

## Response to reviewer#1:

### Comments

I have thoroughly reviewed the manuscript "Developing Spring Wheat in the Noah-MP LSM (v4.4) for Growing Season Dynamics and Responses to Temperature Stress." All the comments have been incorporated well and improved the quality of this manuscript. Overall, it is a very good piece of work. The authors have conducted a comprehensive study that significantly contributes to understanding spring wheat growth and its response to temperature stress in the Noah-MP LSM. With a minor revision this paper is good to publish.

### Previous comment:

In section 2.3, it is important to note that the Y-axis in figure 2b represents  $V(T)$  and not  $f(TV)$ , and the equation for the blue line is Wang 2017, not Wang-Engel (1998). Additionally, the plots in figure 2 should be labeled as a and b, and the Y-axis labels should match the text.

Furthermore, the manuscript's novelty is the new heat stress function, but it is not adequately explained. Therefore, it is essential to provide a detailed scientific explanation of the function to help readers better understand it.

### Follow up on the comment:

With the added equations making the comparison between temperature stress function  $f(TV)$  and Rubisco capacity ( $V_{cmax25}$ ) parameter responses to temperature  $V(TV)$  in default and old function is possible.  $TV$  is defined as canopy temperature. Default and modified  $f(TV)$  are represented by eq. 5 and 7, respectively; similarly, for  $V(TV)$ , it is eq. 6 and 9.

**However, the respective figure (Figure 2 ) has different X and Y axis acronyms defined nowhere. The X-axis ( $f(TV)$  and  $V(TV)$ ) and Y-axis ( $TV$  )degree Celsius) labels in Figure 2 should be consistent with the corresponding equations for consistency and clarity.**

We want to sincerely thank the reviewer for the time and effort in reviewing this manuscript. Indeed, most of the comments are very constructive and helpful to improve the quality of this paper. Please see the attached Figure 2, modified according to the above comment.

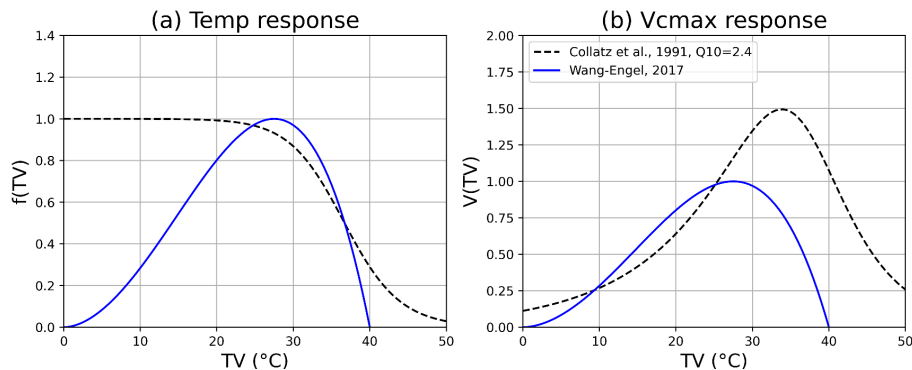


Figure 2. (a) Temperature response of the default Noah-MP PSN-stomata scheme (Collatz et al., 1991) and a new temperature response function (Wang-Engel., 2017) revised equation; (b) Rubisco capacity ( $V_{cmax25}$ ) parameter responses to vegetation canopy temperature ( $TV$ ).