Reply to Reviewer 1
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The valuable comments by Reviewer 1 are greatly appreciated. Our replies to the Reviewer 1 comments are given below.

General Considerations: *This paper develops and demonstrates a new, simple and useful approach to the detection of cloud tops in spectral limb scattered radiance profiles obtained by the OMPS-LP instrument on SNPP. The validity is demonstrated with a systematic comparison with CALIPSO. This technique is useful and should be published after the following minor comments are addressed:*

Reply: We thank Reviewer 1 for positive comments.

Comment 1: *10162: The introduction/use of lnR is confusing; the development in equations 2-4 should be clarified.*

Reply: The text in lines 99-100 (revised manuscript) has been changed to read "The slope α in Eq. (2) can be determined by choosing a longer wavelength (λ_l)". In addition, all subscripts '*sort*' and '*long*' in the text have been replaced with '*s*' and '*l*', respectively, in correspondence with equations 2-4. Equation 2 represents a relationship between *G* and λ. Equations 3-4 tell us how to determine the slope α in Equation 2 and how to derive lnR.

Comment 2: *10161: Water clouds? What about ice, i.e. cirrus? Isn't cirrus the most important cloud type here?*

Reply: Yes, cirrus is the most important cloud type for LP detection. The text has been changed to indicate this point (line 66 in revised manuscript).

Comment 3: *10166: What about the bias that will arise due to patchy clouds in the near and far sides of the tangent point?*

Reply: This is a good point. Patchy clouds in the near and far sides of the tangent point may also cause high biased estimates of cloud height, but have not been investigated here. We have added a sentence to address this point (line 215 in revised manuscript).

Comment 4: *Figure 7: The red curve is not a Gaussian (the high tail on the low value side of the peak). Please clarify/explain.*

Reply: You are correct. The red curve is not a Gaussian for Figure 7. We changed the text: "The red curve represents a linear combination of a Gaussian and quadratic function".

General comment: *What about the change of scattering angle with latitude? This affects the "contrast" between cloud, aerosol and the Rayleigh background. Does the threshold possibly need to change with scattering angle?*

Reply to General comments: This is an excellent point. We find that the radiance ratio spectral dependence is insensitive to variations in scattering angle. We have added a figure and text at line 166 (revised manuscript) to support this statement.