Biogeosciences Discuss., 10, C1612–C1615, 2013
www.biogeosciences-discuss.net/10/C1612/2013/

Biogeosciences
Discussions

Interactive comment on "Direct observation of ^{134}Cs and ^{137}Cs in surface seawater in the western and central North Pacific after the Fukushima Dai-ichi nuclear power plant accident" *by* H. Kaeriyama et al.

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Received and published: 7 May 2013

We appreciate the constructive review the manuscript. It helps us improvement our manuscript. The answers to the comments by referee #1 are as follows.

Please note that, we have added a new figure as Fig. 2 in the results section as suggested by the referee #2 (see below).

Specific Comments: 1. Page 1999, Line 4-7; I cannot find the 'two dense area' in Fig.2b. The authors should use multi-color particles classified by the particle density

or enclose 'two dense area' with thin lines in Fig.2b.

Answer 1: We carefully revised the description of 'dense area' in Fig. 3b (formerly Fig. 2b) compared with Fig. 3a (formerly Fig. 2a), and re-stated as 'three dense area'. The 'three dense area' were enclosed with thin lines in Fig. 3b (formerly Fig. 2b).

Specific Comments: 2. Page 1999, Line 25-26; As stated in the Introduction by the authors, 'the information of radioactive contamination covering the broad area in the North Pacific is still quite limited'. It is true that the less concentration of radioactive Cs in south of KE was reported based on direct observations of seawater by several authors. However, the discussions by the authors seem insufficient. Kawamura et al. (2011) showed the atmospheric deposition of I-131 at the south of KE near the east coast of Japan by the numerical simulation (Fig.7 of Kawamura et al. (2011)). The authors should mention about the possibility of atmospheric deposition at the south of KE.

Answer 2: We added a reference (Kobayashi et al., J. Nucl. Sci. Technol., 50, 255-264, 2013) and discussed about the atmospheric deposition as a possible source of radioactive Cs observed at south of KE near the coast off Japan in June-July 2011.

Specific Comments: 3. Page 2001, Line 5-10; I am confused about the relationship between 'surface' radioactive Cs migration processes by KE and formation of the 'circum-seamount circulations northward and southward around the Emperor Sea Mounts'. The logic of this is not so clear and remains unconvincing. Some extra-details would be helpful for the reader. For example, (1) add the bottom topography in Fig.1 to show circum-seamount circulations northward and southward around the Emperor Sea Mounts, or (2) refer the explanations about the formation of 'surface' circum-seamount circulations around the Emperor Sea Mounts from Wagawa et al. (2012) in detail.

Answer 3: As commented by the referee #1, we think that the circum-seamount circulations would be too local to delay the dispersion of high Cs water. Since we considered the slow dispersion at around 175ËŽ30'E transect was due to the slack of the Kuroshio

extension in the central pacific, we have revised the sentences referring to Fig. 1 of Qiu and Chen (2011) instead of Wagawa et al. (2012).

Interactive comment on Biogeosciences Discuss., 10, 1993, 2013.

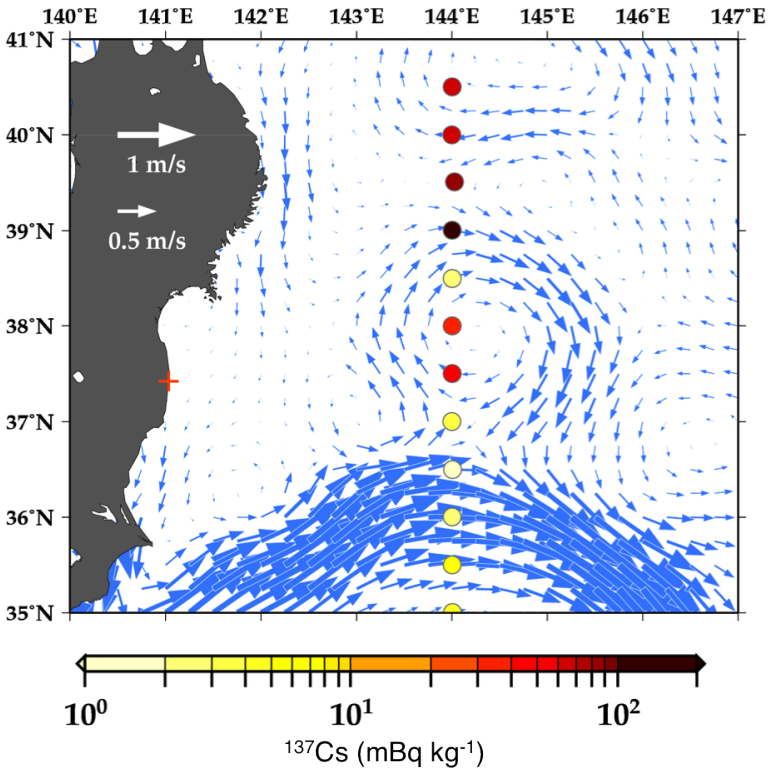

Fig. 1. New Fig. 2. Sampling locations for surface seawater around the anticyclonic eddy observed in July 2011. Color of the closed circles indicates concentration of 137Cs in the surface seawater. Blue arro