

Rebuttal for Blanchet, C.L. “A database of marine and terrestrial radiogenic Nd and Sr isotopes for tracing earth-surface processes”

General comments

In the course of the review process, a large number of datapoints has been added to the database, which now has a global geographical coverage. The new iteration of the database was published as “Blanchet, Cécile L. (2019): A global database of radiogenic Nd and Sr isotopes in marine and terrestrial samples (V. 2.0). GFZ Data Services. <http://doi.org/10.5880/GFZ.4.3.2019.00>”. The first iteration, which was the basis of the present submission remains online under the original doi and with the original citation: “Blanchet, Cécile L. (2018): A global database of radiogenic Nd and Sr isotopes in marine and terrestrial samples. GFZ Data Services. <http://doi.org/10.5880/GFZ.5.2.2018.001>”. The users are redirected on the new version of the database from the landing page.

This process will be repeated to include more datapoints and increase the spatial resolution and add other type of measurements (e.g., marine-derived Nd and Sr isotopes). It is also planned to update the columns and metadata to add more information (as suggested by Referee #1).

These changes have been indicated in the text, especially in section 2.1., where the input for the first and second iterations are carefully laid out. The process is also presented in Table 1 and the geographical extend of the first and second iterations are presented in Fig. 1. The output table (Table 4) has also been updated to present the results after the second iteration.

The figure 4 has been modified as box plots were presented for sample numbers lower than 5, which should preferably be presented as data points. The number of samples in each PSA has also been added to the plots. The text has been adjusted accordingly (cf. section 4).

Changes in the text are highlighted in yellow.

Response to M.D. Krom (Referee #1)

First of all, I would like to thank M. Krom for his swift and supportive review. I have taken good note of his comments and modified the text accordingly. This has improved the quality of reading and clarity of the text.

Comment: “The title is a bit misleading since the dataset is not global but relates to sources to the Mediterranean. This does not mean it is not valuable but it does mean that the title should be adjusted to describe exactly what area has been archived.”

Response: The referee requested that the title should better reflect the geographical extend, which was limited to the Mediterranean in the submitted version of the database (this is also a

remark from Reviewer #2). In this paper, the focus is indeed put on the Mediterranean as it can be used as a validation exercise, since sediment seafloor mapping was already available from the literature (e.g., see Krom et al., 1999; Weldeab et al., 2000; Scheuvs et al., 2013). However, during the review process (i.e., between October 2018 and March 2019) the database has been largely extended to other regions of the world. In a second iteration, an amount of ca. 900 additional data points have been added and published on the GFZ data server (<http://doi.org/10.5880/GFZ.4.3.2019.001>). Due to the now larger geographical reach of the database and the clearly-stated intention to increase the spatial resolution at global scale, it is therefore proposed to keep the titles as submitted. New maps showing the growing number of data points now appear in Fig. 1 and explanations have been added to the text to reflect the process. Data input relative to the second iteration is described in section 2.1 and in table 1.

Comment: The author uses the first person pronoun (I) too often. This should be reduced. She also uses the adverb ‘very’ too often. That should be removed as it is non-scientific.

Response: Thank you for this comment. Most “I” and all “very” have been removed.

Specific comments:

Page 1, line 28: “is” has been kept as the subject is “A large amount of data”.

Page 1, line 29: “very” removed.

Page 2: all “very” were removed and text was adjusted to avoid the use of “I”.

Page 3, line 16: “a” removed.

Page 3, line 22: “in a second time” removed and modified according to reviewer’s proposition.

Page 3, line 30: “realised” replaced by “carried out”.

Page 4, line 3: “bellow” corrected into “below”.

Page 4, line 11: “barium concentration” replaced by “barium/aluminum ratio”.

Comment: “Page 5, line 1: The record should include how the sample was analysed. It used to be that all samples were analysed by TIMS but now there are ICP-MS analyses too.”

Response: The reviewer advises to add a column in the database about instruments used to measure the neodymium and strontium isotope ratios (TIMS or MC-ICP-MS). This is indeed generally provided in databases (e.g., in SedDB). This will be added to the next iteration of the database, as well as uncertainties values. Such addition, however, requires a modification of the structure of the database (and not a mere insertion of lines as was done for the second iteration) and will require more work.

Page 5, line 6: sentence modified according to reviewer’s proposition.

Page 5, line 9: “Potential source areas (PSA)” has now been defined in section 2.2 and is then used coherently throughout the text.

Page 5, line 14”: “very” removed.

Page 5, line 21: sentence modified according to reviewer’s proposition.

Response to Referee #2

The author is grateful to referee #2 for a supportive and constructive review. The comments provided by this reviewer have been largely implemented in the revised version of the manuscript.

Major Comments: “The title of the manuscript, as well as the GFZ data management service at <http://doi.org/10.5880/GFZ.5.2.2018.001> (Blanchet 2018c), imply that the author is presenting a global Nd-Sr dataset for marine and terrestrial archives. However, in the text (e.g. Page 3 Line 4 and Line 24) the criteria for the region revealed as Africa, Europe, Mediterranean, and Atlantic. I highly recommend modifying the title so one can clearly relate to the dataset presented in the manuscript. Although the author stated that the criteria for the regions in the dataset set for Africa, Europe, Mediterranean, and Atlantic but Table 4 and Figure 1 contain samples from Indian Ocean, Asia and Caspian Sea. If this dataset meant to represent the Nd-Sr isotopic signature of marine and terrestrial samples in a global scales then it should contain other well-established records from the Middle East, Atlantic, Arctic, Asia, Australia, and Antarctica, see the list below for example. If the author, at this stage, is mainly focused on Mediterranean, Africa and Europe regions then she needs to elaborate more on the rationale behind selecting these regions.”

Response: Similarly to M.D. Krom, Referee #2 requested to modify the title of the manuscript and the database to reflect the Mediterranean extend of the submitted dataset. This reviewer also advised to add datapoints from several publications in order to reach a global geographical extend. Together with many other datapoints obtain from own literature search, which now provide a global extend to the database, we have added most of the references proposed by Referee #2 in the second iteration of the database (available at ([accessible at http://doi.org/10.5880/GFZ.4.3.2019.001](http://doi.org/10.5880/GFZ.4.3.2019.001))). Only two of these references were not added because: i) the dataset is a seasonal record of dust deposition and the variability will not be preserved in the database (as the datapoints are average for a similar location) (Bory et al., 2002), ii) the samples are of pre-LGM age (Chen and Li, 2013). The author is grateful to Reviewer #2 for providing these references, which are a valuable addition to the database. Due to the now larger geographical reach of the database and the clearly stated intention to increase the spatial resolution at global scale, it is here proposed to keep the titles as submitted. New maps showing the growing number of data points now appear in Fig. 1 and explanations have been added to the text to reflect the process. Data input relative to the second iteration is described in section 2.1 and in table 1.

Minor Comments:

Page 1, line 19: parenthesis added before “Region”.

Page 2, line 15: This sentence has been modified and reads now: “(...) but has been put on hold since 2013 and is therefore not up-to-date”.

Page 3, line 11: Citation from Bouvier et al., 2008 and Jacobsen and Wasserburg (1980) have been added for the CHUR value of Nd isotopes.

Comment: “Page 3, line 28, Page 6, line 24, Table 4, Figure 1 and Figure 3: Change bivalve to freshwater Mollusk as defined by Osborn et al. (2008).”

Response: The term “bivalve” has been kept instead of “freshwater mollusk” since bivalves encompass freshwater mollusks and is a more generic term, that will permit to integrate marine mollusks in the future.