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Earth System Dynamics Discussions

Interactive comment on "Continuous and consistent land use/cover change estimates using socio-ecological data" *by* Michael Marshall et al.

Anonymous Referee #3

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This study provided an approach, which used socio-ecological geospatial predictors to estimate LULCC annually over 30 years at 5km resolution in Kenya. Compared with LULCC estimation through remote sensing approach, the study highlighted the advantage of this method, including increased accuracy of LULCC reconstruction and data availability for historical and future LULCC reconstruction and projection. The study was well organized and the main finding of this study is meaningful for land surface model field. However, the paper could be further improved if the following aspects are considered. 1. The study spent many pages to describe details of datasets used in the model before introducing how model was developed and evaluated. This structure of the paper made it difficult to be followed. I would suggest giving a brief description of model framework and workflow chart before the section 2.2. This will give reader an overall idea about the model framework and developing approach before exploring

details of the model. 2. On lines 15-17: two classifications of land cover types were provided in this study. However, results based on these two levels of classification were not clearly discussed in the following paragraph of the manuscript. First, the purpose of introducing two levels of land cover types has not bee provided. Is it related to different study needs in land surface field? Second, the results indicate large difference in model performance for two levels of classification. But the reasons of these results have not been well explained.

3. The predicting functions developed are only used in Kenya in this study. Whether these predicting functions can be used in other region needs to be discussed in the manuscript.

4. In the abstract, the author motioned that the aim of this study was to develop a LULCC model, which could reconstruct LULCC pre-1981 and project LULCC in future 50-100 years. However, there is no discussion about LULCC pre-1981 and projected 50-100 years in the manuscripts. I understand the main information of this study is to introduce new approach. However, a brief discussion about uncertainty in applying this approach to reconstruct historical data and project future is necessary to highlight the implication of this study

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