Point by Point Response for the submitted ESSDD manuscript for publication, entitled "Dorff, H. et al. (2025): Tethered balloon-borne measurements to characterize the evolution of the Arctic atmospheric boundary layer at Villum Research Station"

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(I) General Notes/Modifications

To better acknowledge and account for the Villum Research Station, which was the basic measurement location in Station Nord used for the BELUGA profiling, we now refer to “Villum Research Station” explicitly, and thus have changed the abbreviation for the measurement station location from “STN” to “VRS” throughout the manuscript. Furthermore, this change was applied to the PANGAEA datasets.

Within the updated manuscript, the datasets are already referenced with their future DOI, unlike in the preprint where a preliminary DOI-like version was provided by PANGAEA.. The future DOIs are not yet accessible but will be activated immediately upon acceptance of the manuscript for publication. The updated datasets (v2.6) have an optimised flight segmentation, reflecting the reviewer’s remarks. Furthermore, general and variable attributes that included information about Station Nord (STN) have been changed to Villum Research Station (VRS). Table 1 lists how the dataset references have changed accordingly:

Table 1: List of dataset references (DOIs) changes compared to preprint version

Dataset	**Preprint link**	**Future DOI already given the updated manuscript**
Dataset biblio-graphy of ballon-borne measurement data	https://doi.pangaea.de/10.1594/PANGAEA.986431	https://doi.org/10.1594/PANGAEA.986431
Meteorological component of TMP	https://doi.pangaea.de/10.1594/PANGAEA.987003	https://doi.org/10.1594/PANGAEA.987003
Turbulent component of TMP	https://doi.pangaea.de/10.1594/PANGAEA.987008	https://doi.org/10.1594/PANGAEA.987008
Broadband Radiation Probe (BP)	https://doi.pangaea.de/10.1594/PANGAEA.987001	https://doi.org/10.1594/PANGAEA.987001
Radiosondes	https://doi.pangaea.de/10.1594/PANGAEA.987053	https://doi.org/10.1594/PANGAEA.987053

(II) Responses and Changes to the Comments from Anonymous Referee 1 (AC1)

Prefaces:

We thank the ESSD handling editor, Fan Mei, as well as the Anonymous Referee #1, for the enlightening review. Please find our responses (in standard font) to the remarks from the Anonymous Referee #1 (in *italics*) below. Modifications in the manuscript are **bold.**

Responses to Reviewer 1:

This is a very well-written article describing an interesting balloon-based dataset. The authors have done a very nice job in describing the measurements and calculations in detail. I have few comments and think that the paper is more or less ready for publication. Below are a few relatively minor things for the authors to think about.

Response: First of all, we want to sincerely thank you for your kind and helpful feedback, as well as for appreciating our work. We are confident that addressing your remarks will further improve our manuscript.

Specific comments:

Abstract, Line 14: What are "temperature rates"? Should this be "Temperature advection rates"? "Sensible Heat Flux"? Something else?

Response: We agree that the term is unprecise. We have changed it to: **"temporal temperature changes"**.

Line 112: In calculating the winds, how do you handle the ground-relative velocity of the probe? Are we assuming this is zero? There are clearly times where the tether is moving (and hence, the probe is as well).

Response: Indeed, there is some drifting of the tether and probe, but we assume this to be of minor relevance. Based on another balloon-borne Arctic campaign at Ny-Ålesund (Svalbard), we have calculated the oscillations of the tether (Fig. R1). The drift speeds, with a mean drift speed of 0.6 m/s, are about one order of magnitude smaller than the wind speeds. Therefore, we neglect them for simplicity.

Modifications (L207ff): Within the manuscript, we now explicitly mention this simplification in a later section (when further describing the measurement data handling and processing, Sect. 3.2) as follows: **"Furthermore, changes of the tether inclination and a related drift of the instrument probes can affect the measured wind speeds. Past BELUGA campaigns have shown that the drift speeds of the probes are up to about one order of magnitude smaller than wind speeds. Therefore, these effects have been neglected in the data processing."**

