

CORRECTIONS TO VT0014 *ESTIMATING ORGANIC CARBON STOCKS USING DIGITAL SOIL MAPPING*, V1.0

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This document provides corrections applicable to *VT0014 Estimating Organic Carbon Using Digital Soil Mapping, v1.0*. Such corrections are effective on their issuance date. Project proponents and validation/verification bodies (VVBs) shall apply and interpret *VT0014, v1.0* consistent with the corrections set out in this document.

These updates will be incorporated into the next issued version of the methodology.

Correction/ Clarification	Description	Section Reference
Correction 1	Correction to units of variance of the estimate of the mean change in SOC stock between times t and $t + \Delta t$	Section 5.1 (12) Eq. (5)
Correction 2	Correction to units for the ratio of molecular weight of carbon dioxide to carbon. Because the correction is applied to a variance, the ratio must be squared.	Section 5.1 (13) Eq. (7)
Correction 3	Correction to units of variance of the estimate of the mean change in SOC stock between times t and $t + \Delta t$. Update to computer code, and replacement of Figure 3.	Appendix 4

1 Correction 1

The following changes are made to Equation 5 in Section 5.1 of the tool.

Correction:

$$\begin{aligned} \text{var}(\overline{\Delta SOC}_{t,\Delta t}) &= \text{var}(\overline{SOC}_{t+\Delta t}) + \text{var}(\overline{SOC}_t) \\ &\quad - 2\rho_{t+\Delta t} \times \sqrt{\text{var}(\overline{SOC}_{t+\Delta t})} \times \sqrt{\text{var}(\overline{SOC}_t)} \end{aligned} \quad (1)$$

Where:

$\text{var}(\overline{\Delta SOC}_{t,\Delta t})$	=	Variance of the estimate of the mean change in SOC stock between times t and $t + \Delta t$ (Mg C/ha) ²
$\text{var}(\overline{SOC}_{t+\Delta t})$	=	Variance of prediction error of the mean of model predictions of SOC stock at time $t + \Delta t$ (Mg C/ha) ²
$\text{var}(\overline{SOC}_t)$	=	Variance of the prediction error of the mean of model predictions of SOC stock at time t (Mg C/ha) ²
$\rho_{t+\Delta t}$	=	Correlation of the prediction error of SOC stock between times t and $t + \Delta t$

Background:

The units of variance are the square of the original data units. This is because variance is calculated as the average of the squared errors of the mean of model predictions.

2 Correction 2

The following changes are made to Equation 7 in Section 5.1 of the tool.

Correction:

$$\text{var}(CO2_{soil,t,\Delta t}) = \left(\text{var}(\overline{\Delta SOC}_{t,\Delta t}) + \text{var}(\overline{\Delta SOC}_{bsl,t,\Delta t}) \right) \times \frac{44}{12} \left(\frac{44}{12} \right)^2 \quad (2)$$

Where:

$\text{var}(CO2_{soil,t,\Delta t})$	=	Variance of the estimate of carbon dioxide removal in SOC stocks between times t and $t + \Delta t$ net of changes in baseline control sites (t CO ₂ e/ha) ²
$\text{var}(\overline{\Delta SOC}_{t,\Delta t})$	=	Variance of the estimate of the mean change in predicted SOC stock between times t and $t + \Delta t$ (Mg C/ha) ²
$\text{var}(\overline{\Delta SOC}_{bsl,t,\Delta t})$	=	Variance of prediction error of the mean of model predictions of SOC stock at time $t + \Delta t$ (Mg C/ha) ²
44/12	=	Ratio of molecular weight of carbon dioxide to carbon

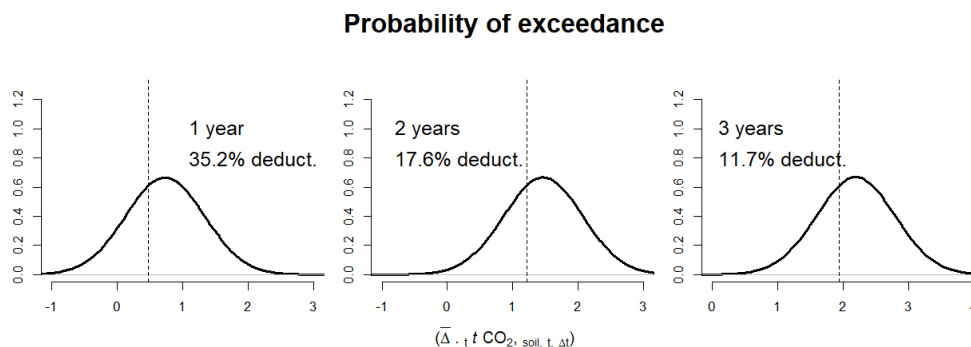
Background:

This quantity is squared because the variance of the estimate of carbon dioxide removal in SOC stocks has units of $(t\ CO_2e/ha)^2$

3 Correction 3

The following changes are made to Figure 3 in Appendix 4 of the tool.

Correction:



Background: All code and descriptions of units were updated to be consistent with correction 1 and correction 2. This resulted in a new version of Figure 3 (Probability of exceedance).