Theme 2 | Advances in soil mapping and monitoring

Soil and vegetation proxies as modulators of global mycorrhizal colonization

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INTRODUCTION

Mycorrhizal colonization (MC) is a fundamental element for the resilience and stability of terrestrial ecosystems. However, the response of this symbiosis to climate, soil and vegetation on a landscape scale is still poorly understood.

OBJECTIVE

Our aim was to assess the relationships between mycorrhizal colonization and soil and vegetation variables on a global scale.

MATERIALS AND METHODS

- 6343 samples (Guerrero-Ramirez et al., 2021)
- 19 Bioclimatics, net primary productivity (NPP) (Karger et al, 2017), soil moisture (0-30 cm), canopy height (Tolan et al., 2024), digital elevation model (DEM) (ESA, 2022) and vegetation indices
- Variable selection
- Performance: concordance correlation coefficient (CCC), mean absolute error (MAE) and null model (mean)

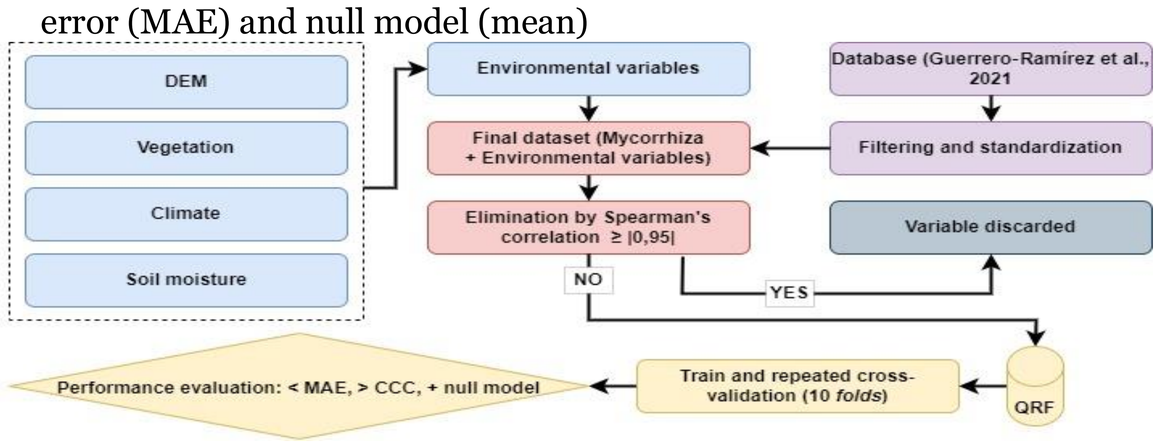

Figure 1. Scheme of the methodological flow used.

RESULTS

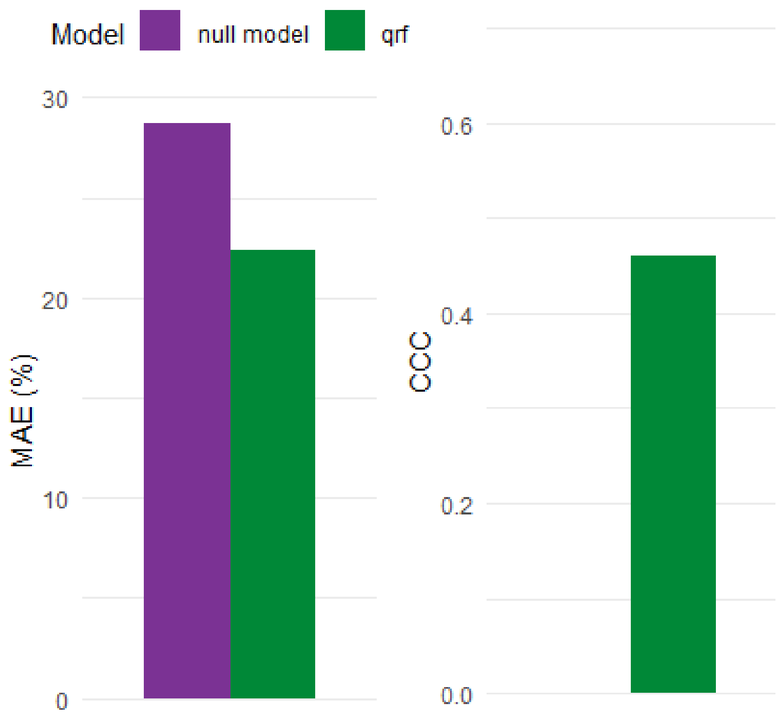

Figure 2. Quantile random forest performance and null model (average).

