Interactive comment on “Thermal acclimation of leaf photosynthetic traits in an evergreen woodland, consistent with the co-ordination hypothesis” by Henrique Fürstenau Togashi et al.

Anonymous Referee #2

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General comments

The authors have performed a suite of gas exchange measurements and leaf biochemical analyses in a suite of species across two seasons. The novel angle to the paper is to present this data in the light of the coordination hypothesis. The work is well done and interesting.

Specific comments

My main comment is that the discussion is very thin. It could use more substance and less reiterating the results. What do you make of the considerable spread in the data? Why do many species in Figure 6 not show the expected response, even if the pooled data does? There’s a lot more here to discuss than is currently covered.

There are a number of studies that have measured Vcmax and Jmax at multiple times across a season in the literature (Baldocchi has a few, for example). These should be acknowledged in the intro. Similarly, there should be a citation to Way and Yamori 2013 who found no change in Vcmax25 in a meta-analysis of plants grown at different temperatures.

Why was Rdark measured after only 5 mins in the dark? This is usually measured after at least 20 and often 30 minutes of darkness to get a true estimate of dark respiration. What VPD were the measurements made at? If the summer VPD is higher, gs will be reduced, which will lower the Ci/Ca ratio, but this isn’t necessarily a temperature effect per se.

Figure 2 - why were the fits forced through the origin and how does this affect the slopes? Is it a minimal effect?

Lastly, while I appreciate the use of the log-transformed data to get linear slopes, I’d like to see the “real” data, at least in the SI. This makes it much easier to see the values measured and compare the data with the majority of other studies that report Vcmax and Jmax values against leaf temperature.

Technical comments

Page 2, Line 13 - please clarify what “these” refers to - Vcmax and Jmax, yes?

Page 9, Line 7 - the relationship between Ci/Ca and photosynthetic capacity could also be because higher photosynthetic capacity (at a constant gs) reduces Ci. Cause and effect can’t be determined.

If all the gas exchange is determined with a Licor IRGA, how are the parameters being reported in units of electrons and O2? Jmax and Rdark should be in units of CO2 per area per time.