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Interactive comment on "Interpreting canopy development and physiology using the EUROPhen camera network at flux sites" *by* L. Wingate et al.

Anonymous Referee #2

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General Comments:

The paper does a very good job of making the connections between leaf level pigments and processes, local environmental data, and canopy information obtained from digital cameras. Establishing the full chain of linkages between camera images and canopy development has proven to be quite the challenge, but the authors have figured out how to couple all the relevant measurements. As the archive of digital repeat images of vegetation continues to grow, the methods and algorithms presented in this paper will become increasingly important in pairing the image data with other sensors to characterize an ecosystem and its response to variation in the driving factors.

Specific Comments:

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The breakpoint analysis for transition dates presents an interesting alternative for extracting transition dates, but is not strongly justified in the paper. As the authors admit, the maximum number of breakpoints must be specified, as well as the minimum segment size. This places a two parameter constraint on the fit, where as thresholding and other techniques only place one. In addition, though the first and final breakpoint locations correspond well to leaf out and senescence, the middle breakpoints don't seem to correspond to phenological transitions. Figures 4-8,10 all note that the breakpoint changes identify "important transitions", though it is unclear from the data presented that these transitions are actually important for the canopy or ecosystem.

The RGB signal modeling of section 3.2 is overshadowed by network-wide analysis of section 3.1. It would be nice to understand more of how the work in section 3.2 was performed, including a full description of the algorithm, parameter values and uncertainties, parameter starting ranges that link PROSAIL results and camera sensor properties to output color fraction curves (Fig 12, panel 3). The results shown in Figure 12 are impressive, and this section of the paper is likely to be of greatest interest to readers, but readers are left without the tools necessary to reproduce or extend the results.

Fig 12, panels 1-2 need to include standard deviation envelopes around the curves for Chl, Car, C_brown, and N.

When discussing the sensitivity analysis of the RGB signal modeling, the note about the impact of diffuse light and leaf inclination angle could use further detail and discussion. Why is it that these two parameters, along with at least 4 others have an impact on the green signal, but not blue or red?

Technical Corrections:

Section 4 Conclusions: line 21, "arhives" should be "archives" Figure 13 caption: "structural paramer" should be "structural parameter"

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