Biogeosciences
Discussions
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Interactive comment on "Variation in photosynthetic and nonphotosynthetic vegetation along edaphic and compositional gradients in northwestern Amazonia" *by* M. A. Higgins et al.

Anonymous Referee #2

Received and published: 16 April 2014

This is a well-written manuscript that documents the relationships between Landsat-derived estimates of photosynthetic and nonphotosynthetic vegetation and field-derived estimates of soil fertility and species composition in Amazonian forests. The scientific significance of the findings and approach documented in the manuscript are of excellent quality, as it the overall presentation quality. My primary concerns and comments stem largely from insufficiently explained methods and prior results. In some instances, where key methodological details or prior results were previously published and, therefore, intentionally omitted, a very brief re-cap in this manuscript would significantly clarify important points for the readers. Specific comments are as follows:

Page 3537, lines 13-15: Suggest clarifying sentence – "Individual pixel values in

Landsat imagery typically consist of reflectance from a mix of substances (features?) including. . .."

Page 3537, lines 21-29: Are there any potential errors associated with the definition of endmembers from such diverse approaches? In other words, how do the aerial estimates of PV endmembers compare to the ground-based estimates of NPV and bare substrate endmembers? Are these approaches expected to yield equivalent estimates of endmember spectra? In addition, is there a sampling framework for endmember estimates?

Page 3539, line 6: What transects? I assume this is in reference to the plant inventories and soil samples, but the term transects is abruptly introduced here.

Figure 1: Suggest adding country names to inset map and/or to 1a.

Table 1, and accompanying text on page 3540, lines 9-11: There is significant monthly variation in Landsat images for the Pastaza-Tigre study area. Is there potential for differences in phenology to confound the analysis?

Page 3540, lines 9-18: What about bare-ground estimates? The introduction discusses a bare-ground endmember, but it does not appear that these estimates were included here. Why not?

Table 1: Could this table be expanded to also include a validation measure of PV and NPV estimates? How accurate were those models?

Page 3541, line 27: "Each of these three soil samples consisted of five random(?) subsamples. . .. Figure 1 and accompanying text on page 3542, lines 5-11: It seems that additional information about NMDS results is warranted. What is the interpretation, for example, in figure 1, of "higher NMDS values" versus lower values?

Page 3543, lines 3-14: Could a simple schematic help to explain this better?

Page 3541, lines 1-14: I'm not 100% clear on how to reconcile the information pre-

sented here about only using the pteridophytes for the NMDS and the information presented on page 3543, line 22 onward about the NMDS ordinations (of pteridophytes data only) explaining 80-90% of the floristic patterns in the "original" datasets....First of all, what is meant by "original" here? Second of all, are the 147 and 127 species at the 2 sites ALL species or only pteridophytes? If these are ALL species, why were these data not used for the NMDS ordinations?

Interactive comment on Biogeosciences Discuss., 11, 3535, 2014.