Earth Syst. Sci. Data Discuss.,
https://doi.org/10.5194/essd-2018-109-RC2, 2019

Open Access Earth System Science Data Discussions

Interactive comment on "A database of marine and terrestrial radiogenic Nd and Sr isotopes for tracing earth-surface processes" *by* Cécile L. Blanchet

Anonymous Referee #2

Received and published: 25 March 2019

Blanchet, 2018(9) laid out a database for Nd and Sr isotopic signature of marine and terrestrial archives for geochemical fingerprinting of earth-surface processes. One of the significance of this contribution is discussing the shortcomings of the available Nd-Sr datasets and addition of sample coordinates for easier graphical presentation of data on georeferenced maps. I found the manuscript fit for the publication in Earth System Science Data Discussion, with the following revisions: Major Comments âĂć 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,

Printer-friendly version

Discussion paper

Mediterranean, and Atlantic. I highly recommend modifying the title so one can clearly relate to the dataset presented in the manuscript. âĂć 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. Biscaye, P.E., Grousset, F.E., Revel, M., VanderGaast, S., Zielinski, G.A., Vaars, A., Kukla, G., 1997. Asian provenance ofglacial dust (stage 2) in the Greenland ice sheet project 2 ice core, summit, Greenland. J. Geophys. Res. Oceans 102 (C12), 26,765–26,781. Bory, A.J.M., Biscaye, P.E., Svensson, A., Grousset, F.E., 2002. Seasonal variability in the origin of recent atmospheric mineral dust at north GRIP, Greenland. Earth Planet. Sci. Lett. 196 (3–4), 123–134. Chen, J., Li, G., Yang, J., Rao, W., Lu, H., Balsam, W., Sun, Y., Ji, J., 2007. Nd and Sr isotopic characteristics of Chinese deserts: implications for the provenances of Asian dust. Geochim. Cosmochim. Acta71, 3904–3914. http://dx.doi.org/10.1016/j.gca.2007.04.033. Chen, Z., Li, G., 2013. Evolving sources of eolian detritus on the Chinese Loess Plateau since early Miocene: tectonic and climatic controls. Earth Planet. Sci. Lett.371–372, 220–225. http://dx.doi.org/10.1016/j.epsl.2013.03.044. Cullen, H.M., deMenocal, P.B., Hemming, S., Hemming, G., Brown, F.H., Guilderson, T., Sirocko, F., 2000. Climate change and the collapse of the Akkadian empire: evidence from the deep sea. Geology 28, 379.doi:10.1130/0091-7613(2000)28<379:CCATCO>2.0.CO;2. Kanayama, S., Yabuki, S., Yanagisawa, F., Motoyama, R., 2002. The chemical and strontium isotope composition of atmospheric aerosols over Japan: the contribu- tion of long-range-transported Asian dust (kosa). Atmos. Environ. 36, 5159–5175. Lupker, M., Aciego, S.M., Bourdon, B., Schwander, J., Stocker, T.F., 2010. Isotopic tracing (Sr, Nd, U and Hf) of continental and marine aerosols in an 18th century section of the Dye-3 ice core

Printer-friendly version

Discussion paper

(Greenland). Earth Planet. Sci. Lett. 295, 277–286. doi:10.1016/j.epsl.2010.04.010 Maccali, J., Hillaire-marcel, C., Not, C., 2018. Radiogenic isotope (Nd , Pb , Sr) signatures of surface and sea ice-transported sediments from the Arctic Ocean under the present interglacial conditions. Polar Res. 37. doi:10.1080/17518369.2018.1442982 Molina-Kescher, M., Frank, M., Hathorne, E.C., 2014. Nd and Sr isotope compositions of different phases of surface sediments in the South Pacific: Extraction of seawater signatures, boundary exchange, and detrital/dust provenance. Geochemistry, Geophys. Geosystems Res. 15, 3502–3520. doi:10.1002/2014GC005443 Pourmand, A., Prospero, J.M., Sharifi, A., 2014. Geochemical fingerprinting of trans-Atlantic African dust based on radiogenic Sr–Nd–Hf isotopes and rare earth element anomalies. Geology42, 675–678. http://dx.doi.org/10.1130/G35624.1. Sharifi, A., Murphy, L.N., Pourmand, A., Clement, A.C., Canuel, E.A., Naderi Beni, A., A.K. Lahijani, H., Delanghe, D., Ahmady-Birgani, H., 2018. Early-Holocene greening of the Afro-Asian dust belt changed sources of mineral dust in West Asia. Earth Planet. Sci. Lett. doi:10.1016/j.epsl.2017.10.001 Van Der Does, M., Pourmand, A., Sharifi, A., Stuut, J.-B.W., 2018. North African mineral dust across the tropical Atlantic Ocean: Insights from dust particle size, radiogenic Sr-Nd-Hf isotopes and rare earth elements (REE). Aeolian Res. 33, 106–116. doi:10.1016/j.aeolia.2018.06.001 Minor Comments âĂć Page 1, Line 19: add a parenthesis before “Region”. âĂć Page 2, Line 15: “. . . important recent additions” from which region? âĂć Page 3, Line 11: Please add citation after ”143Nd/144Nd ratio of 0.512638”: . . . chondritic uniform reservoir and has a 143Nd/144Nd ratio of 0.512638 (Bouvier et al., 2008). Bouvier, A., Vervoort, J.D., Patchett, P.J., 2008. The Lu–Hf and Sm–Nd isotopic com-position of CHUR: Constraints from unequilibrated chondrites and implications for the bulk composition of terrestrial planets. Earth Planet. Sci. Lett.273, 48–57. http://dx.doi.org/10.1016/j.epsl.2008.06.010. âĂć 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).

Interactive comment on Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2018-109, 2018.

Printer-friendly version

Discussion paper