Supplement of

Parametrization consequences of constraining soil organic matter models by total carbon and radiocarbon using long-term field data

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S1: Effect of the weighting parameter on the variance defining the probability distribution of the two data streams.
S2: Value (dimensionless) took by the climatic parameter $r$ (Eq. 9) over the simulation. The shaded area represents the parameter uncertainty.
S3: Coefficient of variation of all the parameters (average) among all the three treatments for the five model structures with the variation of the relative weight of $\text{SO}^{14}\text{C}$ over total C. In this scale 1 means only total C, 0 means only $\text{SO}^{14}\text{C}$. 
S4: The posterior probability density (vertical axis) for the input error term (dimensionless, horizontal axis) for model structure I, II, II, IV and V.
S5: Simulation of SOC pools in the ZOFE trial as described by model structure III, with weighting factor = 0.35. Error bars represent the measured (black) and estimated (dark grey) standard error of the measurements. SOC (A,C,E) is in Mg ha\(^{-1}\), while SO\(^{14}\)C (B, D, F) is in pMC.
S6: Simulation of SOC pools in the ZOFE trial as described by model structure IV, with weighting factor = 0.35. Error bars represent the measured (black) and estimated (dark grey) standard error of the measurements. SOC (A,C,E) is in Mg ha\(^{-1}\), while SO\(^{14}\)C (B, D, F) is in pMC.
S7: Simulation of SOC pools in the ZOFE trial as described by model structure V, with weighting factor = 0.35. Error bars represent the measured (black) and estimated (dark grey) standard error of the measurements. SOC (A,C,E) is in Mg ha\(^{-1}\), while SO\(^{14}\)C (B, D, F) is in pMC.
S8: Graphical abstract of model structure I

Model Structure I

\[ \text{inputs} \rightarrow Y \rightarrow O \]

\[ (1-h)k_1rY \quad h_k rY \quad k_1 rO \]
S9: Graphical abstract of model structure II
Model Structure III

S10: Graphical abstract of model structure III
S11: Graphical abstract of model structure IV

Model Structure IV

\[(1-h)k_r \alpha Y\]

\[k_r \alpha O\]

\[h k_r \alpha Y\]
S12: Graphical abstract of model structure V

Model Structure IV