

Interactive comment on “Fukushima-derived radiocesium in western North Pacific sediment traps” by M. C. Honda et al.

M. C. Honda et al.

hondam@jamstec.go.jp

Received and published: 30 April 2013

1) Is sieving sample with 1 mm mesh insufficient for elimination of “swimmer”? (Answer: A) As Reviewer #1 pointed out, it is recommended that swimmer should be eliminated by hand-picking after wet-sieving sample with a screen or sieve (e.g. Conte et al., DSR II 48, 1471-1505, 2001). We also hand-picked “swimmer” in sample less than 1 mm when we found that by naked eye after sample were filtrated. Thus I changed description as follows: “In the laboratory, sediment trap samples were sieved through a 1 mm plastic mesh to eliminate zooplankton “swimmers” larger than 1 mm.” “If swimmers were found in sample after filtration, these were removed by tweezers.”

However such case is very rare. We might miss smaller “swimmer” which is invisible to the naked eye. However it is very difficult to judge whether such a small zooplank-
C1327

ton was swimmer or sinking particle. A sieve or screen with smaller mesh (less than 500µm) is practically difficult because diatom is pre-dominant in western North Pacific and mesh is easily clogged. Based on my experience, contribution of smaller plankton to total mass flux is generally less than 5 %. Therefore we can ignore smaller swimmers' contamination.

2) English title (A) In accordance with Reviewers #1's suggestion, I changed the title from “Fukushima-derived radiocesium in western North Pacific sediment traps” to “Concentration and vertical flux of Fukushima-derived radiocesium in sinking particles from two sites in the Northwestern Pacific Ocean”

3) Sinking velocity (A) As pointed out by Reviewer #1, my arithmetic was wrong. Sinking velocity between surface and 500 m should be estimated to be 22 ~ 46 m day⁻¹ at K2 and 26 ~ 71 m day⁻¹ at S1.

P2456 L7-8 (A) I replaced correct sinking velocity (22 ~ 71 m day⁻¹). P2456 L14 (A) Following suggestion, I changed “flux” to “inventory”. P2456 L19-20 (A) I changed description about previous report more specific as follows: “The estimated removal rates and residence times are comparable to previously reported values after the Chernobyl accident (removal rate: 0.2-1%, residence time: 130-390 years).” P2457 L1 (A) Following suggestion, I eliminated “radiologically”. P2457 L12 (A) Aoyama et al. (2012) is correct. P2458 L23 (A) About elimination of “swimmer” P2462 L7 (A) I eliminated unnecessary comma after “at K2-4810m”. P2462 L16 / L25 (A) Following Reviewer's suggestion, I changed “flux” to “inventory”. P2463 L12 (A) I changed “station sites” to “stations”. P2463 L23 (A) Honda et al. (2009) is correct. P2463 L1 and L11 (A) I corrected date of sediment trap sample collection from “26 March” to “25 March”. P2463 L22 (A) I input “in” between “observed” and “this study”. P2465 L20 (A) Buesseler et al. (“2012”) is correct. I revised. P2465 L20 (A) I input “in” between “measured” and “this study”. P2465 L23 (A) Though Reviewer recommended to insert “that” between “materials” and “were”, I think it is not necessary.

(Table) (A) Following Reviewer's comment, I changed "Table 1a and Table 1b" to "Table 1 and Table 2". As a result, captions were changed as follows:

Table 1 Concentrations and fluxes of radiocesium at K2. The analytical error is based on one sigma of counting statistics. Concentrations are decay-corrected based on middle day of each sampling period. B.D.L. is below detection limit (0.01 Bq). (B.D.L.) is supposed to be below detection limit because of insufficient sample mass and activity by gamma procedures.

Table 2 Concentrations and fluxes of radiocesium at S1. The analytical error is based on one sigma of counting statistics. Activities are decay-corrected based on middle day of each sampling period. B.D.L. is below detection limit (0.01 Bq). (B.D.L.) is supposed to be below detection limit because of insufficient sample mass and activity by gamma procedures.

In addition, Table 2 became Table 3.

Table 1 and 2 (A) Unit of flux "mBq m² day⁻¹" is wrong. "mBq m⁻² day⁻¹" is correct. Table 1 (A) "Si" is wrong. "S1" is correct. Table 3 (A) "Si" is wrong. "S1" is correct.

Table 3 (A) I changed unit of "Total 134Cs Flux" to "Total 134Cs Inventory". Fig.2 (A) In first line of caption (b) K2-481"0" m Fig.3 (A) Eliminate "o" in the first line of caption. (Reference) P2469 L16 (A) Co-author nam

Interactive comment on Biogeosciences Discuss., 10, 2455, 2013.