In this study, the authors validated three AATSR AOD products (ADV, ORAC and SU algorithm) provided by Aerosol_cci project over China in 2007, 2008 and 2010. It has been widely validated (compared with AERONET AOD) that these three algorithms have ability in retrieving AOD over land globally with high precision. However, over China mainland area, the AERONET data has limitations as reference data. There were not enough AERONET sites built and the distribution of AERONET sites were unevenly in mainland China because of large territory of mainland China. The authors introduced CARSNET data to be combined with AERONET data, making up for these limitations and improving reliability of reference data. On this basis, the authors not only select common evaluation metrics, but also introduce new metrics, for example, the improved KAPPA coefficient as comprehensive evaluation metric, the DR for determination of AOD retrieved "outliers", the improved expected error envelope designed for characteristics of AATSR AOD products, etc. This study is a nice trial consisting many meaningful works and I would recommend publication if my following comments/suggestions can be adequately addressed.

Major comments:

1. The structure and composition of manuscript should follow the requests of official website of Atmospheric Chemistry and Physics (ACP). For example, keywords, team list, etc. should add to manuscript and team list exist in this manuscript.

2. Figures in the manuscript should be clear and easily understood. The main method of this study is to validate three AATSR AOD products year by year for reason of different reference data available for the authors. Readers could distinguish which sites in the Fig. 1 are from AERONET or CARSNET, but may not pick out the space distribution of ground-based data sites in same year easily. I recommend authors to replot Fig. 1 of "The distribution of selected AERONET&CARSNET sites in mainland China in 2007, 2008 and 2010", using one same color or type for sites available in one year.

3. Also I suggest that the paper never use the word "good" to describe the results. The coefficient of correlation (CC) as one of main evaluation metric, which indicates whether there is any linear relationship among the points. Authors could not claim which performances of products is "good" or not "good" by any values of CC or other evaluation metrics. For example, when CC is high, the performances could be viewed as "good", when CC is low, the performance is also viewed "good". The word "good" may confuse readers, leading misunderstanding of conclusions in this study.

Specific comments:

Page 2 line 9, the influences of aerosol particles on cloud should cited the paper of Twomey published in 1974. In general some more references should be added in lines 5-12.

Page 2 line 19, the word “because” should be replaced by other words like “including”

Page 3 line 10, the word “more” should be removed

Page 3 line 15-19, comparison of satellite retrievals with other high quality has limitations, could you illustrate it more clearly?

Page 3 line 26, Please use “Aerosol_CCI” or “Aerosol_cci” through the manuscript but not the mix of them?

Page 4 Tab. 1 the bottom row are same with header row, what is it useful? And in the title abbreviation “Tab.” should avoid.

Page 9 Tab. 4 these statistics should be up to two decimal point.

Page 9 line 3, this sentence has syntax error.

Fig. 8 – Fig. 16. The places of titles should be same.

Page 19 Tab. 5 these statistics should be up to two decimal point.

Page 24 line 29, in part of acknowledgements, the numbers of sites are inconsistent with mentioned as above.