

Interactive comment on “Iron oxides control sorption and mobilisation of iodine in a tropical rainforest catchment” by Laura Balzer et al.

Anonymous Referee #1

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General comments This study deals with distribution of iodine in soils in tropical rainforest. Iodine in soils from nine profiles are investigated by sequential extraction technique. The observed data for iodine in tropical rainforest is valuable. The study is well-organized and the manuscript is well-written. But the considerable revisions for following points should be needed before acceptance.

1. My major concern is that interruption of results from the sequential extraction may have made erroneous conclusion. Authors concluded that iron oxide is the main factor controlling iodine mobility in soil by the fact that major fraction of iodine was F4. It is well known that iodine is highly mobilized as iodide under anoxic soil conditions. Extraction step with reducing agent (NH₂OH HCl) can alter iodine form in soil resulting high percentage in F4. This is not necessarily indicating that iodine adsorbed to iron oxide. In

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addition, sum of F1 to F4 reached upto about 150% in some soil in Figure 4, suggesting that F4 can be overestimated and F5 can be underestimated in this method. Authors should discuss in detail the potential artifact and defect of the extraction procedure for iodine fraction. 2. Many previous studies indicate that soil organic matter, rather than iron oxide, control the iodine mobility in soil. Author should review the previous knowledge in detail about soil component controlling iodine mobility, and novelty of this study should be discussed. In addition, the manuscript lacks references of recent papers on the topics including dynamics of iodine in forest ecosystem, speciation of iodine in soil and water, and mobility of iodine in soil, for example, Roulier et al (2019) Chemosphere 224, 20; Humphrey et al. (2020) Environ. Sci. Technol. 54, 1443; Takeda et al. (2018) Soil Sci. Soc. Am. J. 82, 815; Unno et al. (2017) J. Environ. Radioactiv. 169–170, 131.

Specific comments Page 3 Line 8 Refer the soil classification system exactly. Page 12 Line 5, and Page 14 Line 17-19 Scatter plot should be given to explain the correlation analysis.

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