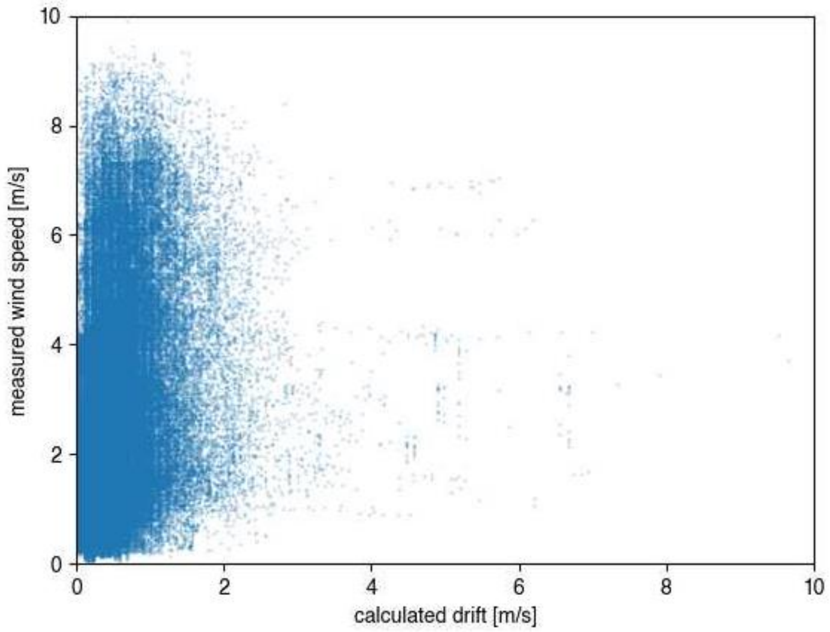

Figure R1: Comparison of measured wind speeds and calculated drift speeds of the balloon-borne instrument probes for profile measurements conducted under Arctic conditions at Svalbard in 2024. For this data, mean drift speed was about 0.6 m/s per ascent.. For data users aiming at wind measurements with high precision, a correction of these effects by using the GPS data is recommended.

Line 136: "Deca-minute" is not a commonly used term. While people can figure it out, it will take most some time to think about what this means. Why not make it easier on the reader?

Response: We reformulated as: **"at intervals of ~10 min."**

Line 153: Were the measurements time-stamped using a common clock on the data-logger? How was this done?

Response: For all the probes, we used GPS as the absolute time server, which was sufficient for 1 Hz data.

Modifications (L156): "[...] referencing the UTC time (from probe-included GPS modules)"

Line 184: Based on experience, even much smaller tilt angles have significant impacts. These impacts can be calculated and/or potentially corrected for. Has there been any attempt to do so?

Response: We agree that even smaller tilt angles can influence the measured irradiance. However, in contrast to solar radiation, the thermal infrared irradiance is nearly isotropic and, therefore, much less affected by the instrument tilt (Bucholtz et al., 2008: https://doi.org/10.1175/2008JTECHA1085.1). According to Wendisch and Yang (2012, 10.1080/00107514.2012.732967), the downward and upward irradiance are defined as hemispheric integrals:

$$\boldsymbol{F}\downarrow= \int_{\boldsymbol{0}}^{\boldsymbol{2\Pi}} \int_{\boldsymbol{\Pi/2}}^{\boldsymbol{\Pi}} I \downarrow\cdot \cos\theta \cdot \sin\theta \, d\theta d\varphi,$$

$$\boldsymbol{F}\uparrow= \int_{\boldsymbol{0}}^{\boldsymbol{2\Pi}} \int_{\boldsymbol{0}}^{\boldsymbol{\Pi/2}} I \uparrow\cdot \cos\theta \cdot \sin\theta \, d\theta d\varphi,$$

with the downward and upward broadband radiances *I.* For a Lambertian radiator, a tilted sensor receives a contribution from both hemispheres as illustrated in Fig. R2. There arises contributions from both major directional components (upward and downward). As described in Picard et al. (2020), e.g., the measured downward irradiance ($F\downarrow$) is modified by a fraction of radiation from the opposite hemisphere proportional to $cos(\beta)$, following:

$$F\downarrow(\beta) = (1 - cos(\beta)) \cdot F\uparrow + cos(\beta) F\downarrow.$$

Assuming similar upward and downward irradiance values and an instantaneous sensor response as a worst-case scenario, the resulting uncertainty in the irradiance values increases with the pitch angle β. This leads to an uncertainty of approximately 0.4 % for β=5° and, nearly 4 % for β=15°. Nonetheless, since our data do not include solar radiation with much stronger directional dependency, we argue that the thresholds we used for the irradiance data quality flags are still appropriate, given the uncertainties above.

No tilt corrections were applied to our data because we aim to allow users full flexibility for individual post-processing in this regard. Following Picard et al. (2020; https://doi.org/10.5194/tc-14-1497-2020), the irradiances can be further corrected by accounting for the above-described cosine-dependent irradiance contribution caused by the sensor tilt and by considering the response time of the sensor.

