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Interactive comment on "Hydroxy fatty acids in fresh snow samples from northern Japan: long-range atmospheric transport of Gram-negative bacteria by Asian winter monsoon" *by* P. Tyagi et al.

Anonymous Referee #2

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Overall comment: The MS entitled "Hydroxy fatty acids in fresh snow samples from Northern Japan: long-range atmospheric transport of Gram-negative bacteria by Asian winter monsoon" by P. Tyagi et al. presents a very clear and concise description of the measurements of hydroxy fatty acids in fresh snow collected from Sapporo, Japan. The results are placed into the context of published work on microbial sources of these fatty acids, which allows the authors to suggest snow fall as an efficient scavenger of the pathogenic microbial compounds. In addition, estimation of endotoxin and bacterial dry mass in snow allows the authors to suggest sources and removal pathways of

airborne GNB. Overall, the manuscript is well written, and the dataset presented here is unique and the focus of this manuscript surely meets the scope of the journal. I recommend the manuscript to be accepted for suitable publication in Biogeosciences after addressing following minor comments.

Comments 1. The statements concerning sources of α-hydroxy FAs are over amplified. Authors attributed the occurrence of α-hydroxy FAs as their source contribution from higher plants. What about the in situ atmospheric formation of hydroxy FAs for the Sapporo snow as the sampling location is far away from the attributed source locations Siberia and Russian Far east etc? Recent study by Feng et al., (2015) (doi: 10.5194/bg-12-4841-2015) had suggested that α-hydroxy FAs can be found in the hydrolysis products of leaf waxes and wood, in microalgae and sea grasses. Therefore, I recommend source attribution of α-hydroxy FAs to their origin either from the contribution from higher plant waxes or the possibility of formation in the atmosphere.

2. Page 13378, Sapporo is an urban city. What is the possibility of having contribution from local air pollution? Snow sampling can be influenced by the local emissions as well.

3. Mention which type of statistical analysis was performed in the caption of the table S1.

4. Page 13382, lines 16-18: authors found statistical significant differences in the concentrations of beta and omega hydroxy FAs between 2010 and 2011. Authors should discuss about the possible reasons for this observation.

Interactive comment on Biogeosciences Discuss., 12, 13375, 2015.