

Interactive comment on “Quantifying the Direct Radiative Effect of Absorbing Aerosols for Numerical Weather Prediction: A case study” by Mayra I. Oyola et al.

Anonymous Referee #2

Received and published: 8 June 2018

This paper evaluates the aerosol model achieves column radiative closure relative to its depiction of the vertical mass concentration profile by combining NAAPS and NAVGEM models with HSRL and aircraft observation data during the SEAC4RS experiment. Overall, the results are clearly presented. However, there is little details about different aerosol forcing for the simulation and also the reasons for choosing these aerosol initializations as representatives. It is important for showing the scientific significance of the study. Also further discussion on the sensitivity of aerosol properties on the simulation results are little involved. The following comments should be addressed prior to recommendation for publication. Specific comments: 1. It is interesting for conducting simulations with different aerosol conditions (e.g. OPS, 3D, FREE), however, there is

C1

little explanation about these experiments setups. It is necessary to let us know how your simulations are designed and why these three sensitivity tests are chosen. Also, there is little details about simulation on the case study (e.g. model configuration, initial time, output time frequency...).

2. The titles of tables and figures are too concise. The labels use abbreviation, but there is no further explanation in the titles.

3. The comparisons are all based on the observed profile with peak AOD sampled at 44.24° N, 104.61°W. How about other location and other time? Do they show the similar results?

Technical corrections: 1. Line 286: should be Figs. 3a, 4a, 5a, 6a.

2. Table 2: no unit.

3. Table 3: no unit.

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2018-284>, 2018.

C2