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Comment

## ***Interactive comment on “Export of $^{134}\text{Cs}$ and $^{137}\text{Cs}$ in the Fukushima river systems at heavy rains by Typhoon Roke in September 2011” by S. Nagao et al.***

### **Anonymous Referee #1**

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One specific comment I would like to note is about the interpretation of the difference in values of the distribution coefficient ( $K_d$ ) (Eqn. (1), p.2774, line 3) between those in the present study and those observed in other locations (other Japanese and Ukrainian rivers). They differ each other by more than two orders of magnitude (p.2773, line 12). According to the present authors' interpretation, the reason for the large difference is relevant to origins of suspended matter (p.2774, line 13-14; line 24-26). Namely, in the studied case, the suspended matter is a result of 'direct input of suspended solids eroded from the ground surface' (line 24-26), while the suspended matter in other referred studies is supplied 'from the watershed and resuspension of river bottom sediments by rain events'. I have two concerns about the interpretation. Firstly, no concrete

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evidences have been shown for identification of the sources in those cases (the present case and the literature ones). It seems that abovementioned assignment of the sources are rather speculative. Secondly, addressing the variety of origins of suspended matter cannot solely explain differences in  $K_d$  values. One should further explain how the origin can influence on the nature of adsorption of cesium on suspended matter. Therefore, I feel it is necessary to reinforce the interpretation from logical and experimental aspects. Comparison of  $K_d$  values between those under a typhoon event and those under non-typhoon events may afford some experimental evidences, for example.

There are a few wording issues as follows. i) Two similar terms, 'suspended matter' and 'suspended solids' are used in the manuscript. Is this wording really necessary? ii) In Table 2, foot note c: 'Proceeding' should be 'Precedent' or 'Preceding'. iii) In Table 4, adding a column of catchment area would help readers' understanding because the export flux is dependent on the area. Moreover, an indication of the major origin of exported  $^{137}\text{Cs}$  (global fallout, or a nuclear accident) for each case would also be helpful. iv) In Fig. 5, legend for abbreviations of minerals is needed.

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