

Interactive comment on “CHLSOC: The Chilean Soil Organic Carbon database, a multi-institutional collaborative effort” by Marco Pfeiffer et al.

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To Referee #3

We appreciate the comments and suggestions to our work, as well as the positive evaluation of our manuscript. Please consider that the English language in this version of the manuscript was proof read by a professional proofreader.

Regarding the specific comments, please find below our detailed response to comments.

Reviewer comment: I am interested to see how consistency between this data and some global soil organic carbon datasets, for example: The HWSD has SOC data, please see their data at:

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https://daac.ornl.gov/cgi-bin/dsvviewer.pl?ds_id=1247 The updated global carbon map: https://esdac.jrc.ec.europa.eu/ESDB_Archive/octop/Resources/Global_OC_Poster.pdf It should be easy to link your dataset (by latitude and longitude) with above two datasets, and analyze the consistency between them. This will be a great contribution to evaluate the data quality of global SOC datasets; meanwhile, it is also a good way to evaluate the quality of CHISOC.

Authors' Response: As suggested, we checked the databases indicated. Both maps, used a very small number of point data from Chile, which happens with most of available global maps. For instance, WoSIS Soil Profile Database has only 45 data points for Chile (Batjes et al., 2019), which are the same used for both global maps indicated by the reviewer. We would like to highlight that this is the first time Chile generates and publishes a consistent soil organic carbon database. As such, we consider that a comparison with other datasets is out of the scope of this paper, especially considering that the datasets mentioned are gridded maps, generated by modelling or interpolating fields measurements. A comparison will only assess the quality of those maps and not the quality of CHISOC, which is a soil profile collection.

We consider that any data to date (databases or maps generated from them) are of inferior quality since they do not have enough samples to represent the pedodiversity of Chile. After a quick analysis, it is possible to show that a map such as HWSD does not represent accurately a local scale (See Attached Figure).

Since we consider that is not possible to compare it in terms of quality (there is not comparable database to date), we added a small comparison in terms of the number of samples (WoSIS) in the introduction as follow: "This work ended up with an harmonized dataset of 13,612 points, which is a great improvement considering that up to date harmonized data on SOC for Chile include 45 points in WOSIS (Batjes et al., 2017)." -

Reviewer comment: Specific comments Abstract Line 2: do you mean both "soil and

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SOC data” are highly concentrated in 25% of the territory, or do you mean “soil SOC data”? In my opinion, it makes more sense to say “soil SOC data”.

Authors’ Response: We change the phrase to “To date, in Chile, a large proportion of the soil SOC data has been collected in areas of intensive agricultural or forestry use, however, vast areas beyond these forms of land use have few or no soil data available.”

Reviewer comment: Please check. Line 7: “dificult to access data” sounds not the best expression, change to “inaccessible data”? But I am not a native English speaker, please check with the native speaker.

Authors’ Response: We checked with a native speaker and reorder the phrase to make it clearer: “This dataset is the product of the compilation from numerous sources including unpublished and difficult to access data, allowing to fill numerous spatial gaps where no SOC estimates were publicly available before.” -----

Reviewer comment: Introduction Line 2: “the contents and dynamics of the SOC stock is pool is are essential to. . .” please check this sentence. Line 3: “atmospheric CO2 content s to be used as an input”, there is a space in the word “content s”, please delete it.

Authors’ Response: We rephrase the sentence as follow “knowledge of the contents and dynamics of the SOC stock is essential for estimating trends in the evolution of atmospheric carbon dioxide (CO2), to be used as an input and applied to models of global climate change”. -----

Reviewer comment: Figure 2. I can understand why before 2005, there are not much data. But why 2007, 2008, and 2009 do not have many data?

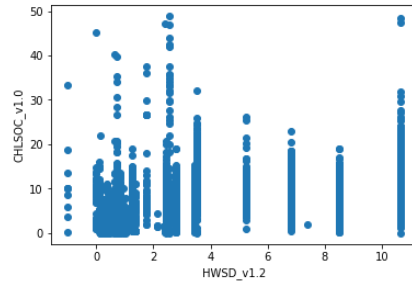
Authors’ Response: Thanks for noting this point. This is mainly related to the databases we were able to access during this compilation effort. We added more information in section 3.2 “Temporal distribution” in order to address this point: “The date of sample

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collection is provided in more than 90% of the included data (12,318 data points). The majority of points were sampled in 2006 and between 2010 and 2018 (Figure 2). The high number of data from the last decade enables users to estimate modern carbon in Chilean soils. Most of the data that report the year in which it was sampled is concentrated in a short timeframe and mainly corresponds to the SAG database (2010-2018) and to sampling efforts related to research projects such as ODEPA in 2006 and INIA (mainly 2015-2018).”

Interactive comment on Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2019-161>, 2019.

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Comparison of random HWSD cells (0.05 degree per pixel*) with different carbon content values with values of datapoints in CLSOC that fall into that cells.

*This corresponds to 180 arcsec. or 5km at the Equator

Fig. 1. Comparison of random HWSD cells (0.05 degree per pixel*) with different carbon content values with values of datapoints in CLSOC that fall into that cells.