

Interactive comment on “⁹⁰Sr and ⁸⁹Sr in seawater off Japan as a consequence of the Fukushima Dai-ichi nuclear accident” by N. Casacuberta et al.

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All comments/questions in the initial review were satisfactorily addressed. As stated before, this is an interesting paper containing important new data.

Reviewer comment 1: The only criticism I have is the long waiting period (5-6 months) before the relatively short-lived Sr-89 was analyzed, while I have a question about the origin of the Sr-90 results presented in Table 1.

Author response: It was not our first purpose to analyze ⁸⁹Sr in these samples. However, when the supernatants of the first ⁹⁰Sr analysis in Barcelona were sent to Sevilla for a second ⁹⁰Sr analysis, ⁸⁹Sr was also detected and thus we thought it was interesting reporting it in this paper. This justifies the long time delay between sampling and

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⁸⁹Sr measuring.

Reviewer comment 2: If I understand the paper correctly, the samples were analyzed for Sr-90 by two laboratories (see Sections 2.2 and 2.3). The first laboratory (Barcelona) separated Y-90 and this manner quantified Sr-90. The second laboratory (Seville) received the supernatants from this analysis (still containing the original Sr-89 and Sr-90) and subsequently quantified both radioisotopes in a slightly different way. However, in Table 1 only one set of Sr-90 results is presented (while the Sr-89 results must originate from the laboratory in Seville). Are the reported Sr-90 results in Table 1 from the first laboratory (Barcelona), and if yes, how do they compare with the set of secondary Sr-90 results from Seville (if this is the case it raises another question why the Sr-89/Sr-90 ratio determinations were not derived from the Seville results only, as this would eliminate any potential issues with the Sr-recovery)? Or alternatively, does Table 1 contain a mixture of Sr-90 results provided by both laboratories (in which case the origin of the results should be indicated)?

Author response: Correct, ⁹⁰Sr samples were first analyzed in Barcelona and supernatants were sent to Sevilla, where they performed a second analysis of ⁹⁰Sr following the method described in Harvey et al. (1989). All the values of ⁹⁰Sr reported in Table 1 correspond to the measurements performed in Barcelona based on the method described in Waples and Orlandini (2010). None of the ⁹⁰Sr analyzed in Sevilla are reported here and only the ⁸⁹Sr activities correspond to the measurements realized in this lab. Therefore, the ⁸⁹Sr/⁹⁰Sr ratio reported in Table 2 is the result of ⁹⁰Sr obtained in Barcelona, and ⁸⁹Sr measured in Sevilla. This has been clarified in Table 1 caption. However, as the reviewer suggests, we have compared the time delay reported in Section 4.3 by using the ⁹⁰Sr results from Sevilla. The average number results in 99±12, which compares very well with the reported in this paper, of 98±18. Moreover, the ⁹⁰Sr method based on Waples and Orlandini (performed in Barcelona) was validated with reference materials from IAEA (i.e. IAEA-443), thus we favored reporting all ⁹⁰Sr values obtained by this method.

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