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Biogeosciences Discussions

Interactive comment on "Cajander larch (*Larix cajanderi*) biomass distribution, fire regime and post-fire recovery in northeastern Siberia" *by* L. T. Berner et al.

Anonymous Referee #1

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General Comments: The manuscript presents a considerable contribution to the state of knowledge on boreal forest dynamics in Northern Eurasia at the high northern latitudes. The manuscript is well-written and presented in a clearly-structured and concise manner. The findings are important and the methodology is scientifically sound. However, the manuscript appears to cover too many components and tends to differ in rigor when addressing different issues. Specifically, while the methods for mapping and analysis for above ground biomass estimates appear solid, the components focusing on fire mapping, validation, and analysis are comparatively less strong. The major weakness is a non-standard approach to establishing mapping accuracy for the MODIS burned area product (please refer to numerous papers on the subject and the MODIS

burned area validation protocol). The analysis of fire regimes is also somewhat oversimplistic. However, these weaknesses do not diminish the net worth of the manuscript but rather highlight the focus areas for additional studies. Specific Comments: page 7560 – line1: reference is needed for MCD45A1 product. The reference appears in the text later on page 7562 but not after the first mentioning of the product. page 7560 – lines 13-15: the information in the sentence beginning with "Global climate models predict a 3–7 _C increase ..." has already been presented in the introductory text. This is an unnecessary duplication and should be removed. page 7564 lines 5-10: On the previous page in the manuscript the authors state that WorldView imaged came calibrated to the TOA reflectance. However, in this paragraph they refer to thresholding based on the Digital Numbers (DNs). This causes confusion in the interpretation of the methodology since DNs do not reflect physical properties of the observed object but rather refer to the engineering and data-driven stretch. Please refer to thresholds in physical measure of reflectance. page 7566 – lines 10: The authors provided the definition for the Fire Return Interval but did not specify how it was assessed. page 7566 – lines 12-13: It is not clear what the authors imply by "fire" in this definition. Is it "all fire events which constitute a single contiguous burned area?" or is it a single fire event? It has been previously shown that large fire scars in Siberia can be composed of multiple fire events merging at some point during the fire season to form a single mega-scar (e.g. see Loboda and Csiszar, 2007). The definition of "fire density" therefore is ambiguous. page 5766 – line 15: It is unclear why the authors ascertain that the statistics are calculated for the period starting with 1969. If Landsat imagery was available since 1972, what dataset was used to determine that prior scars came from 1969 and not earlier? Please clarify. page 7578 lines 1-5: this information has already been presented and is unnecessarily repeated here.

Page 7594: What is the color combination for the Landsat imagery?

Interactive comment on Biogeosciences Discuss., 9, 7555, 2012.