**Methods**

Multivariate analyses were conducted in R version 3.5.1 (R Core Team, 2018). Data were centered and scaled prior to RDA analysis. RDA models were built using the *vegan* package (Oksanen et al., 2018). Type II permutation tests were conducted on the RDA models to determine the effects of temperature, precipitation, and their interaction on metabolite concentrations using the MVA.anova function from the *RVAideMemoire* package (Hervé et al., 2018).

**Results**

Amino Acids:

The experimental design (temperature, precipitation, and their interaction) explained 31.08% of the total variation in amino acid concentrations.

Df Variance F Pr(>F)

precip 1 5.7039 15.7995 0.001 \*\*\*

temp 1 0.3074 0.8514 0.395

precip:temp 1 0.8341 2.3103 0.080 .

Residual 42 15.1628

GC compounds:

The experimental design (temperature and precipitation and their interaction) explains 24.45% of the total variance in primary and secondary metabolites.

Df Variance F Pr(>F)

precip 1 2.2721 9.7157 0.001 \*\*\*

temp 1 0.3798 1.6241 0.135

precip:temp 1 0.5171 2.2111 0.047 \*

Residual 42 9.8219

**Citations:**

Hervé, M.R., Nicolè, F., Lê Cao, K.-A., 2018. Multivariate Analysis of Multiple Datasets: a Practical Guide for Chemical Ecology. J. Chem. Ecol. 44, 215–234. https://doi.org/10.1007/s10886-018-0932-6

Oksanen, J., Blanchet, F.G., Friendly, M., Kindt, R., Legendre, P., McGlinn, D., Minchin, P.R., O’Hara, R.B., Simpson, G.L., Solymos, P., Stevens, M.H.H., Szoecs, E., Wagner, H., 2018. vegan: Community Ecology Package.

R Core Team, 2018. R: A Language and Environment for Statistical Computing.