Supplement of Web Ecol., 26, 35–45, 2026
https://doi.org/10.5194/we-26-35-2026-supplement

Web Ecology Open Access

Supplement of

Heterogeneity of the urban soil microbiome and associations with physicochemical soil characteristics

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Supplementary Figures

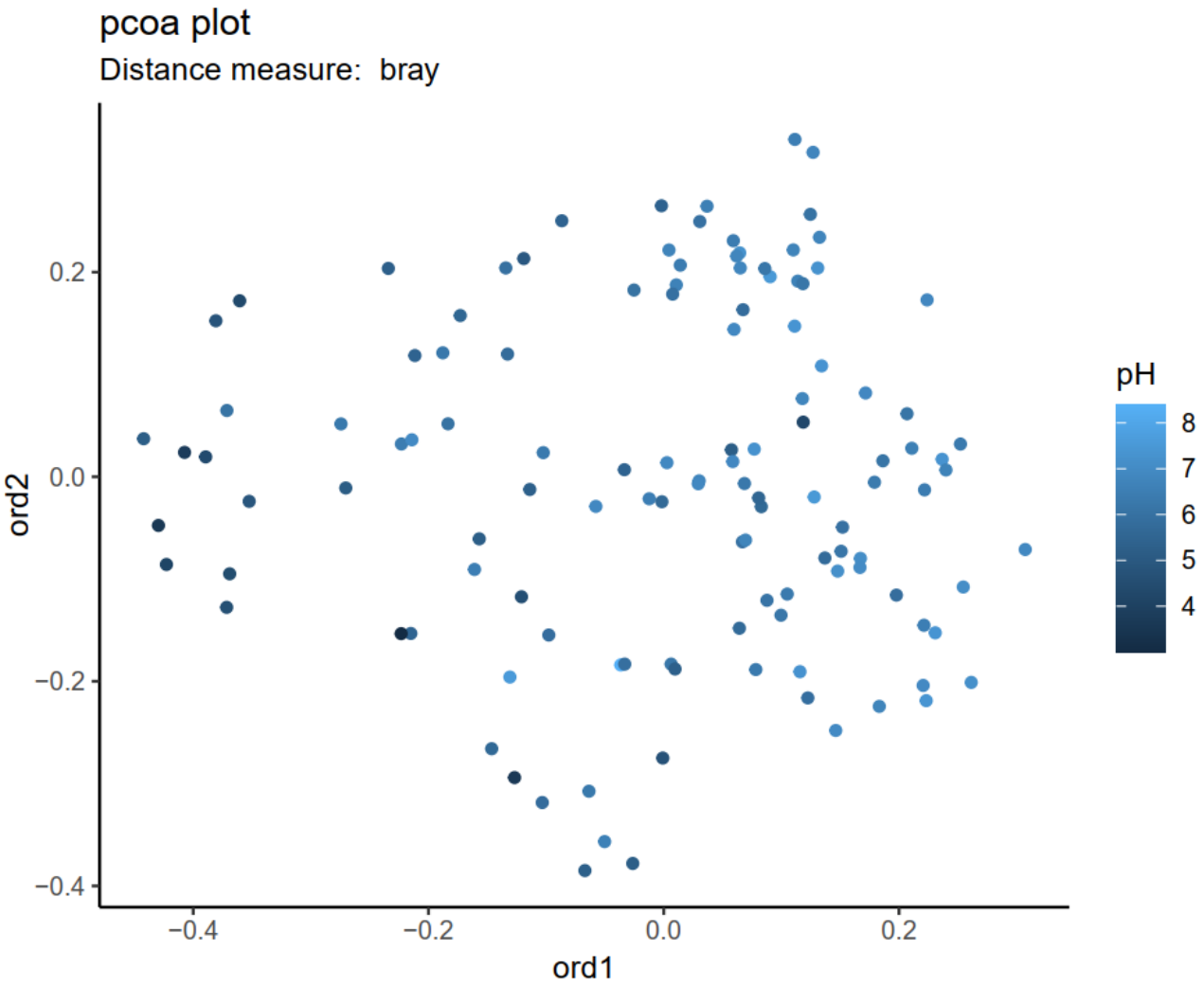

Figure S1: Principal coordinates analysis of bacterial soil communities visualized. The intensity of the blue color indicates the pH of the soil.

