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Interactive comment on “Distributions of low molecular weight dicarboxylic acids, ketoacids and α -dicarbonyls in the marine aerosols collected over the Arctic Ocean during late summer” by K. Kawamura et al.

Anonymous Referee #2

Received and published: 8 August 2012

General comments

This paper studies molecular distribution and stable carbon isotopic composition of low molecular weight dicarboxylic acids and related water-soluble organic compounds in the atmospheric aerosols collected over the Arctic Ocean. Similar research has not been reported for the region. It provides new and useful data and knowledge for better understanding the sources and atmospheric processes of these important organics. The methodology used is robust and well documented, their analysis is generally good, and related work is properly cited. The paper is also well structured.

C3068

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Specific comments

Discussion about the sources of these organic aerosols seems to be a bit inconsistent throughout the whole paper. Some clarification might be needed, e.g. whether these organics are produced mainly by sea-to-air emissions or the contribution of atmospheric transport of terrestrial organics is also significant? Alternatively, is it the case that both sources are important but their relative strength varies by samples?

Page 10132, lines 2-4: “These meteorological conditions suggest that degradation of oxalic acid may be overwhelmed by its production in aqueous phase of aerosols possibly in the presence of Fe”. This sentence is confusing. You are discussing depletion of oxalic acid here. Did you want to say “These meteorological conditions suggest that degradation of oxalic acid in aqueous phase of aerosols possibly in the presence of Fe may have overwhelmed its production”?

It would be good if medians can be provided for TC and TN concentrations (page 10127) as well as for $\delta^{13}\text{C}$ (Table 2). A median is more representative than a mean especially for a small sample size.

Technical correction

Page 10131, line 25: “succinic diacid” should be read as “succinic acid”.

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