SOIL

Discussions

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Interactive comment on "Pedotransfer functions for Irish soils – estimation of bulk density (ρ_b) per horizon type" *by* B. Reidy et al.

Anonymous Referee #1

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Although bulk density is a key property of soil it is often omitted from soil surveys due to the costs associated with it. This paper addresses the key question of how to use pedotransfter functions (PTF) to address this gap. It is novel in that it uses a national scale data base and applies PTFs at horizon level across multiple soil types. The best performing PTF from these were selected and recalibrated and used to develop a soil bulk density map for Ireland. This manuscript constitutes an important body of work in relation to the utility of PTFs but also to bulk density estimation. It will contribute to future work on the assessment of soil carbon stocks as well as having many other applications as described in the conclusions. I recommend that it be accepted for publication after the changes detailed below have been addressed. Abstract L10 How can a PTF be used to predict a horizon type? Introduction The introduction gives an

excellent overview of bulk density however the last paragraph needs revision so that the objectives can be more clearly stated. P4 L20-27 The authors state that a total of 1028 horizons were identified but that due to the presence of coarse fragments only 470 were sampled. Given that bulk density is estimated for the entire country were the recalibrated PTFs used to estimate bulk density for the 528 horizons not sampled? I would like to see this addressed in the methods and the implications (if any) discussed. P5 L5 Can references be provided for the AFT surveys? Section 2.1.1 P10 How was the random selection made? Was there any stratification to ensure that all horizons identified were represented? Discussion P19 L10 Provide references to papers or reports rather than names of projects.

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