

Interactive comment on “Tropospheric Ozone Variability during the East Asian Summer Monsoon as Observed by Satellite (IASI), Aircraft (MOZAIC) and Ground Stations” by S. Safieddine et al.

Anonymous Referee #4

Received and published: 22 April 2016

The authors showcase a number of different datasets that capture atmospheric variations associated with the East Asian Monsoon. The subject is interesting and appropriate for the journal, the paper is clearly written and the presentation is good, but ultimately lacking in substantive analysis or new information.

The authors show six years of IASI ozone, and then show the IASI ozone for the 2011 season alongside output from the ECMWF model. It is good to see that IASI captures the EASM phenomenon, but this has been shown before. This work shows maps of IASI data for multiple years, which has not been shown previously, but the existence of

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the EASM and the fact that it shows up in IASI data has already been documented in previous studies.

The authors compare IASI 0–6 km columns with MOZAIC aircraft measurements for three different airports. Why do this for only one year? Presumably MOZAIC data are available for multiple years? It could be interesting to see how well IASI captures the seasonal cycle that is observed in the MOZAIC profiles at the different airports, but this is not clear from any of the figures. If IASI/MOZAIC comparisons were performed for multiple years, then it would be possible to quantify how well IASI captures the inter-annual variability of the EASM as observed at those sites.

The section on ground-based information does not seem well linked to the rest of the paper. Again, analysis of multiple years of data and how the variability relates to that observed in the MOZAIC and IASI measurements would make this study more interesting.

Alternatively, the authors might consider further analysis of the causes of the observed inter-annual variability in tropospheric ozone in this region. Is the observed variation in tropospheric ozone mainly due to meteorology? To what extent do changes in stratosphere-troposphere exchange come into play versus long-range transport within the troposphere? To what extent are the year-to-year variations associated with changes in regional emissions? Or in changes in cloudiness/photochemical activity?

The IASI ozone dataset is undoubtedly a great resource for investigating monsoon impact on the distribution of pollutants in the troposphere. The analysis presented here is an interesting start, but it would be good to see the authors take this study further in order to provide information that would add to the body of knowledge on this subject.