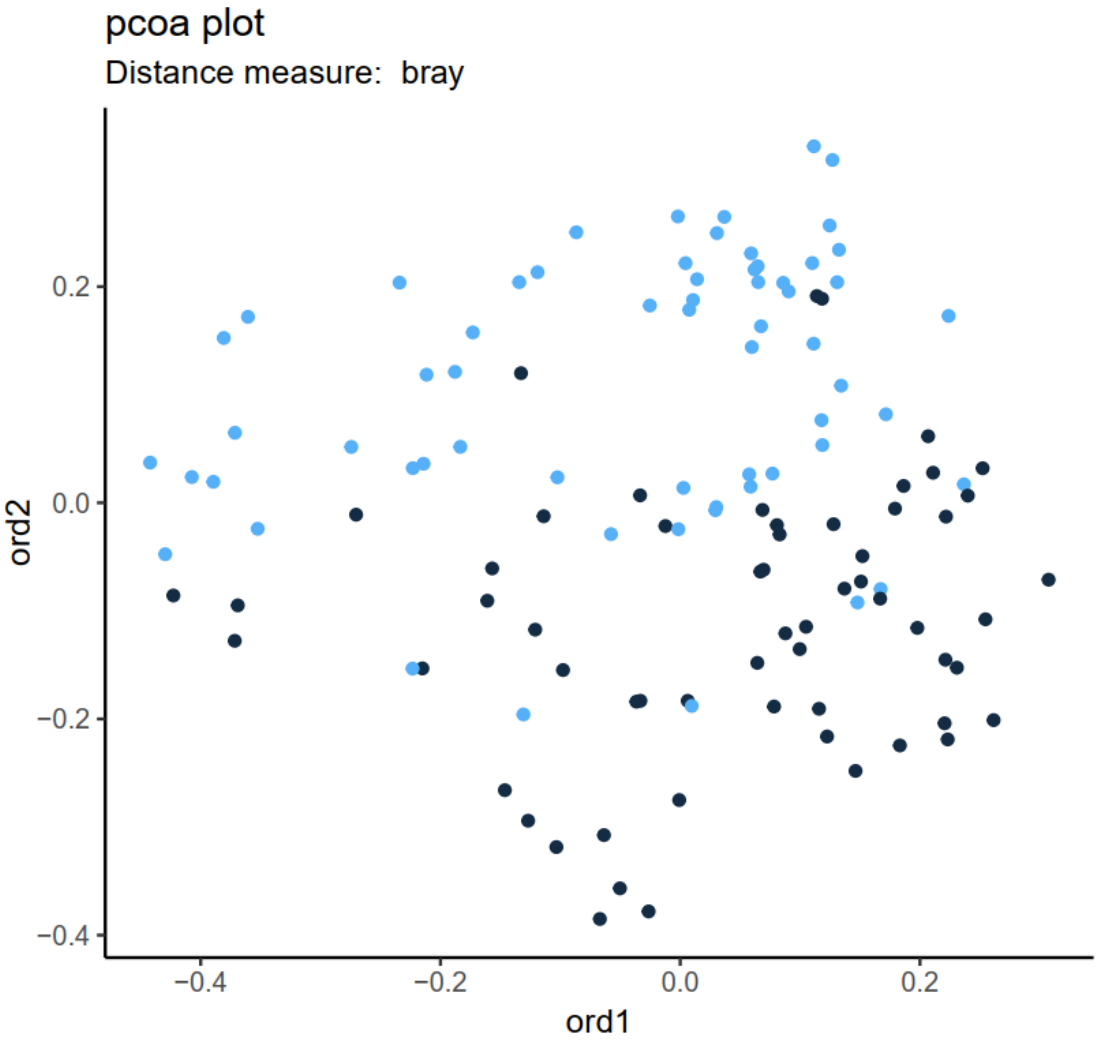

Figure S2: Principal coordinates analysis of bacterial soil communities visualized. The light blue dots are soils sampled at 10-15 cm depth, whereas the dark blue dots are soils sampled at the surface (0-5 cm depth).

