Earth System Dynamics Discussions

Earth Syst. Dynam. Discuss., author comment AC4
https://doi.org/10.5194/esd-2021-85-AC4, 2021

Reply on RC2

Xueyuan Gao et al.

Author comment on "Exploration of a novel geoengineering solution: lighting up tropical forests at night" by Xueyuan Gao et al., Earth Syst. Dynam. Discuss., https://doi.org/10.5194/esd-2021-85-AC4, 2021

Thank you for your comments! We apologize for not giving enough discussion to the potentially negative impacts of this strategy, especially on local wildlife and ecosystem biodiversity, and we realized that a simple sentence "local ecosystem changes could have negative impacts on local wildlife" in the manuscript must have left people an impression of the authors' disinterest or ignorance of the importance of biodiversity. Please believe us we never attempt to ignore the importance of global biodiversity. We do believe that biodiversity conservation is critical to the sustainable development of both natural and human systems.

When proposing the idea of lighting up tropical forests at night as a potential climate mitigation strategy, we don't mean to 100 percent eliminate night in tropical forests. We may consider extending the photoperiod to an appropriate level to increase carbon sequestration meanwhile protecting local biodiversity from disastrous impacts. Nevertheless, a longer photoperiod and shortened nighttime could also have unexpectedly large impacts on local wildlife and biodiversity. We would like to make a supplement to this part and add more discussion about the potential threats to local wildlife and ecosystem biodiversity in the revisions.

Thank you very much for your constructive comments and suggestions again!