Modifications (L195ff): We added the following sentence: **"[...] with uncertainties in the irradiance values greater than 5 %. This amounts to less than 5% of the total data and often are for measurements only shortly after launch. For users interested in considering this strong tilted data, correction routines as described by Picard et al. (2020) are suggested."**

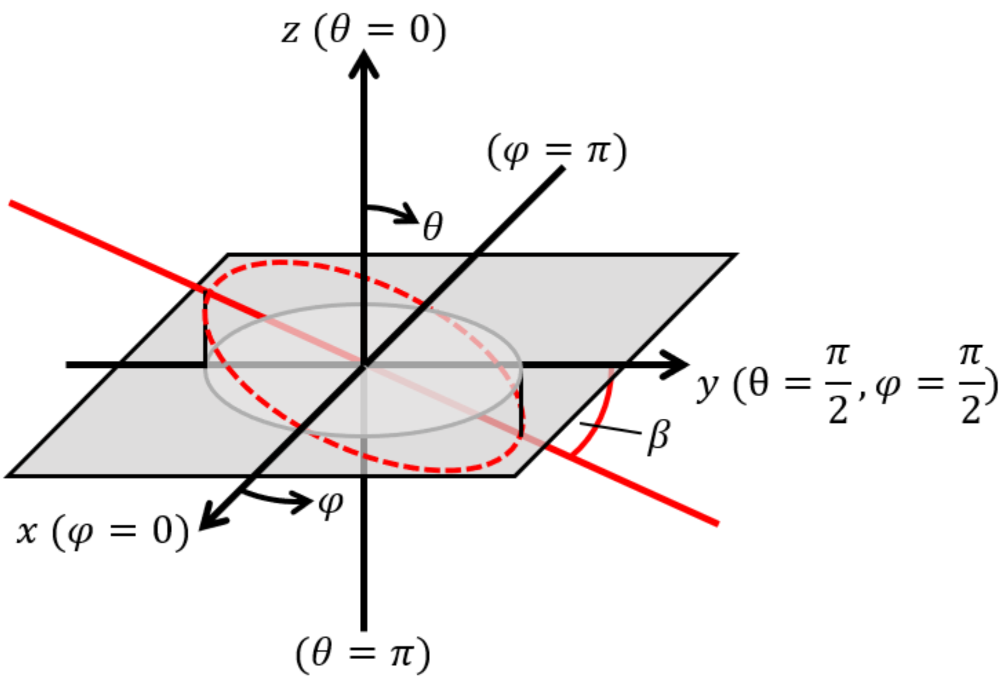

Fig. R2: Geometry of a sloped infinite plane exhibited by radiation.

Line 216: I do see the tail of the spectrum starting to flatten out. It might be helpful to include an average value as well, given that the spectrum itself has a relatively large range.

Response: This has been addressed by using the smoothed spectrum, indicated in Fig. 7 (dark-green, dashed). This averaged spectrum is based on logarithmically equivalent bins. However, within the original manuscript, the figure caption referred to incorrect colours, which made it difficult to identify the lines; this has now been corrected (Response to Referee 2). In addition, for greater clarity, we renamed the legend entry from “smoothed spectrum” to **“averaged spectrum”** in Fig. 7. A slight flattening is indeed visible at the highest frequencies, which indicates where sensor white noise from the sensor becomes dominant. However, the averaged spectrum still follows a straight line with a slope comparable to the inertia subrange model. We therefore argue that fluctuations up to more than 10 Hz remain robust.

Modification (L231ff): We specified that we meant the averaged spectrum: **“Up to frequencies slightly above 10 Hz, the averaged spectrum in Fig. 7 has not yet transitioned to white noise (a flat spectrum), implying that spatial structures of about 2 cm can still be well resolved.”**

Line 278 and throughout manuscript: relative humidity? specific humidity? Please state clearly what is meant by “humidity” throughout the text.

Response: We apologize for the imprecise wording and have now ensured a clear and consistent specification of the moisture quantities throughout the manuscript. Only in selected cases, where referring generally to humidity is sufficient, we retained the generic term, as all moisture quantities can be derived and analysed individually from the measurements.

Lines 335-350: This is starting to border on analysis and discussion on model performance, which is typically not what ESSD articles are for. Recommend removing, as this is only a very limited evaluation. I appreciate that it is meant as an example, but I’m not convinced this is necessary

Response: We apologize for moving too far beyond the intended scope of ESSD with our exemplary case description. Our intention was to highlight the potential of the data for further analysis and encourage users to use the data especially for model and reanalysis evaluation by these appetizers. CARRA is one of the highest resolution state-of-the-art Arctic reanalysis, which plays an important role in the Arctic research community. For this reason, we considered it relevant to showcase the potential of the dataset for future studies.

