4.1 General description

Key references

- **Method**: Legendre & Anderson (1999) , McArdle & Anderson (2001)
- **Permutation methods**: Freedman & Lane (1983) , Anderson & Legendre (1999) , Anderson & Robinson (2001) , Anderson (2001b)

DISTLM is a routine for analysing and modeling the relationship between a multivariate data cloud, as described by a resemblance matrix, and one or more predictor variables. For example, in ecology, the resemblance matrix commonly describes dissimilarities (or similarities) among a set of samples on the basis of multivariate species abundance data, and interest may lie in determining the relationship between this data cloud and one or more environmental variables that were measured for the same set of samples. The routine allows predictor variables to be fit individually or together in specified sets. *P*-values for testing the null hypothesis of no relationship (either for individual variables alone or conditional on other variables) are obtained using appropriate permutation methods. Not only does DISTLM provide quantitative measures and tests of the variation explained by one or more predictor variables, the new routine in PERMANOVA+ has a suite of new tools for building models and generating hypotheses. Parsimonious models can be built using a choice of model selection criteria and procedures. Coupled with preliminary diagnostics to assess multi-collinearity among predictor variables, several potentially relevant models can be explored. Finally, for a given model, the user may also visualise the fitted model in multi-dimensional space, using the dbRDA routine.

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