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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.

Anonymous Referee #3

Received and published: 14 February 2014

This paper investigated several models of evaluating chlorophyll concentration of leaves based on reflectance and absorptance. The authors proposed three hypotheses at the beginning, and then designed three experiments to verify them. At last, the conclusions were drawn. This is a well-written paper that gives a model to estimate the foliar chlorophyll concentration from reflection spectroscopy rapidly and accurately.

However, there are a number of methodological approaches that need to be clarified or addressed before this paper can be deemed valid for the intended audience and application, most of which can be deemed minor in that the implications or assumptions of certain statements need to be clarified.

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Detailed methodological comments:

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 concentration 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.

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

Page 17902, Line 25: Nove, et al (1995) used the same first difference transformation of the reflectance spectra to estimate chlorophyll concentration in lake water. I think Nove’s paper should be cited.

Detailed grammatical/presentation comments:

Page 17897, Line1: “. . .wildly used. . .” should be “. . . widely used. . .”

Page 17897, Line14: Remove “is possibly”

Page 17899, Line 5: “the pigment of leaf pigments”??

Page 17900, Line 2: “spectralon” should be “Spectralon”

Page 17907, Line 4, Page 17908, Line 6, Line 10, Change “adequacy” to “adequate”

Page 17909, Line 20, Change “contains” to “contain”

Page 17910, Line 5, Line 16, Remove unpaired “)”

Page 17911, Line 25, Change “then” to “than”

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

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JPL Airborne Earth Science Workshop, NASA Jet Propulsion Laboratory publication 95-1, 23-26 January 1995, pp. 121-124.

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

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