

Page 1, line 13: "FM13". Please explain what this means or remove, if not necessary in the abstract [The sentence has been removed.](#)

Page 2, line 3: I suggest changing "Lyman alpha wavelengths" by "Lyman alpha radiation". Wavelength's can't really photodissociate. [Changed as suggested.](#)

Page 2, line 23: "polar mesospheric clouds (Perot et al., 2010)". I don't think this is a good citation for PMCs/NLCs, as there have been many more and much earlier & more general studies on this topic. [We kept those citations and added a more general one \(Thomas, 2015\). Moreover, we now cite those papers indicating them with "e.g".](#)

Page 2, line 29: "H2O" -> "H₂O" [We changed this to \$\mathrm{H}_2\mathrm{O}\$.](#)

Page 6, line 8: wrong cite command in "found in (Grieco et al., 2020)."
[Corrected as suggested.](#)

Page 7, caption Fig. 2: "Retrieved concentration profile". Strictly speaking VMR should not be called "concentration", e.g. according to IUPAC. I suggest using the term "mixing ratio" here. This also applies to several other sentences in the paper. Please check. [The term "mixing ratio" has now been applied to all the recommended instances.](#)

Page 8, line 14: please add space before "inclination" [Corrected as suggested.](#)

Page 10, line 17: Is the summer temperature maximum at the stratopause really driven by GWs? The low polar summer mesopause temperatures yes, but don't think the high temperatures at the stratopause. [We changed the sentence from "Summer temperature maxima in the stratopause region and minima in the upper mesosphere result from gravity wave forcing..." to "Summer temperature minima in the upper mesosphere result from gravity wave forcing..."](#)

Page 15, line 8: I suggest mentioning explicitly that "N(z)" is a number and not a number density or mixing ratio. I had to read the sentence several times to get that. [We changed the text to " \$N\(z\)\$ is the number of differences \(absolute or relative\) measured at altitude \$z\$. \$\Delta\(z\)\$ is their median."](#)

Page 15, line 12: "outliers data" -> "outliers" [Changed as suggested.](#)

Page 20, line 1: "and then decreaseS" [Changed as suggested.](#)

Page 22, line 3: "This is to be expected due to the fact that H2O concentration ..."

Larger relative differences are to be expected, but not necessarily large negative differences, right? I suggest changing the statement slightly. We changed the sentence to "These large relative differences are to be expected due to the fact that H₂O mixing ratio..."