

Interactive comment on “Ecosystem-scale compensation points of formic and acetic acid in the central Amazon” by K. Jardine et al.

Anonymous Referee #1

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This manuscript reports compensation points of formic and acetic acid based on field measurement using a PTR-MS. These acids have multiple emission and/or production sources and are known to be important as highly water soluble atmospheric constituents. As the authors described in the report, there are quite limited knowledge on the emission of these acids in the terrestrial forest. The report showed that exchange of the acids can change between emission and deposition through dry and wet seasons. The compensation points of the acids are also determined based on the measurement. These information are useful for atmospheric modeling and also are important to improve the atmospheric science while tropical forest is one of the largest emission source of biogenic organic constituents. However, reviewer think that the manuscript requires some modification on the presentation and discussion before the publication in Biogeosciences.

C4115

Major points:

In introduction, authors mentioned the acids are important to change the water solubility of the CCN. Reviewer agrees with that the most important feature of the acids in biosphere atmosphere interaction is their influence on activity of the CCN. However, there is no detailed discussion in the discussion section. Authors should discuss about influences of the emission and deposition of the acids on the CCN activity though dry and wet seasons. Authors should clarify why the acids are important although they are not very reactive and although atmospheric concentration of the acids are not very high during wet season when there is net emission of the acids.

In L10p9295, authors insist that deposition of the acids is mainly controlled by dissolution into water phase. There should be appropriate reference of calculation to prove the water amount and surface is enough to dissolve the large quantity of the acids while the emission and production of the acids are assumed to be high.

Minor points:

nmol mol⁻¹ might be described as ppbv (please refer rules for BG).

L27p9289, mb should be written in an appropriate SI unit.

Detailed description is required for (Brazil) and (Biosphere2) in L26p9290.

Authors described that inlet of the PTR-MS was warmed to avoid adsorption of the acids (L23p9290). How about sample line at the tower? Because the sample line is very long, adsorption may be very serious without heating (L22p9292). Authors should describe detailed information about this adsorption issue in the field measurement.

In L15p9293, is this enclosure measurement? Authors should clearly describe procedure of the measurement at the early part of the paragraph to help reader's understanding.

The enclosure measurement can only see net emission (or deposition) of the acids.

C4116

The ratio between emission and deposition for the enclosure measurement should be described if possible. It should be described that the enclosure measurement only shows net emission at least.

Tani et al. (2008) EST should also be referred as earlier report of desorption of VOC by vegetation.

Fig. 2 and 3 needs error bars for uncertainties of concentration measurement. It is useful to indicate canopy height in these plots by dashed lines.

Fig.5, It is useful to indicate dry and wet seasons by shaded area in the plot.

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