

## ***Interactive comment on “The role of spatial scale and background climate in the latitudinal temperature response to deforestation” by Y. Li et al.***

### **Anonymous Referee #2**

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Journal: Earth System Dynamics (ESD) Title: The role of spatial scale and background climate in the latitudinal temperature response to deforestation Author(s): Y. Li, N. De Noblet-Ducoudré, E. L. Davin, Z. Ning, S. Motesharrei, S.C. Li, and E. Kalnay MS No.: esd-2015-60 MS Type: Research article

In this manuscript the authors simulate hypothetical deforestation scenarios with an intermediate complexity Earth system model. They then investigate the resulting temperature changes and the mechanisms that cause these, all with a special focus on the latitudinal dependencies. The authors use fixed SST and CO<sub>2</sub> contents from 1960–1990.

Overall I find the paper worthwhile and a nice contribution to climate sciences. I would

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have preferred a more thorough discussion of the state of the art of this topic, and also a little bit more contrasting of the results to other studies. On the second point: The authors explain convincingly, why they can't do this, though. I like the idea of disentangling the various contributions to the overall temperature change effect. The manuscript doesn't provide anything groundbreaking new, but nicely quantifies the basic assumptions given. Also, the model, its shortcomings and how they might affect the outcome are discussed well. I particularly like the analysis done for Fig 5. Overall, I don't see anything that needs major revising.

There are a few minor gripes, mainly with the form, though. On p1904,11 a map with potential vegetation is mentioned, but I cannot find it. Also I think a native speaker should double-check the manuscript. The use of articles and prepositions is somewhat lacking, examples I found at first sight are p1904,113 -> "the deforestation", p1905,121 -> "of more than", p1906,18 -> "In the tropical", p1907,119 "to the global", p1909,12 -> "by an increase", p1910,19 -> "which the relative", p1910,124 -> "is a tendency" p1914,17 -> "The albedo effect", p1969,11 -> "of the climate", p1916,12 -> "on the surface", p1916,14 -> "of the complex" or -> "of a complex". Furthermore, I suppose on p1908,116 you meant "change show linearity", and I'd drop the p1910,114 "On the contrary" -> "whereas", or such, since there is no contradiction. Disclaimer: I am not a native English speaker.

ACCEPT WITH MINOR REVISIONS

Interactive comment on Earth Syst. Dynam. Discuss., 6, 1897, 2015.