# Supplementary material to:

# A model based on Rock-Eval thermal analysis to quantify the size of the centennially persistent organic carbon pool in temperate soils

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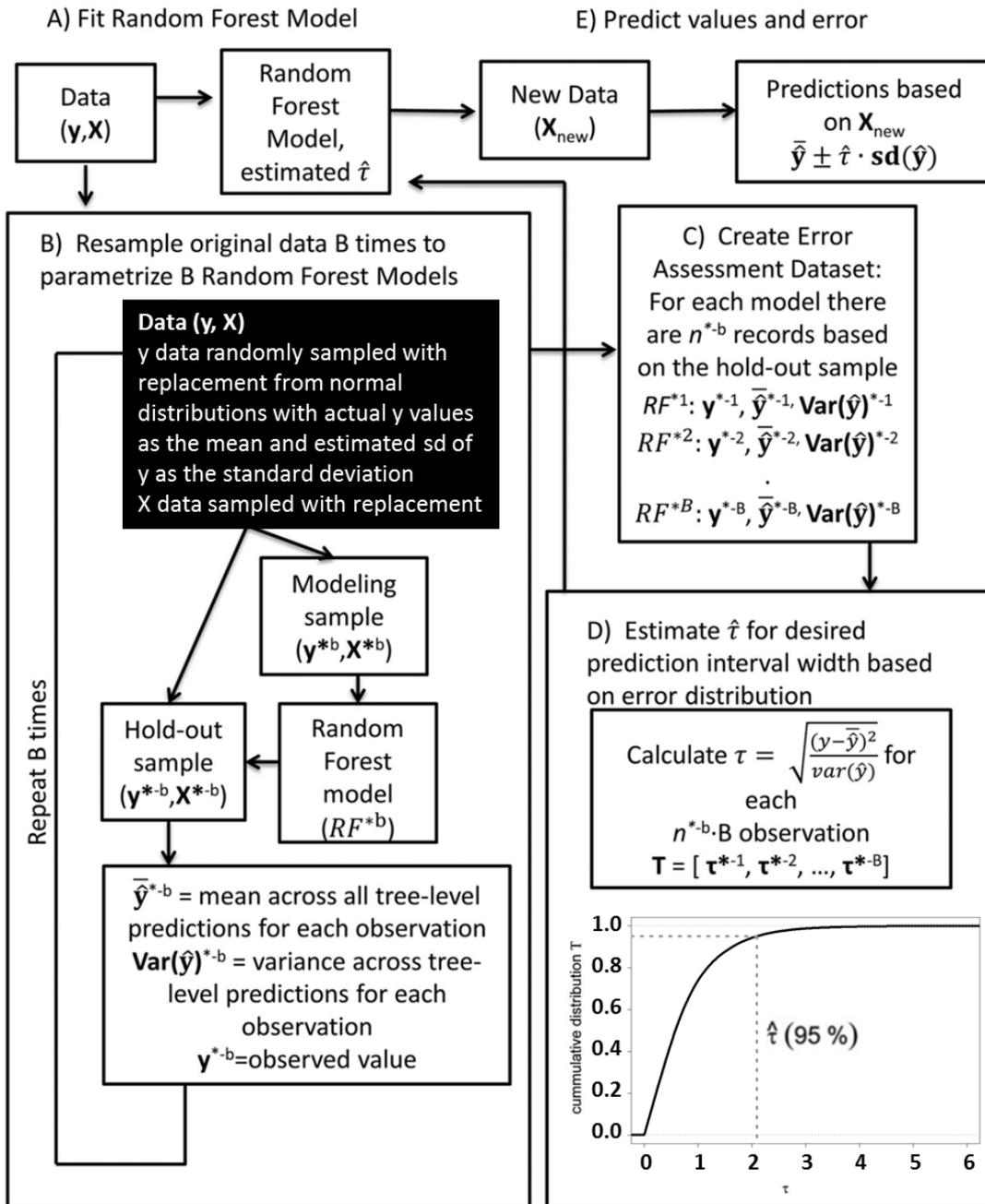
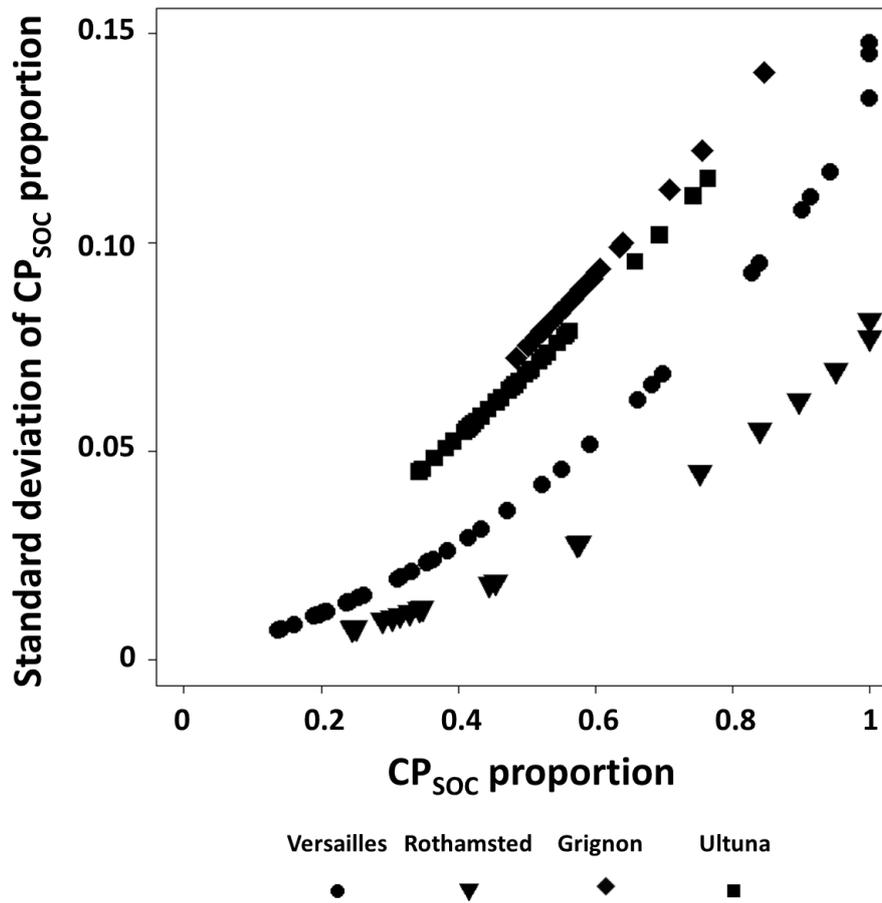
**Supplementary material S1: Basic characteristics of the four long-term agronomic experimental sites used for the reference soil sample set. Abbreviation: *LTBF*, long-term bare fallow.**

| Site | Latitude, longitude | Mean annual temperature (°C) | Mean annual precipitation (mm) | Land use before experiment | Sampling depth (cm) | Soil texture (%, clay/silt/sand) |
|---|---|---|---|---|---|---|
| Versailles, France | 48°48N, 2°08E | 10.7 | 628 | grassland | 25 | 17/57/26 |
| Rothamsted, United Kingdom | 51°82N, 0°35E | 9.5 | 712 | grassland | 23 | 25/62/13 |
| Ultuna, Sweden | 59°49N, 17°38E | 5.5 | 533 | arable | 20 | 36/41/23 |
| Grignon, France | 48°51N, 1°55E | 10.7 | 649 | grassland | 25 | 16/54/30 |

**Supplementary material S2: Error propagation scheme in the random forests regression model (adapted from Coulston *et al*. (2016) and modified).**

5

Supplementary material S3: Standard deviation of the $CP_{SOC}$ proportion as a function of the $CP_{SOC}$ proportion in the reference soil sample set (n = 118).

**Supplementary reference**

Coulston, J.W., Blinn, C.E., Thomas, V.A., and Wynne, R.H.: Approximating prediction uncertainty for random forest regression models. Photogramm. Eng. Remote Sens., 82, 189–197, 2016.