

## ***Interactive comment on “Development of a harmonized soil profile analytical database for Europe: A resource for supporting regional soil management” by Jeppe Aagaard Kristensen et al.***

### **Anonymous Referee #1**

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This manuscript describes challenges associated with the development of a harmonised soil analytical database for Europe over the last 4-5 decades, with examples of use of the quality-assessed data upon their linkage to the 1:1M Soil Geographical Data Base of Europe.

Key issues of missing data, differences in soil analytical methods and their standardisation, and common lack of sharing of data for this significant European effort are duly discussed, reflecting commonly encountered issues in data compilation efforts of this broad scale nature.

The SPADE 18 database (see Fig. 2 and elsewhere, line 95-96) is currently under

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development. Similarly, apparently, earlier versions ‘remained as unpublished work in progress’ (line 178-179). As such, the conclusions could be couched in terms of ‘desirability of gaining free access (CC-BY) to profile data collected using public funds’.

The text can be tightened in places, i.e. remove the PTF regressions.

Other comments:

Abstract and elsewhere: Avoid using ‘demonstrated’, rather use shown or illustrated.

88: but (change to) → in which data from Europe are extracted from ...

150: Hannam et al (2009) refers to an unpublished report. Should at least add the URL: [https://esdac.jrc.ec.europa.eu/Esdb\\_Archive/eusoids\\_docs/esb\\_rr/SPADE-2\\_Beta\\_Report.pdf](https://esdac.jrc.ec.europa.eu/Esdb_Archive/eusoids_docs/esb_rr/SPADE-2_Beta_Report.pdf).

156-157: undertook a scrutiny → assessed the ...

197: URL does not work. Similarly, the EU SPADE 14 database does not seem to be accessible (<https://ec.europa.eu/knowledge4policy/dataset/jrc-esdac-114> and <https://data.europa.eu/euodp/data/dataset/jrc-esdac-114>), but its availability may be considered a prerequisite for publishing this manuscript. Similarly, the landing page for the dataset is non-operational (<https://esdac.jrc.ec.europa.eu/content/spade-14>) (08/05/2019).

199: ‘stakeholder passivity’, probably true, but should this be phrased as such in this manuscript? 200: The manuscript would benefit from a succinct description of these guidelines/or predefined equations.

211: ‘before publication’, according to the website these are ‘provisional data’ and the associated URL does not work (see above).

233: Add abbreviations for texture classes in text (as used in 242-249), e.g. <2um (TEXT2) etc. Alternatively, do these functions need to be defined here at all?

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264: publishing SPADE-14 database. As indicated, not accessible online at the time of this review. 265-270: Table 2 is enlightening in the sense that it shows how few soil profiles were actually shared (1819) for consideration is SPADE over several decades.

274: The number of 1831 profiles for SPADE 18 is not consistent with Table 2 (1819). Based on a rough calculation, this would amount to some 0.4 profile per 1000 km<sup>2</sup>.

–: In my view, some discussion on ‘data sharing’, and desirability of open access (CC-BY) to profiles collated using public money, should be included in the discussions as a ‘way forward’. See also: <http://dx.doi.org/10.5194/essd-9-1-2017> and <https://doi.org/10.1016/j.grj.2017.06.001>. Possible synergies with the work of the GSP P4 & P5?

289: Please explain how this would lead to ‘a substantial improvement in the accuracy of . . .’. How would this be quantified?

295: See comment. Database in preparation still?

342-354: This calculation gives a capacity, but does not consider whether there are any physical or chemical constraints for growth of specific crops, which would limit the effective ‘capacity’ (see e.g. <https://doi.org/10.1016/j.geoderma.2018.02.046>).

360: Commonly, a correction for the occurrence of coarse fragments (> 2mm) is considered in such calculations (<https://www.soil-journal.net/3/61/2017/soil-3-61-2017.pdf>). Is this the case for line 371-372.

396: This confirms the need to consider the full map unit (STMU) composition in such types of assessments.

417: Should add <http://dx.doi.org/10.1371/journal.pone.0169748>.

421: Actually, it has: <http://dx.doi.org/10.1371/journal.pone.0169748>.

243: At global level, using pedotransfer rules (interim update to HWSD), see <http://dx.doi.org/10.1016/j.geoderma.2016.01.034>

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424-430: Not correct as written; should rephrase this. GSM and SoilGrids (now at 250m see above) are not related to the development of the HWSD, rather initiated in realisation of the need to improve on “conventional soil maps” using automated dsm procedures.

430: Not really possible as written. HWSD v1.2 was published in 2012. As such it cannot be based on the ‘SPADE dataset described in this’ manuscript.

444, 446, 450: replace demonstrated by shown or illustrated.

454: Alternatively, the increasing predictive capability and accuracy of digital soil mapping approaches should be indicated. Possibly, also make a reference to soil data collection/monitoring efforts such as LUCAS. Consideration of proximally derived soil data in future work other recent developments re. pedology-based and digital soil mapping (<https://doi.org/10.1111/ejss.12790>).

Figure 1. See 2018, SPADE 18 this paper. The dataset does not seem to be available from JRC ESDAC (<https://esdac.jrc.ec.europa.eu/resource-type/soil-point-data>); searching for ‘SPADE 18’ gives not results at al.

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Interactive comment on SOIL Discuss., <https://doi.org/10.5194/soil-2019-18>, 2019.

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