

Review Comments:

Validation of OMI Total Column Water Vapour Product

General comments:

The manuscript "Validation of OMI Total Column Water Vapor Product" Describes the geophysical validation of Aura Validation Data Center (AVDC) Collection 3 OMI Total Column Water Vapour data set against ground-based GPS, AERONET sunphotometer and satellite-based SSM/I data over period from 2005 to 2009. Authors report good agreement against GPS and AERONET data over land and general underestimation against SSM/I over ocean. Manuscript then describes experimental setup for retrieval algorithm to improve retrieval over ocean and presents comparisons between new algorithm and AVDC TCWV data.

Subject matter is well suited to ACP and methods used are sound and explained clearly. Figures shown are meaningful, although their clarity and quality should be improved. Interpretation of the results shown in section 3 is somewhat lacking and results should be contrasted with other published work. More detailed look on effects of the measurement parameters (viewing geometry, surface albedo, seasonal variation etc.) would also improve the article. However, the manuscript is sufficiently sound to be published in ACP after revision.

Detailed Comments:

Section 3.: Does the general quality screening (MDQF=0) include screening for OMI row anomaly?

Section 3.1: While it is good idea to conduct these comparisons for cloud free cases, it would be good to show the effect of the cloud cover on reliability of the observations. Are cloudy observations still useful?

Section 3.3: Results here should be contrasted to other published work. How does the OMI TCWV compare against other TCWV products (as mentioned in introduction), when they are compared to SSM/I?

Figures 2. and 5.: Is there a change in long-term levels due to the changes in viewing geometry? Due to asymmetrical nature of the row anomaly, any dependencies on viewing geometry (SZA, VZA, local time?) in the product might affect the long term time series even after screening.

Figures 4. and 7.: What is the reason for overestimation over ocean for large total water vapour columns, especially in contrast to general underestimation over ocean? Are there specific situations where OMI TCWV is not reliable?

All figures: Please clarify the figures, especially colour scales used.