

## ***Interactive comment on “Australian net (1950s–1990) soil organic carbon erosion: implications for CO<sub>2</sub> emission and land–atmosphere modelling” by A. Chappell et al.***

**Anonymous Referee #1**

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The authors provide a very useful contribution to the literature by quantifying and mapping soil organic carbon erosion between 1950s–1990 in Australia. The paper is concise, well written and the methods followed by the authors are well explained and documented. Moreover, in my opinion, the authors' hypotheses regarding the use of Cs-137-derived data and enrichment/selectivity processes during erosion are fully relevant.

Most importantly, the authors acknowledge the main limitations of their study (i.e. the need to conduct additional studies at the catchment scale, in order to take further the depositional and riverine processes into account). They also report their findings accurately and replace them in a factual way in the ongoing debates regarding the role of soil erosion in the global carbon cycle.

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I therefore recommend the publication of this manuscript after the authors address the very minor following points: \*P.6794/L.10: replace redistribution with redistribution; \*P.6796/L.16: greenhouse, not Greenhouse; \*P.6803/L.15: It would be helpful to add references quantifying sediment delivery ratios in Australia; \*P.6804/L.1-5: there are also papers showing that, at least in some regions, the implementation of no-tillage may induce an increase in runoff that concentrates across hillslopes and may generate rill or gully erosion. This may also be helpful to add references dealing with this issue in the discussion.

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