However, we agree that when beginning to analyse thermodynamic profiles of CARRA and BELUGA observations, this could be interpreted as a discussion of model performance, and that such an assessment would be too limited and not sufficiently robust within the scope of this manuscript, which must remain focused on the data itself, as required by ESSD.

Therefore, when introducing Section 5 dealing with the general potential of the BELUGA observations to study Arctic ABL transition events, we motivated the importance of combining the observations with model data as follows:

Modification (L301ff): “The following section sketches how BELUGA L2 data from VRS during such transitions can enhance our understanding of Arctic ABL steering processes, for example, regarding temporal temperature changes and radiative heating rates under varying cloud conditions. To fully exploit the BELUGA data and draw robust conclusions about the observed processes, future work will also rely on joint analyses with numerical weather prediction models or reanalysis data. An important aspect in this context is the comparability of the BELUGA data with the model data,

particularly regarding the vertical resolution, which we introduce here for one of the LLJ events and the reanalysis data."

Thus, we did not remove Section 5.3 and Figure 14, but we substantially revised the text. By this, the section now focuses on sketching potential future comparison studies and emphasizes that the general agreement between our measurements primarily serves to place our observations in a broader context. We highlight the value of the dataset for revealing limitations that reanalyses exhibit within the Arctic ABL, using CARRA as an illustrative example.

Modification (L355ff): To reflect this clearer focus, we renamed the section to **"Low-level jet evolution**", as this is an important phenomenon in the Arctic ABL that can be studied with our data. The revised section reads as follows: **"LLJs play a significant role in modulating the structure of the Arctic ABL structure due to their influence on vertical entrainment. Balloon-borne observations are well suited for studying LLJ events. Previous balloon-borne studies have demonstrated that LLJs can effectively enhance near-surface horizontal transport of passive tracers (Egerer et al., 2023).**

During the measurement campaign at VRS, BELUGA sampled several LLJ events, as listed in Tab. 2 and shown in Fig. 11. A prominent LLJ example is presented in Fig. 14, illustrating vertical profiles of potential temperature, wind speed and specific humidity from RF12 on 1 April 2024. The BELUGA observations reveal a pronounced LLJ with a maximum wind speed approaching 5 m s^{-1} above a stably stratified Arctic ABL extending up to about 100 m (Fig. 14a, b). Over the course of the flight, the LLJ intensity increased by approximately 1 m/s (Fig. 14b). Apart from a decrease in the near-surface layer (<50 m), moisture conditions remained fairly homogeneous throughout the lowest 500 m with q between 0.4 and 0.5 g kg^{-1} (Fig. 14c).

These measurements allow the structure of LLJs in Arctic ABLs to be compared with reanalysis profiles. As an example, Fig. 14 includes the corresponding CARRA reanalysis profiles for the duration of the flight. The overall agreement between BELUGA and CARRA, particularly regarding potential temperature (Fig. 14a) and the general shape of the LLJ, places the observations in a broader meteorological context. The high-resolution vertical profiles of meteorological, radiative, and turbulence conditions obtained with BELUGA provide valuable case-study material for future evaluations of high-resolution reanalyses such as those provided by CARRA. The observations support efforts to better understand limitations in the model-based representation of transition events. Differences in specific humidity and maximum wind speed at the LLJ height for this case in CARRA (Fig. 14b, c) illustrate aspects that could be examined in more detail across additional LLJ events."

(III) Responses and Changes to the Comments from Anonymous Referee 2 (AC2)

Prefaces:

We thank the ESSD handling editor, Fan Mei, as well as the Anonymous Referee #2, for the very detailed review. Below, we provide our responses (in standard font) to the remarks from the Anonymous Referee #2 (in *italics*). Modifications in the manuscript are shown in **bold.**

Responses to Reviewer 2:

I think that this unique data set can be very useful in future investigation of small scale boundary layer processes aiming e.g. to a better understanding of the ABL energy budget. The paper is well organized and in general well written with clear logic. I propose some minor revisions (mostly concerning wording).

Response: First of all, we would like to sincerely thank you for the very constructive and detailed feedback. We are confident that addressing your remarks has substantially improved the manuscript in terms of clarity and precision.

