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Comment

## ***Interactive comment on “A sub-decadal trend of diacids in atmospheric aerosols in East Asia” by S. Kundu et al.***

### **Anonymous Referee #2**

Received and published: 28 September 2015

Review acp-2015-554 Title: A sub-decadal trend of diacids in atmospheric aerosols in East Asia Author(s): S. Kundu et al. MS Type: Research Article

In this article authors represent extensive and very impressive dataset, that is definitely worth of publishing. Article is easy to read and understand. Topic, SOA concentrations in East Asia is very important and requires attention. I will recommend accepting this paper with a few minor comments

Chapter 2. - Include number of samples /year to give reader an idea on how many samples conclusions are based on - CO, O3 data are used in results. Please add information about these instruments also.

Chapter 3.1. -Please define molecular distribution

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Chapter 3.2 -Authors state that “Typical air mass transport patterns at Gosan have been shown with reference to the mid-month of each season over the time period of 2001–2008 (Fig. 3)”. Have authors checked that these mid-month values represent the whole dataset by calculating daily trajectories? I think so-called trajectory density plot (describing by color how often a trajectory intercepts a given locationbox) would describe situation better, but might be time-consuming to make.. -Authors state that: “In spring, major saturated diacids did not correlate or loosely correlated with 2-methyltetrols (isoprene-SOA tracers,  $r^2=0.001-0.05$ ) (Fig. 5a–e), pinic acid (an-pinene-SOA tracer, 0.10–0.39) (Fig. 6a–e) and levoglucosan (a biomass burning tracer, 0.001–0.07) (Fig. 7a–e) (e.g., 20Fu et al., 2014). “. However, 2-Methyltetrol concentration were only measured for 2003-2004. Please add this to text.

#### Chapter 4

-Authors state “The increases of diacids derived from anthropogenic VOCs are more prominent than those of diacids generated from biogenic VOCs in East Asia. If the current rate of increases continued, the SOA budget would increase significantly in the future atmosphere in East Asia.”. I am not sure if you can conclude that increase in diacids, directly means increase in SOA. Maybe reformulate this and also same statement/conclusion in other chapters.

#### Figures

-Figure 5,6,7 have a very low information value. If there is no correlation, just note that in text. Please consider improving these pictures. Maybe show only those plots that are necessary. Others can be shown in the supplement.

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Interactive comment on Atmos. Chem. Phys. Discuss., 15, 22183, 2015.

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