors, Earth Syst. Sci. Data, 14, 1125–1151, https://doi.org/10.5194/essd-14-1125-2022, 2022.
2) Davies, P., Baatz, R., Schattan, P., Quansah, E. K., Amekudzi, L. K., and Bogena, H. R.: On the Variability of the Barometric Effect and Its Relation to Cosmic-Ray Neutron Sensing. Sensors, 26(3), 925, doi:10.3390/s26030925, 2026.
3) Gugerli, R., Desilets, D., and Salzmann, N.: Brief communication: Application of a muonic cosmic ray snow gauge to monitor the snow water equivalent on alpine glaciers, The Cryosphere, 16, 799–806, https://doi.org/10.5194/tc-16-799-2022, 2022.
4) López-Moreno, J.I., Fassnacht, S.R., Heath, J.T., Musselman, K.N., Revuelto, J., Latron, J., Morán-Tejeda, E., Jonas, T.: Small scale spatial variability of snow density and depth over complex alpine terrain: Implications for estimating snow water equivalent, Advances in Water Resources, 55, 40-52, doi: 10.1016/j.advwatres.2012.08.010, 2013.
5) Schattan, P., Baroni, G., Oswald, S. E., Schöber, J., Fey, C., Kormann, C., Huttenlau, M., and Achleitner, S.: Continuous monitoring of snowpack dynamics in alpine terrain by aboveground neutron sensing, Water Resour. Res., 53, 3615–3634, doi:10.1002/2016WR020234, 2017.
6) Wallace, J. M. and Hobbs, P. V.: Atmospheric Science: An Introductory Survey: Second Edition, 1–488 pp., doi:10.1016/C2009-0-00034-8, 2006.

On behalf of all the co-authors,

Mario Gallarate