

Earth Syst. Sci. Data Discuss., referee comment RC3  
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## **Comment on essd-2022-125**

Anonymous Referee #3

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Referee comment on "A strontium isoscape of inland southeastern Australia" by Patrice de Caritat et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2022-125-RC3>, 2022

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## **Review of 'A strontium isoscape of inland southeastern Australia' by Patrice de Caritat et al.**

### **General comments**

The paper of de Caritat et al. presents a novel robust database of non-bioavailable Sr isotope ratios from southeastern Australia. In general I think that the measured data are of high-quality and well-constrained in the framework of Australia geology. However, I'm not convinced that these data can be used to trace the provenance of biological samples (i.e. isoscape purpose). Indeed, as the authors themselves wrote, non-bioavailable Sr isotopes are rarely good proxies for biological materials, due to the different end-members contributing to the two classes (i.e. bioavailable vs. non-bioavailable) final isotope ratios. This clearly limits the possible use of such data. Moreover, the fact that the samples represent 'averaged' catchment site (5200 km<sup>2</sup> on average) is definitely 'blurring' the potential resolution and thus prediction power of any isoscape built on the data. The authors clearly state this on L200 page 8, however I think that such issues need to be discussed more in depth maybe in the introduction, to warn the reader on the limits of the current dataset. My suggestion is also to adapt the title as: 'A non-bioavailable Sr isoscape of inland southeastern Australia'.

### **Specific comments**

Isoscape terminology. Although many works on isoscape are purely descriptive, an isoscape should represent a modelled map of a specific isotope distribution. This mean that the data should be accompanied by a modelling outline and validation, to show the prediction power of the model itself. This is the main reason why I feel that this paper mostly represents a new dataset rather than an isoscape of the area. I'm not asking to entirely change the terminology used in the manuscript, but I think it is something that we

(as community) should keep in mind for future works.

### **Technical corrections**

'Robust standard deviation' is a truly un-used descriptive statistic term. I suggest to report data as median  $\pm$  median absolute deviation (MAD).

Table 1: a single line table is not very useful. Maybe you can add here the descriptive statistics for each geological region (as Figure 7).

L172 p.7: the link is incomplete. Will It be updated during/after the publication process?