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Hydrology and Earth System Sciences Discussions

Interactive comment on "Accurate LAI retrieval method based on PROBA/CHRIS data" *by* W. Fan et al.

Anonymous Referee #1

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This manuscript proposed a new hyperspectral directional second derivative method (DSD) to estimate LAI accurately through analyzing the canopy anisotropy. The idea is interesting. However, many places in the manuscript are not clearly written and therefore further clarification and improvements are needed. There are also errors throughout the manuscript that need to be corrected. I would suggest the authors make a major revision for reconsideration for publication in Hydrol. Earth Syst. Sci. Discuss. Listed below are my specific comments.

1. The structure of the paper is poor. I suggest to reorganize this paper according to the style of a normal research paper. . 2. In section 6 "Field measurements and validation", you mention that "It can be found from the two figures the inversion LAI

using DSD method is more reasonable", why? In the abstract, you mentioned that the retrieve LAI was validated by the ground truth of 11 sites. I can't find the validation results throughout the paper. Why don't you give us the validation results, such as correlation coefficient, rms error, for the methods by NDVI and DSD model? Please give more quantitative values.

3. The write-up is causing major problems, I strongly suggest that you let your manuscript be proof-read by an English native-speaking scientist.

4. Figure 4 illustrated the impacts of multi-scattering on reflectance spectra. I can't believe a reflectance spectra with a value of 0.9 in the NIR bands. Please check it.

5. Figure 6 illustrated the comparison of canopy spectra on CHRIS image before and after filtered using the two-step denoising method. However, only one spectral curve was illustrated. Please check it.

6. In figure 8, please separate the CHRIS images at different view angles.

7. There are only 18 bands for the CHRIS images, how do you calculate the directional second derivative.

8. In the abstract and discussion parts, you mention that "It shows that by applying innovative filtering method, the new LAI inversion method is accurate and effective". Why don't you give the result without filtering.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 7001, 2009.