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Interactive comment on "Geospatial variation of grapevine water status, soil water availability, grape composition and sensory characteristics in a spatially heterogeneous premium wine grape vineyard" *by* D. R. Smart et al.

Anonymous Referee #3

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GENERAL COMMENTS The paper focuses on the small scale variability of the terroir effect as mediated by variations on soil water availability to grapevines. It shows a large and varied dataset acquired with a multidisciplinary approach, which is very interesting, but the analysis of those data has been poorly conducted (details in Results section in the Specific Comments below). The article is not well structured: the introduction and material and methods parts are too long and confused, the explanation of results is difficult to follow. References lack of very important works on the subject (e.g., Seguin, van Leeuwen, Bramley...)

SPECIFIC COMMENTS: ABSTRACT: The abstract does not well introduce the subject, the first 15 lines are useless, some of the used expression are not scientific "...from years of management is known...", line 4 p. 1017. INTRODUCTION: Section 1.1 is useless and poorly written, should be eliminated. Section 1.2 is a more suitable introduction to the subject of the paper, although it lacks important references on the relationships water-soil-grapevine, and their role in the terroir effect. MATHERIAL AND METHODS: This section should be shortened. Specifically, each subsection should avoid to inform about the why of each analysis, and just limited to technical details necessary to repeat the experience. RESULTS: As previously mentioned, data analysis has been poorly conducted. Specifically the authors classify data in two groups. They do not present raw data in a suitable graphical form, neither report basic distribution statistic (such as standard deviation etc.), but it appears from table 1 that such class are probably not balanced. Even more important is the fact that variance is not homogeneous among the two groups. The threshold used for classification allows the non-stressed group to vary greatly more than the stressed one. This is an important violation of one basic assumption of ANOVA (and authors didn't test it with a Bartlett test, for example, before running the analyses) which greatly increases the risk of Type I errors, i.e. assuming significant differences when they are not. Most of the statistical analyses in the paper are performed using this kind of grouping, especially the interesting parts on the sensory attributes and metabolites of berries. The validity of such interesting results is questionable. Furthermore it is not clear why the authors difference regression analyses in between the two years, probably because of difference in density of measurements. The authors use as a matter of discussion the homogeneity of the results across years, therefore it will be more suitable to analyze both years together. Differences in density of measurements is a minor problem in regression analyses, but it will also be possible to random sampling from the more represented year to equalize the number of samples across years. The R^2 must be used instead of r^2 and p instead of P for p-value, rˆ2 is not correct in figure 8 and 9 and in the same figures the Dormant pruning weight graphic lacks of y-axis labels. DISCUSSION: Discussion ba-

sis are mined from non rigourous statistical analyses, furthermore this section is long and not always supported from results.

CONCLUDING REMARKS: This work is about an important topic and of real interest for this Special Issue. However, major changes must be made to accept the article for publication. It will be necessary to remade ANOVA analyses using a different and more coherent grouping. It will also be important to check the quality of the analyses by looking at the distribution of residuals to ensure that basic assumptions stay respected. Otherwise other kind of analyses, which are non parametric, must be used. Some summary statistic must be added to table 1 and 2, and not only min and max and the mean, but at least a measure of variance or standard deviation and the median, or otherwise use boxplots. The paper must be shortened and important references must be added (van Leeuween, Seguin, Bramley, Tisseyre).

Interactive comment on SOIL Discuss., 1, 1013, 2014.