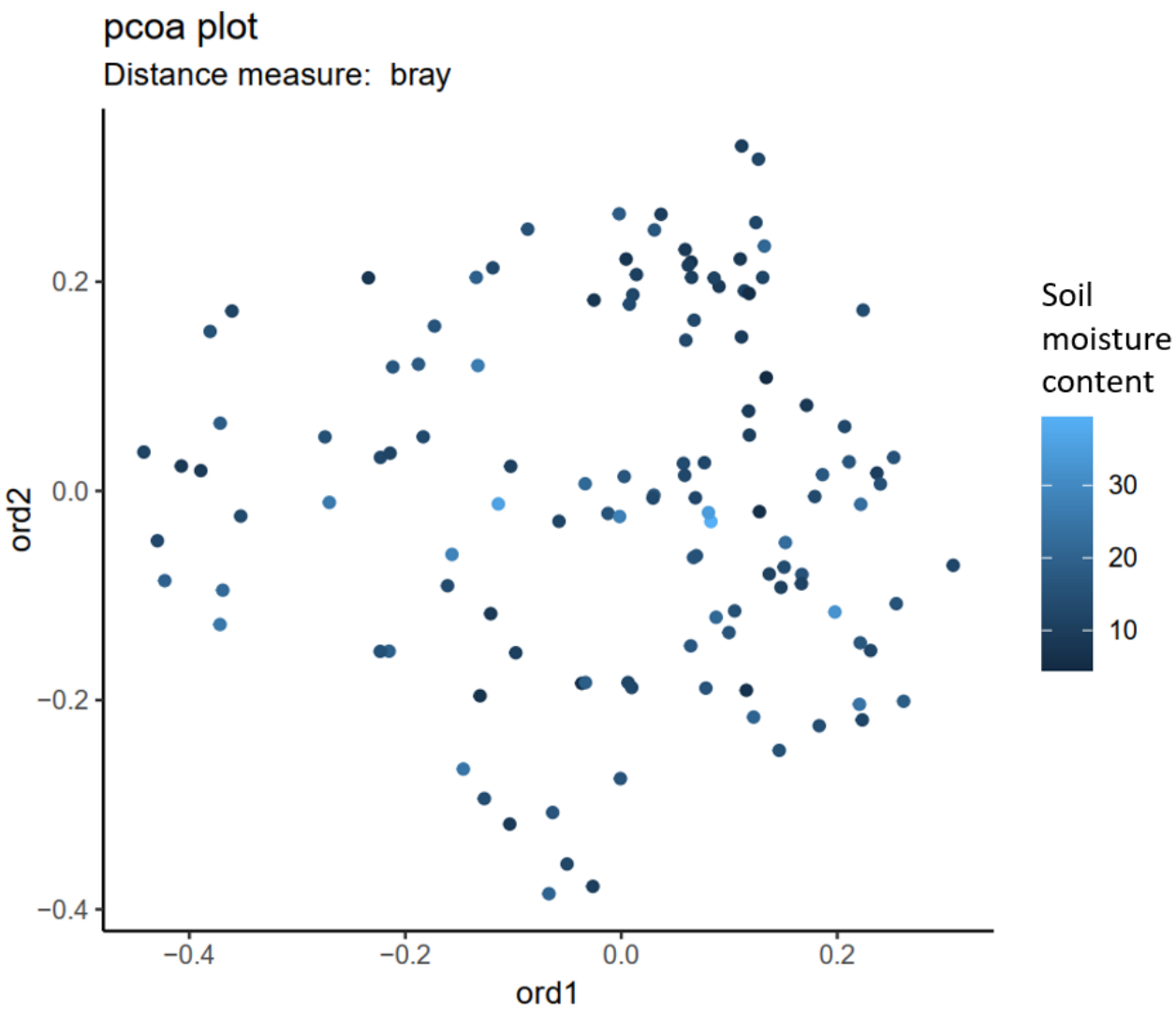

Figure S3: Principal coordinates analysis of bacterial soil communities visualized. The intensity of the blue color indicates the soil moisture content.

