

3 Detailed response to comments from referee 1

6 Page Comment

1 1 we would like to maintain the title as our model evaluation includes soil carbon and other related properties (see Figure 1).

9 2 1 ok

2 2 ok

12 2 3 model variance (as surrogate of model uncertainty) at coarse scales should not be avoided just by the availability of higher resolution data, it should be rather explained and reduced (increase model agreement) with more and more validation experiments.

2 4 data scenario is referred to available data per country

15 2 5 because this countries have both rich and low SOC stocks from arid environments to highly productive ecosystems.

2 6 yes, we will improve the explanation of this step

18 2 7 there is lower accuracy on a continental model (data not shown) using all data contained in WoSIS, we will include more information on the revised version of the manuscript.

21 3 1 we would argue that is not a fair comparison (country vs global) but we will include some other performance metrics

4 1 ok

4 2 ok

24 4 3 ok

4 4 the use of ISRIC data does not affect our conclusion of best methods and soil-related institutions in the countries currently are leading research based on country-specifics data and products.

27 4 5 ok, in supplement

4 6 ok we appreciate your contributions

5 2 the cross validation results were not sensitive to repeated cross validations (1 time) and
30 between 10 or 5 fold (results varied <2%).

5 3 ok

5 4 yes models tend to do that and we show how using realistic and non realistic model
33 limits can affect largely our predicted stocks

5 5 ok

5 6 we will change this limit number. The intention was to show how a potential misuse of
36 prediction limits can affect our predicted stocks but we will reduce this number to something realistic.

5 7 ok

5 8 yes the weights were the ratios between rmse and r2

39 5 9 similar to r2 but different, this ratio is proposed in this work as a complementary metric
for model evaluation that can be used to weight the average of different predictions.

42 6 1 we agree but the variance of different assumptions analyzing the same problem and
generating multiple plausible predictions is also uncertainty. The uncertainty that you mention is just
across the places we know, where we have observational data.

6 2 ok

45 6 3 ok

7 1 ok

8 1 RF variable importance was not considered here

48 9 1 ok

9 2 these are validations, we will better explain this step

9 3 the direction and magnitude of the correlation analysis

51 10 1 ok

10 2 these are rich data countries

54 10 3 carbon density is affected by the presence of both low carbon and high carbon
dominated areas in large countries

10 4 to show an obvious relationship support the reliability of our framework which is meant
to support capacity building across Latin America.

57 11 1 ok

12 1 ok

12 2 ok

60 12 3 ok we will re-organize discussion section

14 1 but this adds more complexity to model performance.

14 2 ok

63 14 3 at the global scale too.