

## ***Interactive comment on “Deforestation decreases resistance of simulated Easter Island climate to drought” by Alexander Lemburg et al.***

### **Anonymous Referee #3**

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The authors use a limited-area model to simulate the weather under a series of scenarios of deforestation in Easter Island. Soil temperature/moisture increase/decrease in the deforested scenario, while the wind speed doubles without the drag effect of trees. The authors also test the sensitivity during drought spells under the same scenarios where changes in surface roughness and sensible heat flux are key variables explaining the mechanisms of change.

The paper's focus is interesting. Yet I have two major concerns and one minor comment:

1. The results are not new since it is well known that climate effects of deforestation are strongly related to changes in roughness length/wind speed and changes in heat fluxes. It is hard to believe the drought scenario. I'd rather have calculated a drought

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index (e.g. PSDI) without changing soil moisture because of the feedbacks with deforestation. A drought index accounts for variations on precipitation, potential evaporation, etc. Soil moisture by itself, though relevant, in my opinion has to be used in conjunction with other important scalars.

2. My other concern is related to the very limited time span of the modeling. The authors link the results with past climates and set hypothesis about what could have happened over Easter Island in the past. It's been shown that deforestation has a strong seasonal effect on the climate, particularly during the dry season. Therefore, as the authors attempt, extrapolating the modeling results to past climates is not possible under current modeling set up.

3. The manuscript is very hard to follow.

I do not have much more to add that differs from the comments of the other reviewers.

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