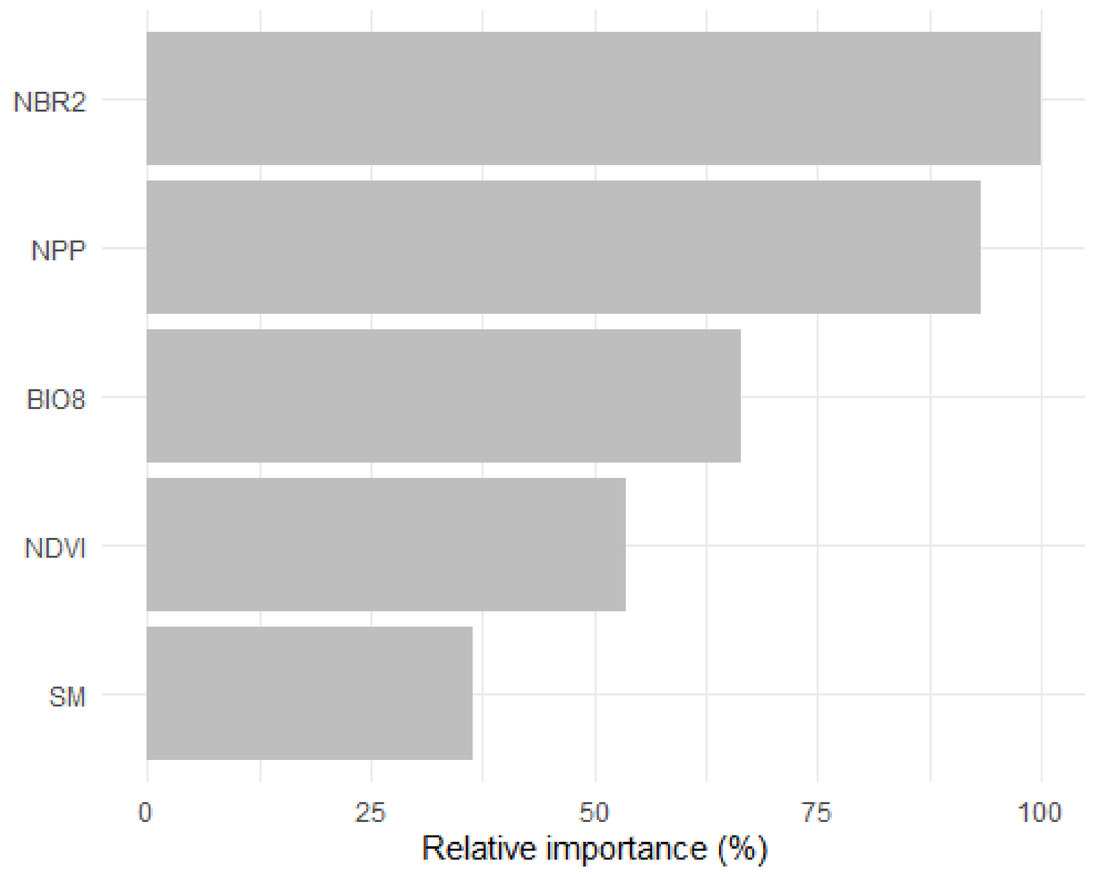

Figure 3. Relative importance of the five most important variables for the quantile random forest model. NBR2 = Normalized burn ratio 2; NPP = Net primary productivity; BIO8 = Average temperature of the wettest quarter; NDVI = Normalized difference vegetation index; SM = Soil moisture.

CONCLUSION

Our study suggests that ecosystem humidity and vegetation significantly modulate MC at a global level.

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