



General drivers of microbial carbon use efficiency in soils

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A growing dataset



Fig 1: The dataset comprises 45 sites across different continents derived from 9 different projects. Status April 2023

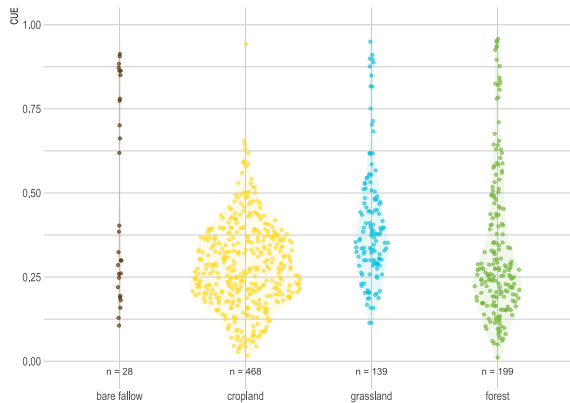


Fig 2: Number of observations on soil microbial carbon use efficiency (CUE) per different agricultural land uses and forest. Dataset status April 2023

Background

- Microbial processing supports organic matter stabilisation in soil
- Identifying when metabolised C is directed most efficiently to microbial biomass, i.e. microbial carbon use efficiency (CUE) might help to develop C stabilisation strategies
- Large datasets can help to identify general drivers

linear mixed-effects model

- significant interactive effect indicates: pH effect on CUE depends on pH range

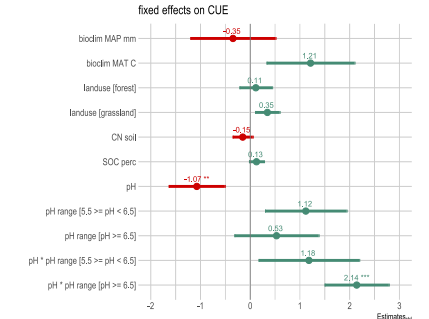
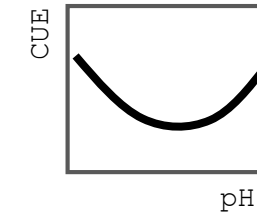
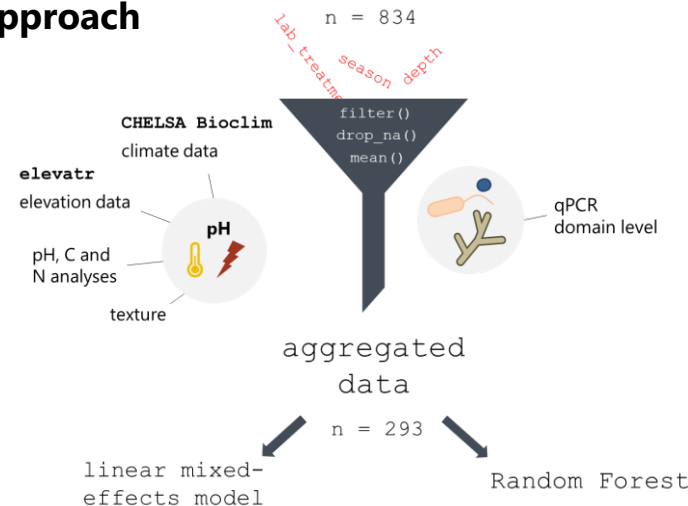


Fig 3: Results of the linear mixed-effects modelling. Standardised fixed effects.

Approach



Random Forest

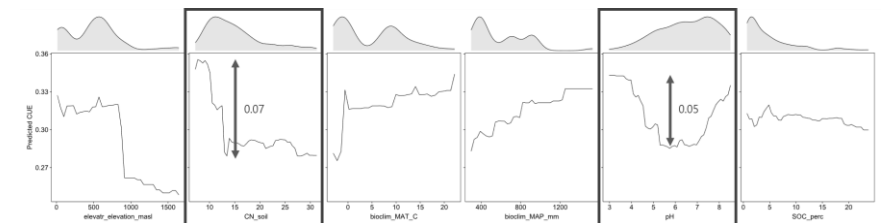


Fig 4: Most important predictors of CUE within the dataset (presented in descending order). Grey density plots above facets reveal the skewed distribution in climate data due to regional clusters.

- regional clusters in data limit interpretation of climate effects on CUE
- confirms U-shaped relationship between CUE and soil pH