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Interactive comment on "Technical note: A simple approach for efficient collection of field reference data for calibrating remote sensing mapping of northern wetlands" *by* Magnus Gålfalk et al.

Anonymous Referee #1

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This Tech Note presents a method for using a cheap robust consumer camera to capture RGB image data over (potentially) methane producing vegetation in wetlands, to aid validation of satellite land cover maps from 10 m pixel size. The aim is to provide a quick 'good enough' method to work over 10 m grids that can be collected and processed simply and rapidly.

The aim of the note is clear, it is well-written and provides a sound, simple approach, clearly explained. I think this could potentially provide a useful paper, as it is certainly true that collecting useful LC data at the plot to landscape scale is quite difficult, particularly in these kinds of areas where the vegetation is spatially variable, low stature

and with many areas of standing water, topography etc. However, in its current form the note is deficient in a couple of important aspects which I outline below. If these can be addressed in revision I think it could be published.

The main weakness is there is no quantitative assessment of the results, even at a very basic level. I realise the emphasis is on the collection and processing to the point where the user can choose their own method for generating LC info for comparison with other land cover products/maps i.e. the methods that might be applied for LC analysis are essentially down to the user after the processing of the RGB data. However, without some assessment of whether the resulting data are fit for purpose, we have no idea whether it's worth pursuing or not. At the very least I'd expect more than the 1 or 2 images presented, compared with some 'known' alternative assessment, just to give a first pass assessment of the approach. Another, related aspect, that's missing is some clear sensitivity assessment. How robust are results to different users collecting data, different light conditions, times of day and so on? You might even expect more than one camera to be looked at. Sure, GoPros are common and the methods *ought* to work for other cameras, but we don't know. Mobile phone camera data might potentially be even more useful. Also what about details of processing - various indices are mentioned but how sensitive are the results to these choices?

The manual part needs to have clear step by step guidance to the geom correction aspect as that is a key part of the method and may vary from camera to camera.

How long does it take to do the geometric calibration (which is one-off or only needs to be done occasionally) and the processing of an image to something useful? And how automatic is that latter process? The text implies some manual input is required. Clearly, again the onus is on the user and how they choose to do this, but the authors ought to give us an idea of timings for their workflow. If the aim is to do validation of LC data at anything other than trivial scales (few pixels), this is likely to require processing of 100s of images. If this requires significant manual input then the method may be limited. I note their generous offer to process data for users - but how prepared are

they to process a large amount of data from many users with many different systems? Is this feasible and for how long?

A more general issue that probably needs to be addressed at least in passing is cheap UAVs. The processing methods could be very similar (in the rgb sense), the geom is dealt with already by SfM software and you can cover much larger areas. Clearly this method is far more robust to wind, but is that the main / only benefit given the larger area UAVs can cover? My feeling is there is a place for this method *if* it is more clearly demonstrated, but it may be superseded very quickly (which is less likely if it can be applied to mobile phone data for example).

If the authors can clearly address these issues then I think a revised version would be suitable for publication.

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