

Ocean Sci. Discuss., referee comment RC3
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Comment on os-2021-44

Anonymous Referee #3

Referee comment on "Control of oceanic circulation on sediment distribution in the southwestern Atlantic margin (23 to 55°S)" by Michel Michaelovitch de Mahiques et al., Ocean Sci. Discuss., <https://doi.org/10.5194/os-2021-44-RC3>, 2021

Review of paper titled "New insights of the influence of ocean circulation on the sedimentary distribution in the Southwestern Atlantic margin (23° S to 55° S) based on Nd and Pb isotopic fingerprinting." By Mahiques et al.

This paper aims to provide a detailed qualitative model for provenance and transport of sediments in the Southwestern Atlantic margin (SAM). Authors have used previous work as well as exhaustive radiogenic isotopic composition of Pb and Nd measured in the sediment samples collected from shelf and slope areas in five different locations. The data reported in this study will be an important contribution for understanding ocean circulation and its impact on sediment distribution in the SAM. Thus, the paper can be considered for publication. However, there are several issues which need to be fixed/modified (highlighted in specific comments). I totally agree with previous reviewers' assessment on this paper and recommend Authors to consider while revising it. Broadly, the discussion is poorly written, difficult to follow and possibly need a rewrite. The details of study area is just mere description which is not related to this study. Most of the statistical result are not well linked with discussion. Thus, I recommend for a major revision of present version.

Specific comments:

- Authors have claimed "new insight" which they have to specifically highlight in the Abstract. I feel, this is an incremental work based on previous publication by Mahiques et al., 2008, Marine Geology which had no epsilon Nd. It must be highlighted in the paper main text as well.
- Introduction need to be more incisive and a proper hypothesis need to be defined. Why there is a need for radiogenic isotope data which will provide a better understanding of

the provenance of sediments in the SAM?

- Study area description can be trimmed down.
- I could not see a need for Fig. 2, 3, and 4. How these result helps in assessing the role of ocean circulation on sediment transport? This is completely missing in the discussion.
- I have no clue why authors have not put isotopic ratios with corresponding isotopes e.g. $^{206}\text{Pb}/^{204}\text{Pb}$, $^{207}\text{Pb}/^{204}\text{Pb}$ and so on. The same is missing in material and methods.
- Rest of my comments are similar to those raised by other 2 reviewers and suggest authors to consider it carefully, particularly those raised by Rev #1.