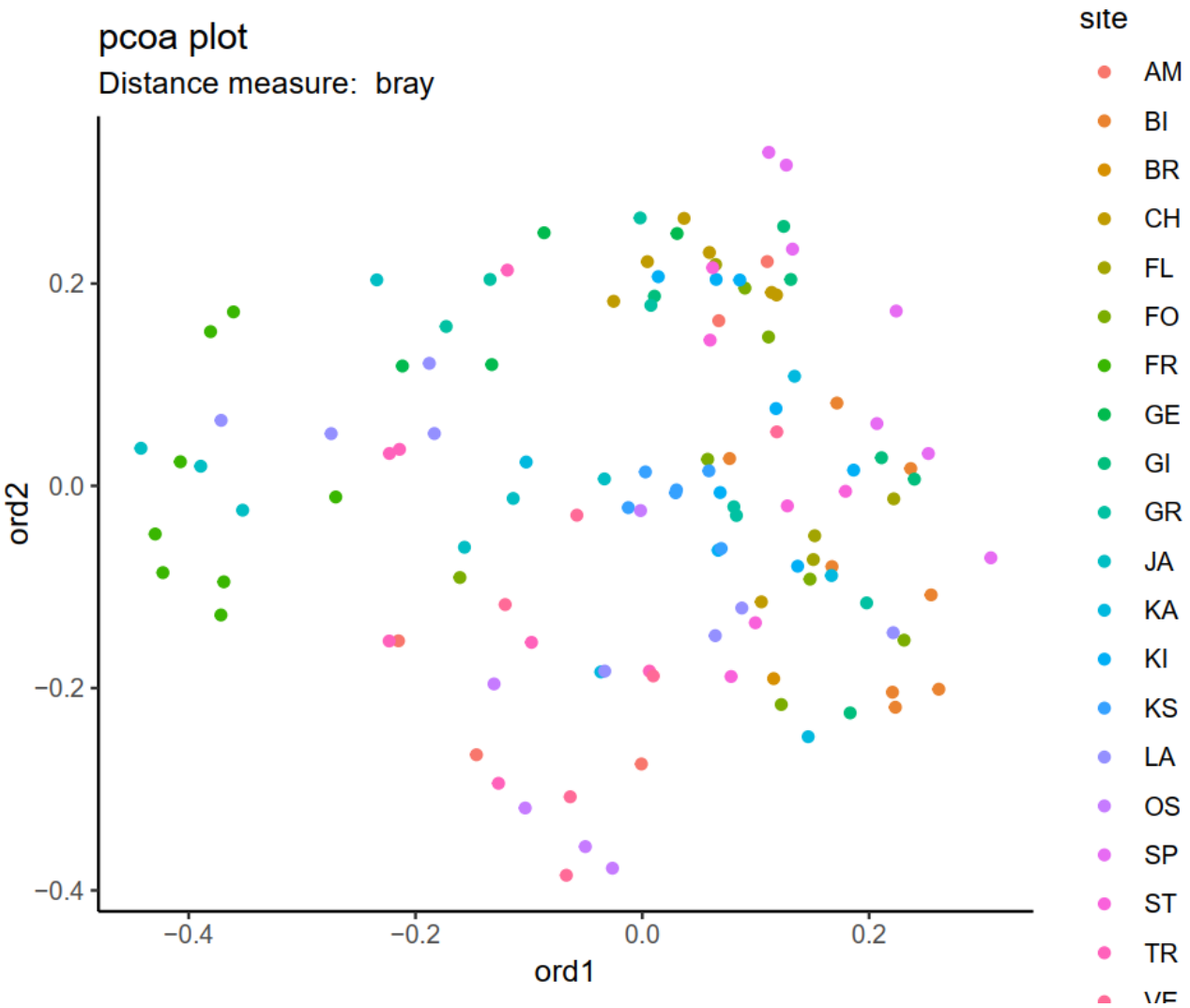

Figure S4: Principal coordinates analysis of bacterial soil communities visualized. The color indicates the site where the soil was sampled. The letters in the legend are abbreviations of the street names.

