Editor comments on the revised version

Thank you for responding to the referees' comments and revising the manuscript accordingly. Having studied your revisions, I would like to ask you to consider the following comments before the paper can be accepted for publication.

1. The new introduction provides more context on aerosol typing, which is helpful. However, several statements remain rather vague, and references are missing. Please discuss existing approaches to aerosol typing and provide the relevant references, particularly for the CALIPSO and EarthCARE classification schemes which are mentioned in the text.
2. In Sect. 4.2.1, please update the review of literature values and include recent references. For instance, a database of LR and PDR values at 355 nm has been provided by Floutsi et al. (2023a, b).
3. Several other aerosol classification schemes use four basic components instead of three as proposed here (e.g., Holzer-Popp et al., 2013; Nishizawa et al., 2017; Wandinger et al.; Floutsi et al., 2024). Please contextualize your approach within the existing literature and discuss the pros and cons of the different methods.
4. Please check the scaling of the color bars in your figures and avoid strange values with two decimal places (cf. RH in Fig. 4, PDR in Fig. 5).
5. Please ensure that your equations are consistent with the submission guidelines (https://www.atmospheric-measurement-techniques.net/submission.html - Mathematical notation and terminology). Variables should be indicated using a mathematical symbol rather than an abbreviation (e.g. τ instead of *AOT* or δ instead of *PDR*). Please follow the rules for the use of italic and roman fonts.
6. Data availability: This statement is thought to provide information on the accessibility of data presented and discussed in the paper, e.g., the FENNEC data set. Please consult the submission guidelines under the topic “Prepare your assets” and provide information accordingly.

References:

Floutsi, A. A., et al.: DeLiAn – a growing collection of depolarization ratio, lidar ratio and Ångström exponent for different aerosol types and mixtures from ground-based lidar observations, Zenodo [data set], https://doi.org/10.5281/zenodo.7751752, 2023a.

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Nishizawa, T., et al.: Ground-based network observation using Mie–Raman lidars and multi-wavelength Raman lidars and algorithm to retrieve distributions of aerosol components, J. Quant. Spectrosc. Ra., 188, 79–93, https://doi.org/10.1016/j.jqsrt.2016.06.031, 2017.

Wandinger, U., et al.: HETEAC – the Hybrid End-To-End Aerosol Classification model for EarthCARE, Atmos. Meas. Tech., 16, 2485–2510, https://doi.org/10.5194/amt-16-2485-2023, 2023.