Reviewer Comments-

General Comments:
Tschackow et al. explore high temporal sap flow data and its relationship with VPD, temperature, and topsoil moisture across three different sites. In general, the work shows promise but needs more exploration or refining the objectives based on the figures shown. My major concerns are 1) lack of rationale for selecting three sites, and why such different sites. This work would be more impactful if it includes more than one station per ecotone, which exists based on Figure 2. 2) Objectives are not explicitly clear, nor what is defined as stress or a hot/cold day.3) On line 14 the authors mention that the data is temporally sparse, which might lead to lack of alignment across data sets but do not tackle in the methods how corrections were made to account for that. 4) The writing would benefit of some revision, particularly on paragraph structure, correct citations, and improving clarity. For example, line 496 is a one-sentence 'paragraph' that does not relate to the rest of the conclusion.

Specific comments:

- Definitely improve flow on the abstract, making sure transitions are clear.
  - More concise
  - There is also no clear distinction between the abstract and introduction.
- Unclear how Figure 1 fits in the introduction. Seems more like an abstract
- On the introduction, there is no clear distinction between how rising CO2relates to plant water dynamics. I would suggest adding a sentence that links the paragraphs together
  - **Please revise citations**
    - Line 48- Foster has no year, is it a one author publication?
    - Line 50- no year
    - Line 71- no year
    - Line 187- requires citation
  - Line 76-78: The hypothesis is conceptually interesting but fundamentally circular, since hysteresis itself reflects stress; the authors should clarify which specific aspect of hysteresis they expect to change prior to observable canopy-level decline.
- Begin by mentioning sap flow acronym at the beginning, not at the middle of intro, and being consistent with the acronyms. If not, there is no need to include it, especially SF for sap flow
- Why contrasting sites? What is the motivation? Why not concurrent mediterranean sites, or concurrent tropical sites? Is three different sites without replication informative enough?
- Paragraph 80, yes and? How does it add to the flow?
- Figure 3- Align the mean seasonal gradient to the right panels, not the middle.
  - X axis?
  - Would also recommend better ID for the different sites. They are unnecessarily complicated

- Line 449- there is no justification to why Vegetation Optical Depth research can serve to motivate your work. It can be informative on its own. I would suggest restructuring towards how it can inform remote sensing initiatives.
    - Similar comment on line 496. If you want to use your work for VOD, then it is worth mentioning in the conclusion, but it does not add to your argument in any way
- There is no mention of how sap flow is measured (heat thermistor, etc- are the sensor different, and does not cite literature depicting that SF has a clear diurnal cycle- it is not always the case and is very much individual dependent.
- Line 177: great depths?
- Line 179: age of trees? Or age of the forest?
- No division between major groups such as angio/gymno clades, which might inform why there is similar patterns across the different sites.
- There is lack of consistency throughout the writing
- What is the broader application of this work? It is not explicit.