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Interactive comment on “A novel reflectance-based model for evaluating chlorophyll concentration of fresh and water-stressed leaves” by C. Lin et al.

C. Lin et al.

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Response to Reviewer #3

We are very appreciative for the excellent and very knowledgeable feedback and suggestions provided by Reviewer #3 which helped us improve our manuscript.

Reviewer comment:

#1. The title says “a reflectance-based model”, but in the paper, the author discussed both the reflectance-based and the absorptance-based models. And one of the conclusions is that the absorption data might not be suitable for determine chlorophyll con-

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centration since “the determination of Chls using the chlorophyll meter (absorptance-based model) has a significant bias or uncertainty due to its failure of responding to the influence of water stress.” Also, the majority of remote sensing data are reflection spectrum. Based on above reasons, I think the paper can be shortened considerably by focusing on the key aspects, the reflectance-based models.

Answer: The novel contribution of our study was to develop the reflectance-based model, therefore, we believe that the title should reflect this overall objective. To demonstrate the adequacy of our model, we had to compare it to commonly employed absorptance-based models, so we included the discussion of absorptance models as well. We would kindly argue that shortening the paper by eliminating the absorptance-based models and their evaluation would make the study less convincing for some readers who could easily wonder if absorptance-based models would be more appropriate. However, we agree that the paper could be shortened by focusing on key aspects, as suggested by another reviewer as well. We believe we accomplished this clarification of focus with a previous revision that was published in the Interactive Discussion BGD-10-C7611 on 28 Dec 2013. In that revised version based on comments from other reviewers, we reduced the Introduction section by approx. 20% and the Conclusion section by about 30% which we believed better clarifies the focus of our study.

#2. Page 17900, Line 17: What is FDS short for?

Answer: FDS indicates the first derivative spectra of reflectance (FDS). That sentence now reads “A first derivative transformation of the reflectance spectra (Novo et al., 1995; Dawson et al., 1998) was applied to calculate the slope values of the foliar reflectance spectra, also known as first derivative spectra (FDS), and to determine the red edge position.”

#3. Page 17902, Line 25: Novo, et al (1995) used the same first difference transformation of the reflectance spectra to estimate chlorophyll concentration in lake water. I

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think Nove's paper should be cited.

Answer: We inserted the Novo et al citation when first mentioning FDS, as seen in the previous comment.

Novo, E., M. Gastil, and J. Melack, 1995. An algorithm for chlorophyll using first difference transformations of AVIRIS reflectance spectra, Summaries of the Fifth Annual JPL Airborne Earth Science Workshop, NASA Jet Propulsion Laboratory publication 95-1, 23-26 January 1995, pp. 121-124.

#4. Detailed grammatical/presentation comments:

Page 17897, Line1: "wildly used" should be "widely used" Answer: Indeed, we corrected as suggested. Thank you.

Page 17897, Line14: Remove "is possibly" Answer: Removed as suggested.

Page 17899, Line 5: "the pigment of leaf pigments"?? Answer: We replaced pigment with "chlorophylls concentration"

Page 17900, Line 2: "spectralon" should be "Spectralon" Answer: Spectralon is now used with capital S, in two instances in the manuscript

Page 17907, Line 4, Page 17908, Line 6, Line 10, Change "adequacy" to "adequate" Answer: We kindly disagree with this suggestion. "Adequacy" refers to model fit adequacy (as in accuracy) which is commonly used in statistics and should not be replaced with the "adequate" adjective.

Page 17909, Line 20, Change "contains" to "contain" Answer: Replaced as suggested.

Page 17910, Line 5, Line 16, Remove unpaired ")" Answer: Removed as suggested.

Page 17911, Line 25, Change "then" to "than" Answer: Changed as suggested.

Interactive comment on Biogeosciences Discuss., 10, 17893, 2013.