Specific comments:

Equation 1: This formula assumes the constant temperature gradient of the standard atmosphere. However, the observed T-gradients were different. The temperature as a function of pressure is known with high vertical resolution from the measurements. So, one could take the average temperature between two pressure layers and calculate then z layer by layer? (See e.g. equation 6.13 in the textbook of Pichler, 1986). This would improve the accuracy for z. Pichler (1986) Dynamik der Atmosphäre BI Wissenschaftsverlag

Response: We aim for as much consistency among all the BELUGA datasets as feasible. In recent years, we have consistently calculated the barometric altitude for all balloon activities using Equation 1, which is also applied in aviation meteorology. We compared these calculations with the GPS altitude on the radiosonde and found very good agreement, although GPS-based altitude estimates can be somewhat unreliable, particularly at these high geographical latitudes.

Nevertheless, we appreciate your suggestion for improving the accuracy of the balloon height information. To address this, we now point out the possibility of a more accurate altitude determination using the current temperature, as in the following:

Modification (L168ff): **"The calculation method of Eq. 1, which uses a standard temperature gradient for determining barometric altitude, is commonly applied in aviation and has been shown to correspond well with GPS-derived altitude in recent BELUGA datasets (Pilz et al., 2022). To ensure consistency across all BELUGA datasets, this method was also applied in the dataset reported here. For users aiming at higher precision of the altitude, reprocessing is recommended using the actual gradients of the locally measured temperature."**

Please note that previous datasets have been fully published and cannot be changed. However, if a merged dataset combining the all BELUGA observations and campaigns together with specific variable products is published in the future, we will consider using the gradient method.

Line 11: better: one possible major …

Response: We have changed it accordingly.

Lines 14-15: meaning of 'temperature rate' is unclear here. Is it the change of temperature with time or the vertical gradient or something else?

Response/Modification: We specified as follows: **"temporal temperature changes".**

Lines 27-28: I think, much older and thus original references need to be given here.

Response/Modification: We have added two sources: Thuiller & Lappe (1964, https://doi.org/10.1175/1520-0450(1964)003<0299:WATPCF>2.0.CO;2) and Stull RB (1998, https://doi.org/10.1007/978-94-009-3027-8).

Caption Fig. 1: better 'domain' instead of 'extent', Replace 'dots illustrate' by 'orange dots illustrate' since there are also other ones.

Response/Modification: We updated the figure caption as: **"Location of Villum Research Station (VRS) at Station Nord on the northeastern tip of Greenland (purple cross), with the CARRA reanalysis (western) domain indicated by the orange rectangle (a). The mean sea ice concentration from ASMR-2 (Spreen et al., 2008), averaged over the BELUGA measurement period from 24 March to 12 April 2024, is also shown. Panel b) provides a zoomed view of the coastal region around Station Nord. Dots illustrate the grid spacing of the commonly used reanalysis datasets ERA5 (black) and CARRA (orange), which can be evaluated by the BELUGA observations. The background map was created with Natural Earth."**

*Caption Fig. 3: better: … probes distributed **along** the **rope** (not robe, that's something else). Aren't clouds often also within the inversion?*

Response: We corrected the wording. You are right that clouds are often located also within the inversion. However, during this campaign, clouds were more frequently observed above the ABL. We thus clarified in the figure caption that it was a specific feature of the campaign.

Modification (Figure 3 Caption): **"Schematic sketch of the typical flight strategy with instrument probes along the rope recording data in several profiles throughout the ABL. Shadings qualitatively show the temperature structure within the ABL, with increased values (orange) around a near-surface inversion above which clouds commonly formed during the campaign."**

Table 2: why is turbulence data often unavailable?

Response: At the beginning of the measurement campaign, there were major problems with data acquisition. We were able to solve these problems on site for the standard measurements with a comparatively low sampling frequency, but not for the desired higher sampling rate of the hot-wire anemometer.

Fortunately, we had another data acquisition system with high sampling rates at our disposal, which we were able to integrate into the probe after minor modifications, thus providing us with good quality hot-wire measurements after flight RF13. Further sporadic failures were caused by broken sensors in the occasional harsh environments. In the concerning paragraph, we added:

Modification (L135ff): **"The 28 RFs of BELUGA accumulated measurement data over about 76 flight hours [...]. In general, the instruments performed reliable and continuous measurements, except for the turbulence probe (TMP_{turb}), which experienced data acquisition problems in the first half of the campaign."**

Line 141: probably, the authors mean the maximum height of all balloon flights reaching more than 200 m height?

Response: The maximum heights of all balloon flights are listed in Table 2. The crosses in Figure 4 indicate the maximum heights of all profiles exceeding 200 m for each RF. To make this point clearer, we rephrased as follows:

Modification (L144f): "For the VRS campaign, Fig. 4 shows the maximum heights of all profiles exceeding 200 m for each RF."

