Review of the article titled "Aerosol light-scattering enhancement due to water uptake during TCAP campaign" by Titos and coauthors for publication in Atmospheric Chemistry Physics.

The authors have used data collected by the aerosol observing system during the Two Column Aerosol Project to characterize the aerosol characteristics at Cape Cod, MA. The authors have reported the observed aerosol light-absorption and light-scattering coefficients together with the single scattering albedo and Angstrom exponent. The scattering enhancement factor is also calculated by using the observations from the dry and wet nephelometers. The authors have proposed an exponential equation that estimates aerosol hygroscopic growth as a function of single scattering albedo. I think the article is well-written and will be of use to scientist studying aerosol radiative properties together with the wider meteorological community. But I see that the article falls short in some ways and hence recommend it to be published after major revisions. Please find below my specific comments.

Major Comments:

1) During the TCAP field campaign there were two aerosol observing systems part of the AMF-1, the aerosol observing system (AOS) and Marine aerosol observing system (MAOS). The article should use the data from the condensation particle counter (CPC) and the Hygroscopic Tandem Differential Mobility Analyzed (HTDMA), part of the MAOS and AOS to characterize the aerosol size distribution and size increase due to increase in RH.

2) The authors have done a good job in summarizing the aerosol radiative properties as measured by the AOS. But the article falls short in describing the general meteorology during the presence of the aerosols. Mainly, a plume of aerosols might be coming from an urban area, but if precipitation is accompanied by that plume, then due to aerosol scavenging, the number concentration will be less and so will be the aerosol impact on atmospheric radiation. So, I highly encourage the authors to include some description of the meteorological conditions during the presence of different aerosol composition.

3) From the AOS and MAOS data, in addition to the quantities calculated by the authors, it is also possible to calculate the backscatter fraction and submicron scattering fraction. Calculation of these quantities might (probably) provide some insights on the aerosol composition. Fan et al. (2010 JGR) and Manoharan et al. (2014 ACP) might be of some help.

4) The authors have described the figures in the text, but many a times have not drawn any scientific conclusions from them or at least speculated the scientific importance of the data. For example, I am not sure what scientific insights are gained from Fig 3. I suggest the authors go through the manuscript and figures again and draw some science conclusion from the presented data. Thanks.

5) The Cimel sun-photometer and Multi-Filter Rotating Shadowband Radiometer (MFRSR) are also part of the AMF-1 and measure the aerosol optical depth (AOD). It will be great if the authors also characterize the AOD measurements.

Minor Comments:

1) Line 3-4 page 3362: I am not sure TCAP is some kind of framework, it was a ARM funded field campaign. Please revise the sentence to reflect that.

2) Line 10 page 3366: PTFE stands for Polytetrafluouroethylene … it will be great if you mention the full-form of PTFE together with PTFE.

3) Section 2.1: While describing AMF-1 instrumentation, usually the article Mather and Voyles (2013, BAMS) and Miller and Slingo (2007, BAMS) are mentioned.

4) Page 3368, Line 7: Not sure what the "de" is after 550 nm.

5) The measured quantities are absorption and scattering coefficients. You have provided equations for SAE and f(RH,λ), but have not done so for SSA. It will be great if you do that too.