**Responses (will go into interactive review site):**

**Round 3 (or sort of 4) October 2020**

Editor #1:

Dear Dr. Brillante,

Thank you for the opportunity to revise our manuscript. We have provided a revised manuscript addressing reviewer #4’s concerns. Specifically we have worked to make sure the figures and tables are clear and readable.

We provide point-by-point responses to Reviewer 4’s concerns separately.

Thank you.

Lizzie & Nicole, on behalf of our co-authors

Reviewer #4:

Q1) The work realized by the authors is very interesting because it tries to face a literature gap on the evaluation of war temperatures on grapevine during the budburst and flowering, by means of multy-variety study growing diverse varieties together. The authors occurred in a high variability in flowering (plants exposed at 20,26, 30, 34, 37°C mean temperature in growth chambers; 28 of 50 studied varieties had not flowering) that produce limitation in the study of variety specific response to temperature. In any case, the big efforts realized by the authors has produced results in line with literature. The main findings are that: higher temperatures did not have a significant effect on the rate at which vines progressed through the flowering stage; the higher temperatures did correlate with flowering abortion. These results confirm that under climate change, which represents a current and future challenge for the winegrowers, the increase of temperature or the presence of extreme temperature events during the flowering stage can strongly affect the winegrape yields. Moreover, the results highlight the necessity to better understand the heat responses across the varieties.

We thank the reviewer for their review, and have worked to address concerns (discussed below).

Q2) In my point of view, one limitation is the extension of lab results to the field. This perplexity has been treated by the author "..if lab phenology appears similar to field phenology, it would suggest such results could be relevant to field conditions (lines 97 and 98)", but probably more data and experiments are needed to fix it, and it is a general problem not specific of this manuscript.

The second limitation is that there were not enough plants of each variety in each chamber to test for a difference in varietal response to the heat treatments, and then the authors have reported their findings across varieties. The fact that only 10 varieties have been evaluated in the growth chambers under different mean temperature represent a limitation.

The main important strength point is the big work realized by the author, and the efforts to produce useful information to the reference scientific community to face climate change issue in viticulture. Obviously, the chosen aim was difficult (a big number of plant varieties, that never were studied together in the previous literature on this theme), and the authors have paid with reduced results, but significative in agree with the recent studies.

We completely agree with the reviewer’s comments. We tried for many more varieties than have been done before! And we did not obtain a good sampling across multiple varieties in the end, given our struggles with growing so many different varieties. We have tried to both address our original question and give relevant data on which varieties grew well, or not, in hopes other researchers can use this information to perform similar, and hopefully, more successful studies.

Q3) The applied methods and the data analysis are good and able to support the conclusion.

We are glad the reviewer found the methods and analyses adequate for our conclusions.

Q4 Checklist  
a.

- Yes

b.  Is the quality of the figures and tables satisfactory?

- No

We apologize for this. We downloaded the TIFF figure files and agree that Figure 1 and Figure 3 are coming through as poor quality. The original files are produced in R and vectorized, thus they should not appear so poor. We have now uploaded new versions at higher resolution in TIFF and we also provide the vectorized PDF of all figures (the PDF files are of better quality as they maintain the vectorized format).

c-g.   
- Yes

h. Are the data underlying the study available in either the article, supplement, or deposited in a repository? (Sequence/expression data, protein/molecule characterizations, annotations, and taxonomy data are required to be deposited in public repositories prior to publication.)  
- No

The data are freely available on the KNB via two datasets:

N Merrill and E Wolkovich. 2019. Budburst and leafout phenology of 50 varieties of winegrapes (Vitis vinifera subsp. vinifera) in greenhouse with heat tolerance of flowering study. <https://knb.ecoinformatics.org/view/urn%3Auuid%3A59f80d14-bc09-49a6-8143-0e2823bab9a2>

Elizabeth Wolkovich. 2017. Variety phenology: <https://knb.ecoinformatics.org/view/doi:10.5063/F18G8J29>

We provide these links on lines 141 and line 190 in this revision.

KNB is a robust fully open repository (even the code underlying it is open-source) and it is part of DataOne, thus providing reliable long-term storage of data.

Q5: The manuscript is well written and readable for the reader. The principal concern is about the figures. Most of them must be improved in quality (Figs 1 and 2) and others (Fig. 3) are not readable.

We thank the reviewer for their positive comments.

Q12: Minor revisions