

Review of “A novel method to detect the tropopause structure based on bi-Gaussian function”

The authors have put a solid amount of work into revising the manuscript to address my comments and those of the other reviewers. The clarity of the paper and its assertions have improved and many of my concerns have been reduced. However, there are still a handful of edits that I believe must be made before this can be considered for publication. Most are technical in nature, but there are two general points remaining that are most important in my view.

General Comments

1. The use of “local coldest point(s)” throughout is unnecessarily confusing. This would be much clearer stated as “local cold point(s)”, since only one could possibly be the coldest.
2. Units for all equations and terms outlining the bi-Gaussian method are still absent from the paper. This includes Equations 5 & 6, where the resulting altitude units and dependent latitude units should be clearly defined, line 220 where the PTH height units for the search range should be defined, everything in Table 2, and everything in Table 3.
3. Section 5 is somewhat vague, unclear, and includes a lot of hand-waving examples of double tropopause characteristics and purported linkages to other metrics. It is neither convincing or necessary based on my evaluation and I recommend simply removing it (lines 403-481; Figs. 13-15; Table 5) and related lines 503-507 from the manuscript.

Technical Edits

Line 12 – recommend revising second instance of “structures” to “characteristics.”

Line 16 – “tropopauses” should be “tropopause”

Line 18 – “remarkable” should be deleted. This is subjective, non-scientific language.

Line 19 – delete “recognition”

Line 28 – “formatted” should be “formed”

Line 30 – recommend revising “the case of” to “with cases that” & delete “happens occasionally”

Line 37 – “tropopause” should be “tropopauses”

Line 43 – “of tropopause” should be “of the tropopause” & “formatted” should be deleted

Line 48 – “discovered the tropopause” should be “discovered tropopause”

Line 57 – “separated” should be “used”

Line 58 – “lapse minimum rate” should be “lapse rate minimum”

Line 65 – “called” should be “called the”

Line 71 – delete “tracers”

Line 75 – replace “compositions, with active STE” with “constituents”

Line 80 – “tropopause” should be “the tropopause”

Line 85 – “tropopause” should be “the tropopause”

Line 88 – “details” should be “detail” & “with the existing” should be “with existing”

Line 98 – delete “there are”

Line 147 – revise “influenced by stratospheric” to “constrained by”

Line 159 – “gradient” should be “gradients” & “compositions” should be “composition”

Line 164 – “following” should be “follows”

Line 169 – “following” should be “follows”

Line 179 – “LRT, provides” should be “LRT, and provides”

Line 197 – “minimum points” should be “minimum temperature points”

Line 202 – “following” should be “follows”

Line 252 – once again, “remarkable” should be deleted.

Line 261 – “general” should be “total” & the numbers here seem incorrect. If I total the lines from Table 4, I instead get 23.00% and 17.85%.

Line 289 – the dots are “magenta”, not “cyan”

Line 309 – “contradictory” should be “contradiction”

Line 315 – insert “with a” before “prevailing ST structure”

Line 320 – start sentence with “The”

Line 322 – “in the Fig.” should be “in Fig.”

Line 323 – “bi-Gaussian” should be “the bi-Gaussian approach”

Line 335 – “if exist” should be “if multiple exist”

Line 343 – “accuracy” would be better stated as “agreement with the LRT”

Line 400 – “in UTLS” should be “in the UTLS”

Lines 409-411 – I do not know what this sentence means.

Line 427 – what “invades”?

Lines 428-429 – I also do not know what this sentence means.

Line 440 – “at 315 K” should be “at the 315-K”

Lines 444-446 – this sentence does not begin correctly, but I’m not sure I know exactly how you want to relate it to something shown/mentioned previously.

Line 459 – “does” should be “do”

Line 488 – “based bi-Gaussian” should be “based on bi-Gaussian identifications”

Line 491 – delete “monotonous”

Line 500 – delete “and uploading”