Line 143: better: During the first 11 RFs …. maximum heights reached by the balloon were mostly slightly below 500 m while …..

Response: We rephrased the sentence as follows:

Modification (L147ff): "During the first 15 RFs, the maximum profile heights reached by the balloon were mostly slightly below 500 m and occurred at similar altitudes. In the subsequent RFs, maximum profile heights varied more, both between and within individual RFs, and frequently exceeded 500 m."

Line 144: better again 'maximum' profile heights'

Response: See comment above.

Lines 181-182: In general, a wind speed above 20 m/s is not unrealistic in the Arctic. So, one could add that during the campaign wind speed was in general low, so that values above 20 m/s were considered as unrealistic and thus excluded.

Response: We appreciate the suggestion and have adapted L181-182 accordingly. **Modification (L193f): "During the campaign, wind speeds were generally low, so values above 20 m/s were considered unrealistic and thus excluded."**

Fig. 5: what is called constant altitude is obviously not really constant. See green peak around 13:50. Another point: What is the reason for the green color dots near the red peaks?

Response: We changed the label in the data to **"nearly constant altitude"** and updated the figure legend accordingly. In addition, we corrected the greenish segments near the red peaks, which resulted from an error in the flight segmentation code.

Modification: Updated Figure R1.

And 'near-ground' is not always the same layer. E.g. during descents ´near-ground' differs in the descent from 'near-ground' during ascent.

Response/Modification: We also corrected this shift, which was caused by using temporally averaged mean gradients in height that were erroneously not referenced to the centred index. As mentioned above, we updated and debugged our flight segmentation. Figure R1 illustrates the updated flight segmentation, showing the same period (RF01) as in Fig. 5.

Caption Fig 7: at least on my screen the raw spectrum appears to be light green rather than blue and I do not see any orange color in the figure.

Response/Modification: We corrected our erroneous descriptions, which referred to a previous version.

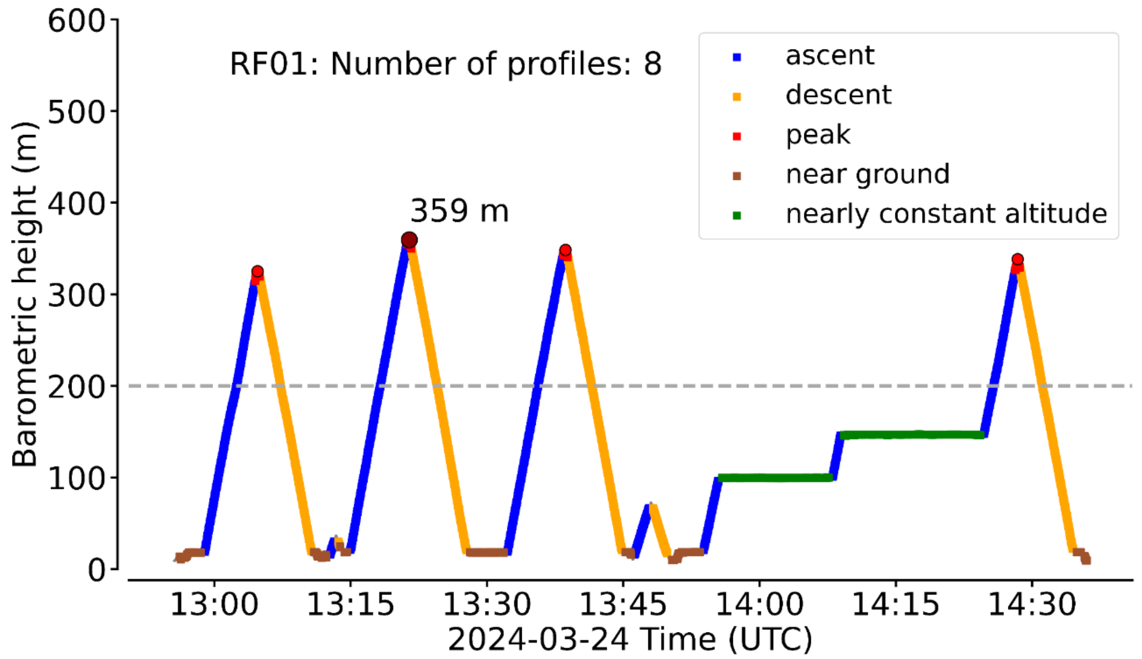

Figure R1: Updated Figure 5. Flight altitude over time during flight (RF01) with all flagged flight segments. Vertical profiling is distinguished by ascent and descent. Peaks are flagged for 15 s before and after maximum profile heights (red dots, with the highest profile depicted as darked dot).

