

Supplementary information

List of articles analyzed in the systematic review (n=127)

Articles fulfilling the eligibility criteria (n=28)

1. Alkama R and Cescatti A 2016 Biophysical climate impacts of recent changes in global forest cover. *Science*, 351(6273), 600-604
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3. Bathiany S, Claussen M, Brovkin V, Raddatz T and Gayler V 2010 Combined biogeophysical and biogeochemical effects of large-scale forest cover changes in the MPI earth system model. *Biogeosciences*, 7(5), 1383–1399. <http://doi.org/10.5194/bg-7-1383-2010>
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5. Costa M H and Foley J A 2000 Combined effects of deforestation and doubled atmospheric CO₂ concentrations on the climate of Amazonia. *Journal of Climate*, 13(1), 18-34.
6. Dass P, Müller C, Brovkin V and Cramer W 2013 Can bioenergy cropping compensate high carbon emissions from large-scale deforestation of high latitudes? *Earth System Dynamics*, 4(2), 409–424. <http://doi.org/10.5194/esd-4-409-2013>
7. Davin E L and de Noblet-Ducoudré N 2010 Climatic impact of global-scale Deforestation: Radiative versus non radiative processes. *Journal of Climate*, 23(1), 97–112. <http://doi.org/10.1175/2009JCLI3102.1>
8. Devaraju N, Bala G and Nemani R 2015 Modelling the influence of land-use changes on biophysical and biochemical interactions at regional and global scales. *Plant, Cell & Environment*, n/a–n/a. <http://doi.org/10.1111/pce.12488>
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10. Gates L D and Ließ A 2001 Impacts of deforestation and afforestation in the Mediterranean region as simulated by the MPI atmospheric GCM. *Global and Planetary Change*, 30(3-4), 309–328.
11. Gibbard S, Caldeira K, Bala G, Phillips T J and Wickett M 2005 Climate effects of global land cover change. *Geophysical Research Letters*, 32(23), 1–4. <http://doi.org/10.1029/2005GL024550>
12. Hasler N, Werth D and Avissar R 2009 Effects of tropical deforestation on global hydroclimate: A multimodel ensemble analysis. *Journal of Climate*, 22(5), 1124-1141.
13. Kleidon A and Heimann M 2000 Assessing the role of deep rooted vegetation in the climate system with model simulations: mechanism, comparison to observations and implications for Amazonian deforestation. *Climate Dynamics*, 16(2-3), 183-199.

14. Lee X *et al* 2011 Observed increase in local cooling effect of deforestation at higher latitudes. *Nature*, 479(7373), 384–387. <http://doi.org/10.1038/nature10588>
15. Lejeune Q, Davin E L, Guilloid B P and Seneviratne S I 2014 Influence of Amazonian deforestation on the future evolution of regional surface fluxes, circulation, surface temperature and precipitation. *Climate Dynamics*. <http://doi.org/10.1007/s00382-014-2203-8>
16. Medvigy D, Walko R L and Avissar R 2012 Simulated Links between Deforestation and Extreme Cold Events in South America. *Journal of Climate*, 25(11), 3851–3866. <http://doi.org/10.1175/JCLI-D-11-00259.1>
17. Nobre P, Malagutti M, Urbano D F, de Almeida R A and Giarolla E 2009 Amazon deforestation and climate change in a coupled model simulation. *Journal of Climate*, 22(21), 5686-5697.
18. Schneck R and Mosbrugger V 2011 Simulated climate effects of Southeast Asian deforestation: Regional processes and teleconnection mechanisms. *Journal of Geophysical Research: Atmospheres*, 116(D11)
19. Semazzi F H and Song Y 2001 A GCM study of climate change induced by deforestation in Africa. *Climate Research*, 17(2), 169-182.
20. Snyder P K, Delire C and Foley J A 2004 Evaluating the influence of different vegetation biomes on the global climate. *Climate Dynamics*, 23(3-4), 279–302. <http://doi.org/10.1007/s00382-004-0430-0>
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22. Voldoire A and Royer J F 2004 Tropical deforestation and climate variability. *Climate Dynamics*, 22(8), 857-874.
23. Voldoire A and Royer J F 2005 Climate sensitivity to tropical land surface changes with coupled versus prescribed SSTs. *Climate dynamics*, 24(7-8), 843-862.
24. Werth D and Avissar R 2002 The local and global effects of Amazon deforestation. *Journal of Geophysical Research: Atmospheres*, 107(D20).
25. Werth D and Avissar R 2005 The local and global effects of Amazon deforestation. *Journal of Geophysical Research*, 107(D20).
26. West P C, Narisma G T, Barford C C, Kucharik C J, and Foley J A 2011. An alternative approach for quantifying climate regulation by ecosystems. *Frontiers in Ecology and the Environment*, 9(2), 126–133. <http://doi.org/10.1890/090015>
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Articles not fulfilling the eligibility criteria (n=99)

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3. Anderson-Teixeira K J, Snyder P K, Twine T E, Cuadra S V, Costa M H and DeLucia E H 2012 Climate-regulation services of natural and agricultural ecoregions of the Americas. *Nature Climate Change*, 2(3), 177–181. <http://doi.org/10.1038/nclimate1346>
4. Avissar, R., & Werth, D. (2005). Global hydroclimatological teleconnections resulting from tropical deforestation. *Journal of Hydrometeorology*, 6(2), 134-145.
5. Badger, A. M., & Dirmeyer, P. A. (2016). Remote tropical and sub-tropical responses to Amazon deforestation. *Climate Dynamics*, 46(9-10), 3057-3066.
6. Bala G, Caldeira K, Wickett M, Phillips T J, Lobell D B, Delire C and Mirin A 2007 Combined climate and carbon-cycle effects of large-scale deforestation. *Proceedings of the National Academy of Sciences of the United States of America*, 104(16), 6550–6555. <http://doi.org/10.1073/pnas.0608998104>
7. Baldocchi, D., & Ma, S. (2013). How will land use affect air temperature in the surface boundary layer? Lessons learned from a comparative study on the energy balance of an oak savanna and annual grassland in California, USA. *Tellus B*, 65.
8. Ban-Weiss G A, Bala G, Cao L, Pongratz J and Caldeira K 2011. Climate forcing and response to idealized changes in surface latent and sensible heat. *Environmental Research Letters*, 6(3), 034032. <http://doi.org/10.1088/1748-9326/6/3/034032>
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15. Boisier J P, De Noblet-Ducoudré N, Pitman A J, Cruz F T, Delire C, Van Den Hurk B J J M and Voldoire A 2012 Attributing the impacts of land-cover changes in temperate regions on surface temperature and heat fluxes to specific causes: Results from the first LUCID set of simulations. *Journal of Geophysical Research: Atmospheres*, 117(12), 1–16. <http://doi.org/10.1029/2011JD017106>
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22. Brovkin V, Boysen L, Raddatz T, Gayler V, Loew A and Claussen M 2013b Evaluation of vegetation cover and land-surface albedo in MPI-ESM CMIP5 simulations. *Journal of Advances in Modeling Earth Systems*, 5(1), 48–57. <http://doi.org/10.1029/2012MS000169>
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