

Interactive comment on “Biases in the albedo sensitivity to deforestation in CMIP5 models and their impacts on the associated historical Radiative Forcing” by Quentin Lejeune et al.

Anonymous Referee #1

Received and published: 18 April 2020

Overall opinion: Lejeune et al. have devised an interesting and innovative method for extracting the albedo of forested and crop/grass land cover types from model simulations and the combination with the space-for-time approach to estimating the effect of land cover change is quite promising. I feel the science is of good quality and the results are useful.

Some questions: I agree with the already posted comment that the RF estimates are based on a parameterization that may contribute its own biases and that the strength of the paper is in the novel albedo methods. I leave it up to the authors whether to address this in the discussion or to change the RF parameterization. Differences in soil type

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or texture can affect the albedo of vegetated surfaces and that this would add noise, if not bias to the 'space for time' method. Some brief discussion of the quality, accuracy or uncertainty in the datasets employed (e.g. ESA-CCI) would be helpful. I am curious as to why CRUNCEP V4 was chosen for offline simulations when newer versions and reportedly improved products such as CRUJRA and GSWP3 are available.

Specific minor details:

Line 23: Doesn't constraining something usually reduce its range? Line 26-28: Awkward sentence Multiple locations: "associated to" should be "associated with" Multiple locations: "inferior to" should be "less than" and "superior to" should be "greater than" Line 300: Change "the local albedo difference between albedo and crops/grasses" to "the local albedo difference between forest and crops/grasses".

Interactive comment on Earth Syst. Dynam. Discuss., <https://doi.org/10.5194/esd-2019-94>, 2020.

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