

Response to the Editor

Dear Editor,

We sincerely thank the reviewer for their time and effort in conducting a second review, as well as for their valuable comments. The comments and suggestions from Reviewer #2 have been carefully addressed in the revised manuscript.

Accordingly, we hereby submit the revised manuscript and the corresponding diff version, along with our responses to all comments from reviewer #2. In our replies, all line references correspond to the final tracked-changes version of the manuscript.

Audrey Teisseire & co-authors.

General Comments

The corrected manuscript was improved but still there are some issues to be addressed.

1) In particular, regarding the IFS temperature, the evaluation was mostly qualitative. The text now discusses IFS limitations and mentions radiosonde checks but does not provide a quantitative comparison (bias / RMSE / timing mismatch). This matters where the interpretation hinges on the dendritic growth layer or 0 °C isotherm placement. I suggest adding a small table or figure or Appendix with IFS vs Payerne sounding (ΔT profiles, time stamps), and note any adjustments made to temperature contours (e.g., Fig. 1 removal rationale).

1) A panel of plots comparing Payerne radiosonde measurements with IFS-modeled temperatures for all case studies is presented in the Appendix and discussed in lines 124-135 where we added: *“In order to provide a guideline for the robustness of the IFS temperature information used in the discussion of the case studies presented here, Fig. B1 has been added to the Appendix. Within Fig. B1, one representative example of the profile of atmospheric temperatures from the IFS at Eriswil station is compared with the corresponding radiosonde observation from Payerne (46.813°N, 6.944°E, 491 m a.s.l) for each case study. Given that IFS data at Eriswil and radiosonde profiles from Payerne show good agreement, we assume that the IFS can be reliably used to infer temperature in our study. Nevertheless, the deviations shown in Fig. B1 are used in the discussion of the case studies as an indicator for the presence of possible spatial inhomogeneities in the temperature field. Indeed, for the 22 February 2024, Fig. B1d shows a strong spatial variability, especially visible below 2.5 km height. Given this strong variability, the time-resolved temperature contours have been removed from Fig. 1, while they are shown in the overview plots of all other presented case studies.”*

Formal aspects

1) In multiple places, the radar reflectivity uses spaced math like “Z e” instead of standard Z_e ; likewise “ $v = -1 \text{ ms}^{-1}$ ” formatting alternates between different minus signs and spacing around “=”. This occurs across Sections 2–5 and figure captions. Please normalize to Z_e , $DWR_{\{Ka-W\}}$, $SNR_{\{co\}} / SNR_{\{cross\}}$, SLDR, and velocities as $v = -1 \text{ m s}^{-1}$ (with thin space between unit symbols). Apply through text and figure axes/captions.

1) Thank you for this comment. The entire manuscript has been carefully reviewed and the variables have been standardized.

2). There is an inconsistent use of hyphen/en-dash for “Ka-band”, “W-band”, $DWR_{\{Ka-W\}}$. Some instances use hyphen “-” and others an en-dash. The subscript “Ka-W” also appears as “Ka-W” or “Ka–W”. Authors should use Ka-band, W-band (non-breaking hyphen) and $DWR_{\{Ka-W\}}$ (en-dash in the subscript) consistently.

2) We acknowledge the suggestion of Reviewer #2 and have corrected as suggested in the entire manuscript.

3). Most acronyms are now defined, but a few first uses could still be tightened. Example: “RPG94 of type (RPG-FMCW-94-DP)” —the parenthetical “of type” is awkward; also ensure VISSS and PeakTree (if mentioned) are expanded at first use in main text. Rephrase to “the RPG-FMCW-94-DP (hereafter RPG94)” and ensure one clear first-use expansion per acronym.

3) Thank you very much. All acronyms have been revised, and the sentence has been corrected as suggested.

4). Most captions add “UTC”, but scan across figures to ensure all explicit times carry “UTC” and use a consistent hh:mm:ss style. E.g., Figs. 4–5, 9–10, 16–17 are mostly consistent; please do one final pass.

4) Thanks for the hint. We added information about the seconds of a UTC time stamp or time frame, where this information is of relevance.

5). A few paragraphs narrate features in an order that differs from panel ordering (e.g., referring to SLDR before SNR panels). Readers have to jump back and forth. When discussing multi-panel figures, follow a consistent order (e.g., $SNR_{\{co\}} \rightarrow SNR_{\{cross\}} \rightarrow SLDR$), according to the panel layout.

5) The entire Results section has been revised and now follows a consistent figure order wherever possible. Regarding the paragraph (lines 402–419), the decision to describe the SLDR Doppler spectrogram before the SNR_{co} spectrogram is deliberate, in order to emphasize the increase observed in SLDR in the region where the fall velocity is higher and to relate it to the SNR_{co} Doppler spectrogram.

6). (Very minor). Note that authors use ‘Figure 1’ but later Fig. 2, etc. please be consistent.

6) “Figure” has been replaced with “Fig.” throughout the text.