Caption Fig. 8: formulation needs improvement. You mean 'Near-surface frequency of net infrared irradiances (Fnet) based on data around 30 m height' ?

Response: We rephrased the caption as follows:

Modification: "Frequency distribution of net thermal infrared irradiance values (F_{net}) for near-surface data recorded at around 30 m height (purple) and for the profile peaks (orange) [...]".

Line 238: better: 'were' published or 'will be' published ?

Response: Changed accordingly.

Line 252/253: The sentence is misleading. The authors mean probably: Marine air masses reaching STN are influenced by their traversal over the (partly) sea-ice-covered ocean?

Response: Changed accordingly.

Line 253: delete likely, the surface always influences an air mass. Or is there a reason for decoupling here?

Response: Done.

Line 254: '…. Can frequently influence …. also this sentence part needs reformulation. The synoptic condition cannot be a prerequisite for the data. Do the authors simply mean: The synoptic situation at STN is furthermore influenced often by katabatic flows ..... ?

Response: We rephrased the passage as follows:

Modification (L269ff): "Marine air masses reaching VRS and their thermodynamic vertical structure are influenced by their traversal over the sea-ice-covered ocean. The synoptic situation at VRS, and by this the thermodynamic BELUGA measurements, are furthermore often influenced by katabatic flows, driven by the complex orography in the hinterland of Station Nord."

Line 277: replace 'fields' by 'speeds' (a wind field cannot decrease or increase).

Response: We changed the wording accordingly.

Lines 280 – 281: A similar figure as Fig 11b and c for the observations (with the same vertical axes) would be helpful.

Response: We agree that Fig. 9 is less suitable for identifying the ABL features shown in Fig 11. However, we aim to keep the section concise and therefore decided not to add the suggested figure to the manuscript. For completeness, the low-level radiosonde profiles are shown below in Fig. R2.

To avoid misunderstandings in interpreting the comparison between Fig. 9 and Fig. 11 that arose from the original manuscript text, we clarified the reference to Fig. 9 as follows: **Modification (L297ff): "The radiosonde profiles, which were shown for the entire troposphere in Fig. 9, generally confirm the synoptic development in the ABL indicated by CARRA in Fig. 11, highlighting the rather dry conditions at VRS."**

Line 283: The 'thermal' stratification

Response: We have concretised the phrase accordingly.

Caption Fig 12: sentence part starting with 'color-coded': please write complete sentence.

Response: This was an unintended remnant and has been corrected. We rephrased the caption as follows:

Modification (Figure 12): **"Near-surface thermal structure and its temporal evolution during RF15 (2 April 2024) based on TMP_{met} data. (a) Flight altitude, with colour-coded progression over time. (b) Vertical profiles of potential temperature (Θ), with each profile colour-matched to the corresponding time segment in (a). [...]"**

Line 292: 'spatio' means here in vertical direction? Or was the spatial variability (horizontally) derived from the reanalyses?

Response: We specified that we meant the vertical scales as follows:

Modification (L314f): **"Among the transitions between Arctic ABL states, changes in cloud conditions have a significant impact on the Arctic ABL structure, particularly evident in variations of the vertical temperature gradient (lapse-rate) at small temporal and vertical scales."**

