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Some reflections on acquisition, processing and analysis of statistical data in forest soils

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Abstract
Beyond the classical statistical approaches (determination of basic statistics, regression analysis, ANOVA, etc.) a new set of applications of different statistical techniques has increasingly gained relevance in the analysis, processing and interpretation of data concerning the characteristics of forest soils. This is possible to be seen in some of the recent publications in the context of Multivariate Statistics. These new methods require additional care that is not always included or refered in some approaches. In the particular case of geostatistical data applications it is necessary, besides to geo-reference all the data acquisition, to collect the samples in regular grids and in sufficient quantity so that the variograms can reflect the spatial distribution of soil properties in a representative manner. In the case of the great majority of Multivariate Statistics techniques (Principal Component Analysis, Correspondence Analysis, Cluster Analysis, etc.) despite the fact they do not require in most cases the assumption of normal distribution, they however need a proper and rigorous strategy for its utilization. In this work, some reflections about these methodologies and, in particular, about the main constraints that often occur during the information collecting process and about the various linking possibilities of these different techniques will be presented. At the end, illustrations of some particular cases of the applications of these statistical methods will also be presented.