

The revised manuscript by Panettieri et al. has been improved according to reviewers' comments. Some points have been clarified. In consequence, I think that the manuscript could be accepted.

I have only minor comments:

L53 « chemical characterization of SOM will establish C turnover rates”: chemical characterization alone cannot provide information on C turnover rate

L86 to 89: the sentence concerning the hypothesis is very long. “stored within different soil compartments”: as the focus on LF was questioned by reviewers, the authors should specify here the LF and its indication of early change.

L132: The method of Le Bissonnais is mentioned but I would appreciate some details.

L357: I agree for LG and PG but there is overlap of PC and BF only considering bulk BF.

L396 presumably lost following microbial degradation, rather than from translocation to mineral-associated fraction: nothing supports this hypothesis. I would remove this sentence.