

## ***Interactive comment on “Horizontal distribution of Fukushima-derived radiocesium in zooplankton in the northwestern Pacific Ocean” by M. Kitamura et al.***

### **Anonymous Referee #4**

Received and published: 5 June 2013

The paper describes the contamination of seawater and biota samples collected on cruise along a south-north section of R/V MIRAI within a WOCE cruise about 10 months after the accident at Fukushima Daiichi nuclear power stations. The paper presents interesting features, because the contamination of zooplankton is not related to the concentration of radiocesium found in seawater. This finding might also contribute to the question of the dynamic of marine food web contamination. The paper should be published after minor corrections of some typing errors and some grammatical corrections of some sentences.

Some more specific comments you may take into account:

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Abstract: Please reformulate the following sentence, because it is not correct and difficult to understand: Biological characteristics of zooplankton community possibly influenced how large was contamination of radiocesium in the community but it is still unknown what kind of biological factors were important.

1 Introduction: ... in airborne (release and subsequent) fallout ... community included (would be) [was] needed.

2 Methods: ... frozen at  $-20^{\circ}\text{C}$  after [sorting out] (separation from) fish. ... are previously describ[v]ed in Kumamoto ... agreed with the certificated values within the (provided uncertainties) [errors]. Because the radioactivity of  $^{134}\text{Cs}$  in the two samples ... → Due to the activity of  $^{134}\text{Cs}$  in the two samples ... these were re-analysed using a ... because the (error) [counting uncertainty] of  $^{134}\text{Cs}$  activities was [too] high ... agreed with the certificated values within the errors. → ... with the certified values within the given uncertainty range.

4 Discussion: ... Honda et al., 2012) [A] (a)nd the lowest one was observed ...

... As for concerns in the subtropical area, dilution of seawater by advection, diffusion, and vertically mixing, or vertical transportation of radiocesium attached with the sinking particles into deep layers [were] (would be) possible explanations ... Do you mean dilution of seawater by different water bodies with different T/S-signatures or do you mean "dilution of radiocesium"? This sentence should be reformulated, it is not so clear. As far as the subtropical area is concerned, dilution of radiocesium by advection, diffusion ... ???

... be derived (not only) from [not only] surface but ... NPSMW was [an] important source ... did not necessarily [follow] (correlate with) higher radiocesium activity in zooplankton. (So) [Consequently], it is difficult to explain the high Cs ... Fukushima-derived high radiation (?) located between 20 N and 30 N one month ... Do you mean radiation or radioactive contamination?

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Finally, we discuss (on) [a] potential impact of the radioce[s]ium ...

Please reformulate the following sentence for better understanding: In the subarctic/transition regions, accumulated radiocesium in the migrant's bodies might be transported downward and (uptake of) [consequently accumulate ???] radiocesium into the mesopelagic food web (through) [by] biological activities (was) [. This would be a] possible [explanation of this process]. I understood, what I have indicated by my changes.

... mesopelagic communities should be (researched) [investigated] in [the] future.

5 Conclusions:

... 25° N that was not corresponded with ... → 25°N which does not correspond with ...

Please reformulate the following sentence, because it was not clear for me and the grammatical structure is also not correct: Activity concentrations of radiocesium in zooplankton might be influenced not only [by the ???] environmental radiocesium activity concentration but also other [by] factors, which are (that is) still unknown.

Table 1 and 2: Are the given uncertainties of the radiocesium activity at 1 sigma or 2 sigma?

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Interactive comment on Biogeosciences Discuss., 10, 6143, 2013.

**BGD**

10, C2530–C2532, 2013

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