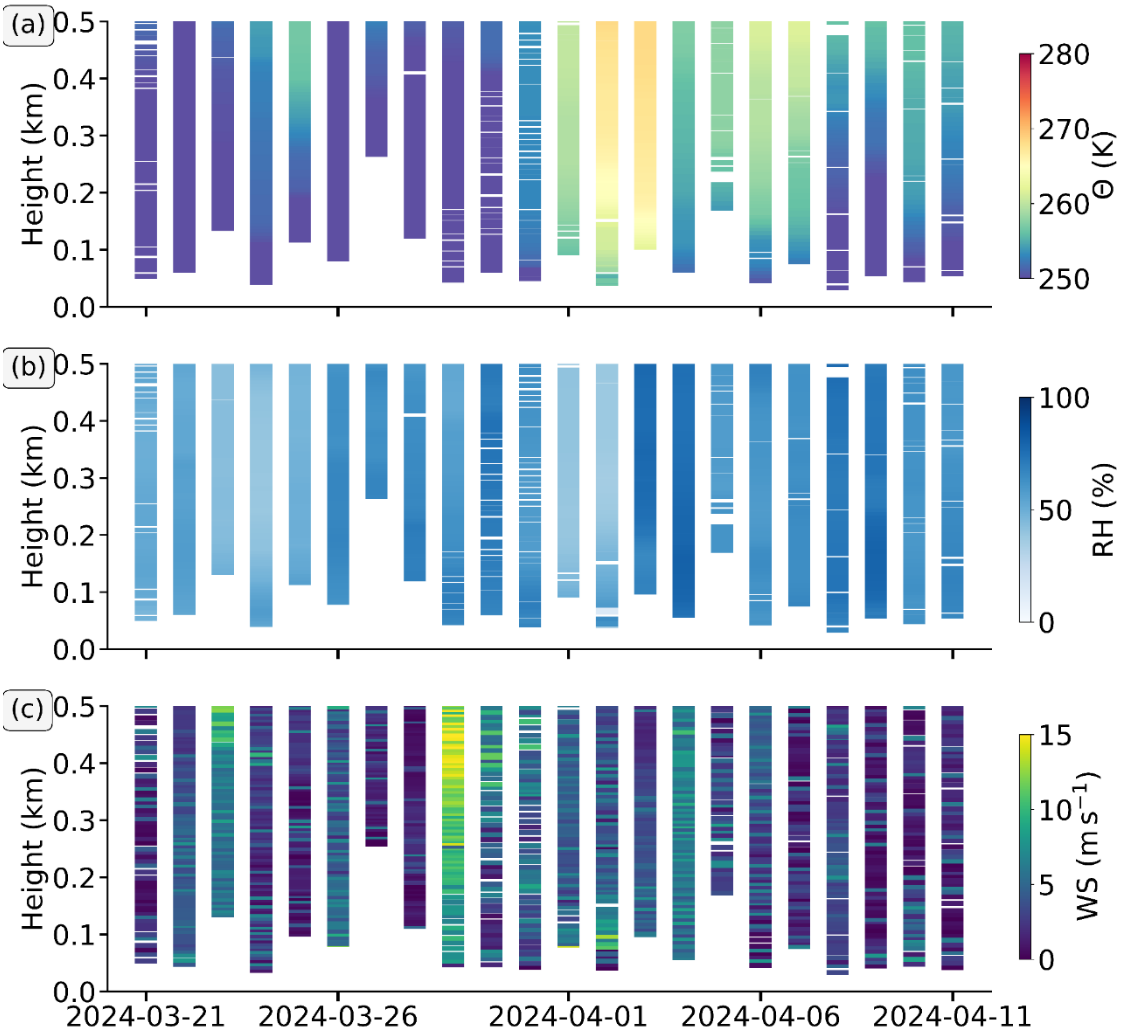

Figure R2. Radiosonde profiles of (a) potential temperature, (b) RH, and (c) wind speed for the campaign as in Figure 9 in the manuscript, but only for the lowest 500 metres.

Line 310 and text below: the authors mean probably just the divergence of radiative fluxes (not the divergence of the radiation budget). Only changes in radiation are addressed, but what about turbulence and phase changes? Changing wind speed will generate less or more mixing and as a consequence stronger or weaker stability.

Response: Vertical mixing induced by turbulence has a significant impact on the thermal stratification and temporal changes in the vertical temperature structure, which we did not intend to neglect. Our purpose was instead to highlight the radiative-based assessment that becomes feasible with our observations. Therefore, we reformulated the passage as follows:

Modification (L332ff): "In addition to advection (horizontal exchange of different air masses), phase transitions, and vertical mixing by turbulence, the divergence of the local radiative fluxes can induce temperature tendencies in the near-surface inversion during transitions between cloud-free and cloudy states described in Sect. 5.1. [...]"

Line 331: this formulation needs improvement. E.g.: ' ... the arctic ABL due to their strong impact on vertical entrainment '.

Response: We rephrased the sentence accordingly.

Modification (L355): "Low level jets (LLJs) play a significant role in modulating the structure of the Arctic ABL due to their influence on vertical entrainment."

Line 335: I suggest deleting '… all measurements from RTF12 are compared here' and continue previous sentence part with …specific humidity together with the corresponding CARRA ....The reason for this change is that the comparison is made in the paragraph starting in line 341 while the previous paragraph explains BELUGA measurements only.

Response: In accordance with our response to Referee 1 we have strongly adjusted the section and first only introduce the BELUGA observations in the Figure, resulting in the following updated sentence:

Modification (L358f): "During the measurement campaign at VRS, BELUGA sampled several LLJ events, as listed in Tab. 1 and shown in Fig. 11. A prominent LLJ example is presented in Fig. 14, illustrating vertical profiles of potential temperature, wind speed, and specific humidity observed from RF12 on 1 April 2024."