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Interactive comment on “Towards spatial assessment of carbon sequestration in peatlands: spectroscopy based estimation of fractional cover of three plant functional types” by G. Schaepman-Strub et al.

Anonymous Referee #2

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I applaud the general idea of this paper. In fact using spectral mixing analysis may prove to be useful in discriminating among vegetation types rather than only relying on common image classification procedures, which in a number of cases do not allow species-level detail.

However I have some major concerns about the reproducibility of the results obtained by this ms. While the paper is analytically sound it definitively fails in applying a robust sampling design.

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In fact, it is highly recommended, when gathering data in the field, to be as much objective as possible. This may guarantee robust procedures to be applied in other similar habitats or more generally in other similar conditions.

In this case, authors subjectively chose both transect positioning and within-transect plots. In this view, authors are strongly encouraged to avoid terms deriving from sampling theory such as “representative”. It has long been acknowledged that a sample n is considered “representative” when it has a known probability P_n to be selected within a population of potential samples $[n_1, n_2, \dots, n_n]$.

This used sampling procedure may lead to a-priori discard noisy situations, which are the most common in nature, due to a mixture of differently reflecting media, in this case different *Sphagnum* communities.

I agree with the authors that the model calibration should be done on known proportions of different vegetation types in order to accurately estimate their reflectance spectra. However I would appreciate that authors may further test their achieved model by random sampling procedures.

Only in this manner their proposed methodology (or better an application of a previously well-established methodology) may be useful for a number of new researches on the matter.

Interactive comment on Biogeosciences Discuss., 5, 1293, 2008.

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