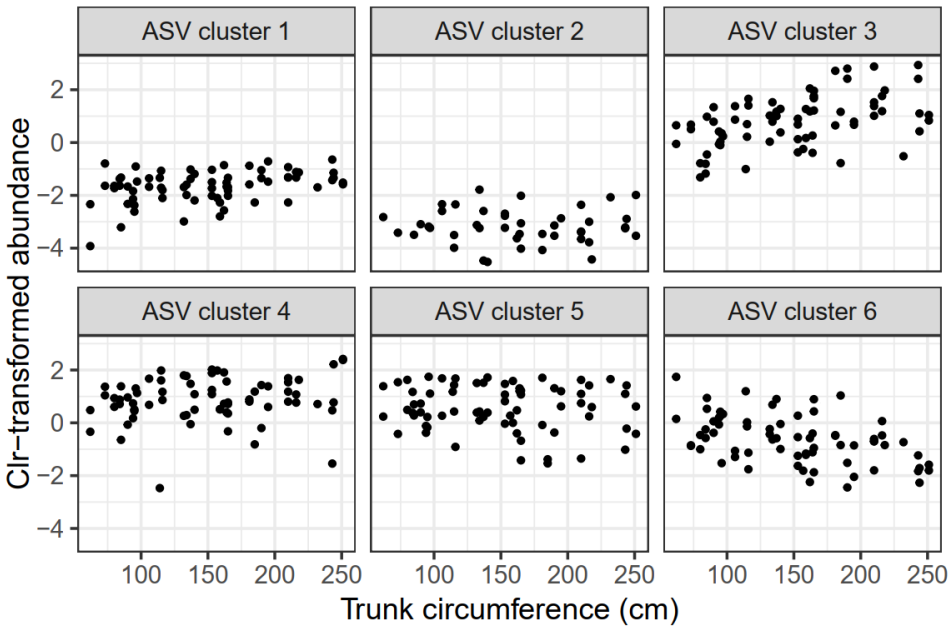

Figure S5: Trunk circumference was considered as a proxy for time since last soil disturbance. The graph shows the abundances of each ASV co-occurrence cluster with increasing trunk circumference, so over time since last soil disturbance. To detect ecological succession in bacterial communities, we applied an approach similar to what is described in Shade et al. (2013). For this analysis, soil samples at the same depth of the same tree were merged, ASVs were filtered to those present in at least 20% of the samples, the samples of the trunk circumference outlier of 288 cm were removed, and ASV clusters were determined using SparCC with the function 'cluster_taxa' of the tidytacos package. Most clusters do not show a temporal trend and when they do it is only a general increase or decrease over time and does not refer to groups of bacteria increasing and decreasing over time as is expected for ecological succession (Shade et al., 2013; Smets et al., 2022).

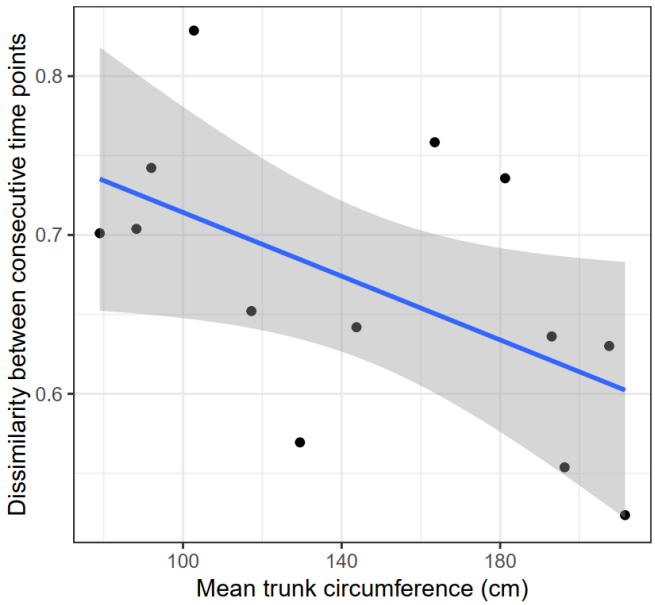

Figure S6: Trunk circumference per site roughly represents tree age and dissimilarity of soil communities (10-15 cm depth) per site was visualized only for increasing tree circumference. The significant negative correlation (p = 0.03, kendall tau = -0.46) indicates that the soil communities at different sites start to become more similar as the tree circumference increases, which is a logical consequence of ecological communities in similar conditions developing over time or together with the tree root system. This graph was made based on the methods described in Smets et al., 2022. "Time points" were assigned based on trunk circumference, with difference between consecutive time points being between 6-18 cm (approximately 1-3 years). Often two sites occurred in the same time point. To avoid redundancy typical for beta dissimilarities, a sample within a time point was compared to only one other sample in the previous time point and one sample in the next time point.

References

Shade, A., McManus, P. S., & Handelsman, J. (2013). Unexpected diversity during community succession in the apple flower microbiome. *MBio*, *4*(2), e00602-00612.

Smets, W., Spada, L. M., Gandolfi, I., Wuyts, K., Legein, M., Muyshondt, B., Samson, R., Franzetti, A., & Lebeer, S. (2022). Bacterial succession and community dynamics of the emerging leaf phyllosphere in spring. *Microbiology spectrum*, *10*(2), e02420-02421.