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Estimating Rhizosphere Priming in European Agricultural Soils

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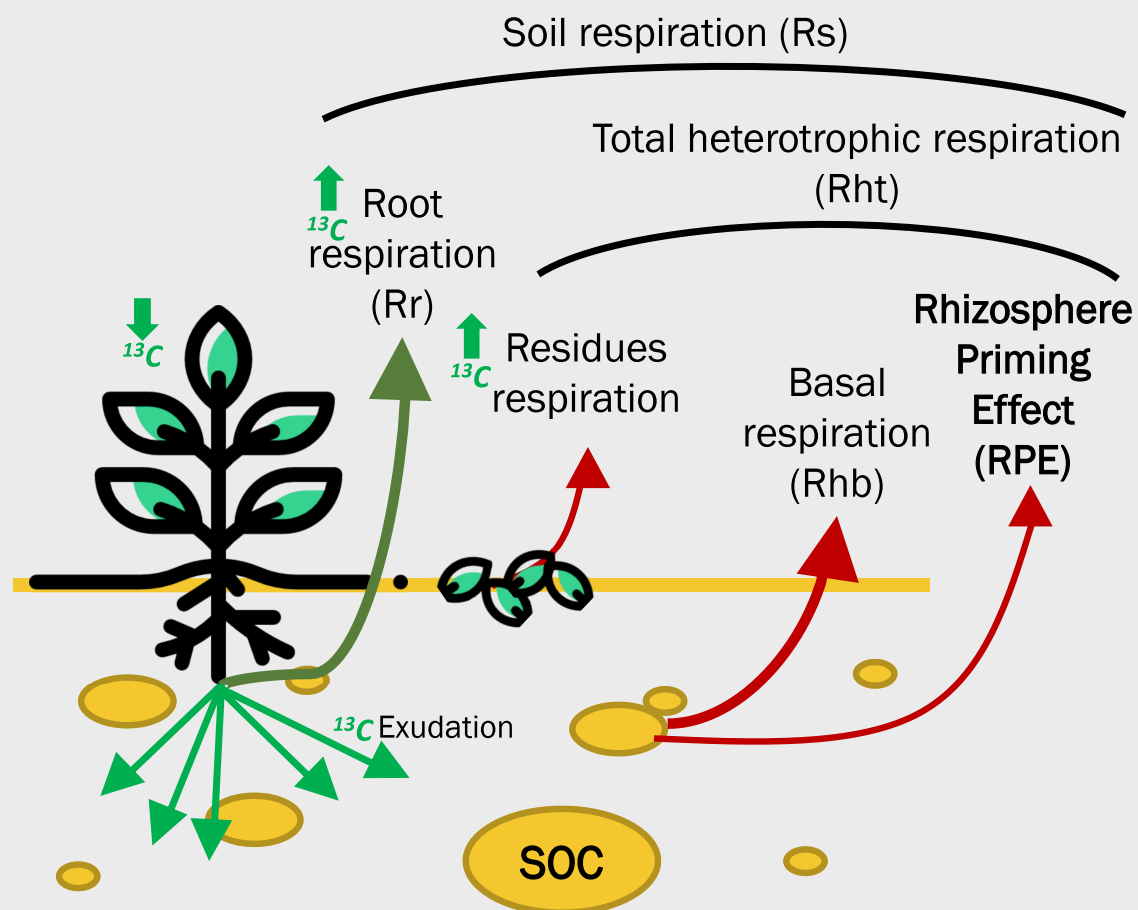
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Estimating Rhizosphere Priming in European Agricultural Soils

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- Incubation studies : potential increase in SOC respiration by up to 300% due to RPE

Cheng et al., 2003

- Largest uncertainty: RPE magnitude in croplands

Wang et al., 2024

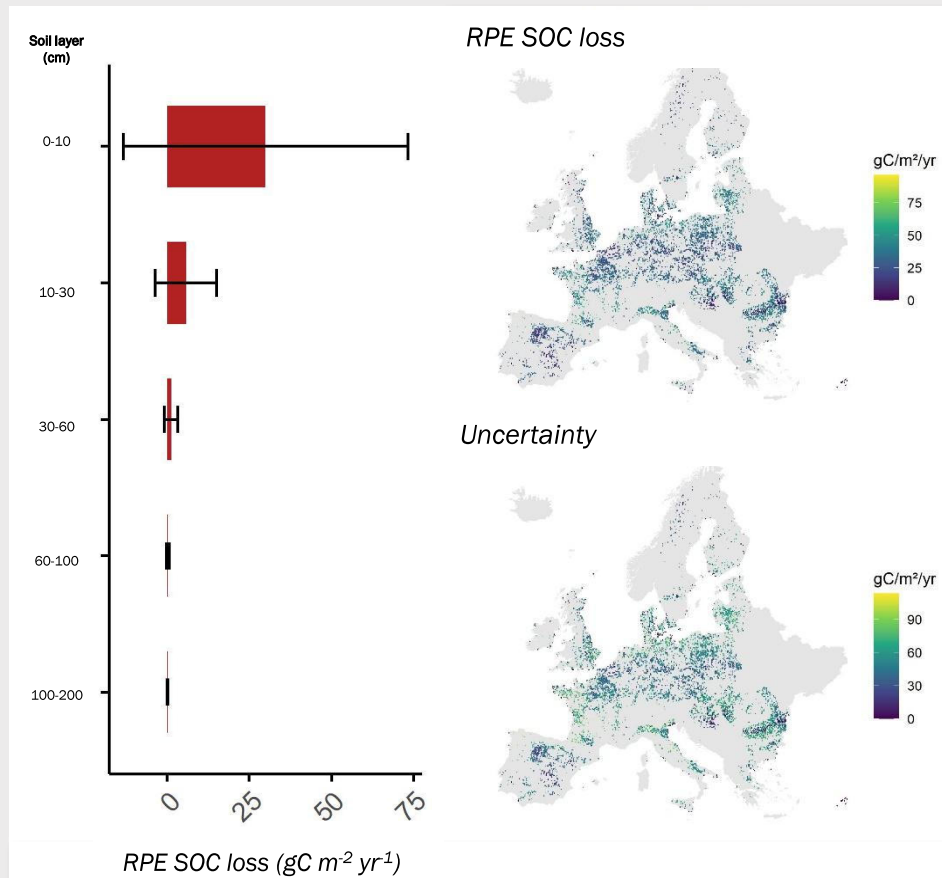
MISSING: broad scale spatial & depth explicit estimate

but see: additional 40 Gt C loss by 2100 from permafrost area, Keuper, Wild et al. 2020

We do not know how much the RPE contributes to Rh

PrimeScale model

Method I : assuming RPE is included in Rh



First results

- RPE mainly occurs in topsoil layers (0-30cm)
- RPE estimated at 19(±25) gC m⁻² yr⁻¹ (Method I)
- RPE estimated at 26(±67) gC m⁻² yr⁻¹ (Method II)
- RPE ≈ 10% of Rh

Assumptions

- RPE includes the mineralisation of residues
- No seasonal variation in RPE ratio