

**Review of “Is there an aerosol signature of cloud processing?” by Ervens et al. (2018)**

The authors have thoroughly revised their manuscript considering mostly all of the comments raised. I have one small remaining concern about the calculated mass ratio.

I read through the manuscript, and have the following comment which need to be addressed in the final manuscript.

In the revised manuscript, the authors have used aerosols in a size range up to 850 nm for the calculation of the  $R_{\text{tot}}$  factor. In the firstly submitted manuscript, aerosols in a size range up to 320 nm were used for the calculation of the  $R_{\text{tot}}$  factor. The authors mentioned in their revision “The resulting total masses are considerably higher and, thus, the resulting R values are much smaller.” and “Scenarios where this ratio exceeds  $R_{\text{tot}} \sim 0.5$  are the most likely ones where clouds can significantly change aerosol parameters.”. The value in the firstly submitted version was  $R_{\text{tot}} \sim 2$ . So, the applied aerosol size range for the calculation affects significantly the  $R_{\text{tot}}$  values which are used to predict a chemical cloud-processing signature in selected air masses. Therefore, I guess it should be clearly stated in the revised manuscript that for the calculation of  $R_{\text{tot}}$  values only aerosols in a size range up to 850 nm (PM 0.85) should be used. If aerosols with a different size range are used the resulting  $R_{\text{tot}}$  values could be smaller or higher. Thus, a comparison with the proposed value of  $R_{\text{tot}}$  ( $\sim 0.5$ ), provided in the present study, could be misleading.