Response to the reviewers are in blue, extracts from the manuscript are *italicized* with changes to the manuscript indicated in *red*.

Comments from Steven de Hertog

The study analyses long-term forestation effects on temperature, with a focus on non-local influences and the role of slower components of the Earth system such as the ocean. I find this work provides novel insights and is well structured, clearly highlighting the most important findings. Overall, my comments are minor and mainly aimed at clarifying the implications of the specific model used (UcVic) and how it differs from or compares with models used in previous literature. I believe that the use of UcVic model simulations performed here and the performed analysis with a focus on the role of the ocean in the long term is relevant and provides new insights that can inform future research. Hopefully these comments can further help improve the manuscript.

Thank you very much for taking the time to review and providing thoughtful comments.

A first comment concerns the final land-cover map after regrowth shown in Figure 1. The model includes only two forest types, shrubs and two grass types as the penultimate vegetation category. As I understand it, the land model has dynamic vegetation, meaning that land cover is established during the simulation according to the local climate. Although the global patterns appear reasonable, the distribution seems somewhat biased toward needleleaf forest over Europe and appears unable to represent the Siberian boreal forests. Could the authors add some discussion on whether the vegetation module has been evaluated, how it compares to present day land cover, and what the potential implications of these differences might be?

Yes, the vegetation module was evaluated and compared to present-day conditions in the Meissner et al. (2003) study. There has been some changes in the model code since then, but they have resulted in only minor differences in PFT distribution, so the findings from that study remain valid. Overall, the global PFT distribution is in good agreement with observations, but regional differences do exist (Meissner et al., 2003). Some of the areas with lower agreement with observations include, as you pointed out, Siberia and Northern North America (biased towards shrubs) and Europe (biased towards needleleaf trees) (Meissner et al., 2003). In addition, the North American Prairies (biased towards needleleaf trees), the African steppe (biased towards broadleaf trees), and Central America (biased towards broadleaf trees) are also in lower agreement with observations (Meissner et al., 2003).

These biases would affect the PFT composition in reforested grid cells. Consequently, we would expect these biases to have mixed effects on albedo and corresponding surface temperature changes. At high latitudes, particularly in snow-masking regions, an increase in needle leaf forest (such as in Siberia) would likely result in a decrease in albedo, strengthening the non-local warming effect. On the other hand, in low to mid latitudes, a reduction in needleleaf or broadleaf forests would likely lead to an increase in albedo, weakening the non-local warming effect. Although the amplifying role of the ocean likely remains valid in these conditions, the magnitude of the amplification would be impacted, with a strengthening at high latitudes and a weakening at low to mid latitudes.

As a result, we have added the following paragraph in the Discussion, following the discussion of the latent heat fluxes:

Thirdly, the simulated distribution of PFTs by the dynamic vegetation model contains regional biases. According to Meissner et al. (2003), the global PFT distribution is in good agreement with observations, but there are regions with lower agreement with observations, such as Siberia and Northern North America (biased towards shrubs), Europe and the North American Prairies (biased towards needleleaf trees), and the African steppe and Central America (biased towards broadleaf trees); however, these biases may have changed slightly following vegetation retuning in version 2.10 of the UVic ESCM. Such biases would affect the PFT composition in reforested grid cells. Consequently, we would expect these biases to have mixed effects on albedo and corresponding T_{surf_land} changes. At high latitudes, particularly in snow-masking regions, an increase in needleleaf forest would likely result in a decrease in albedo, strengthening the non-local warming effect. On the other hand, in low to mid latitudes, a reduction in needleleaf or broadleaf forests would likely lead to an increase in albedo, weakening the non-local warming effect. Although the amplifying role of the ocean likely remains valid in these conditions, the magnitude of the amplification would be impacted, with a strengthening at high latitudes and a weakening at low to mid latitudes.

Secondly, I would like to commend the authors for the clear discussion of the potential role of cloud feedbacks, which are not represented in the model. However, several studies (a.o Portmann et al., 2022) also highlight the importance of atmospheric dynamics, which, as I understand from the methods section, are not included in the current modelling setup. I believe it would be useful to further discuss potential implications of this as has been done for the cloud feedbacks, given that atmospheric dynamics have been shown to be particularly important in the context of non-local effects.

We fully agree that atmospheric dynamics can play an important role in shaping non-local climate responses to forestation. While the current modelling framework does not include a fully dynamic atmosphere, we note that the analysis presented in Appendix B, which was presented in the context of cloud feedbacks, also incorporates any impact of atmospheric dynamics on surface energy fluxes since the models used for the comparison have a dynamic atmosphere. This would include the impact of any changes in atmospheric circulation on cloud cover. We have adjusted the wording in the manuscript to clarify this.

Moreover, based on the findings of Portmann et al. (2022), the impact of forestation on large-scale meridional atmospheric heat and moisture transport is small. They further report that forestation causes only a very modest weakening of the Northern Hemispheric Hadley cell and a corresponding strengthening of the Southern Hemispheric Hadley cell during boreal winter, in agreement with the weak changes in total atmospheric heat and moisture transport. On the other hand, that study shows that the dominant contributor to changes in meridional heat transport is the ocean, primarily through a weakening of the Atlantic Meridional Overturning Circulation (AMOC) which is also observed in our simulations (Fig A10). We therefore do not expect such changes in atmospheric circulation and meridional heat transport to have a significant impact on the results of this study. We have added a section in the manuscript to discuss this, prior to discussing cloud feedbacks.

As a result of the above changes and the changes recommended by the second reviewer, the Discussion section on atmospheric dynamics and cloud feedbacks now reads as follows:

Despite consistency with prior studies, there are limitations in performing idealized forestation experiments with the UVic ESCM. Firstly, as mentioned previously, the UVic ESCM does not incorporate atmospheric dynamics nor cloud feedbacks. Changes in atmospheric circulation can influence meridional heat transport, which in turn could affect the magnitude and geographic distribution of non-local effects (Alexeev and Jackson, 2013; Henderson et al., 2021; Portmann et al., 2022). However, Portman et al. (2022) suggest that global forestation causes only weak changes in atmospheric heat and moisture transport, driven by a modest weakening of the North Hemisphere Hadley Cell in boreal winter and a corresponding intensification of the Southern Hemisphere Hadley Cell in boreal summer. These changes are small in comparison to the reduction in oceanic heat transport associated with a weakening of the AMOC, which is captured in this study (Portmann et al., 2022). It is therefore likely that changes in atmospheric heat and moisture transport resulting from changes in atmospheric circulation would have only a minor impact on T_{surf_land} *and on the results of this study.*

Regarding cloud feedbacks, changes in cloud cover affect not only the planetary albedo, but also the hydrological cycle, including the strength and geographic distribution of surface evaporative fluxes, and the amount and distribution of water vapor in the atmosphere (Bonan et al., 2025; Laguë et al., 2023; de Vrese et al., 2024). Forestation influences cloud cover locally through changes in surface energy balance and non-locally via remote changes in temperature, humidity, and atmospheric circulation (Cerasoli et al., 2021; De Hertog et al., 2023; Duveiller et al., 2021; Hua et al., 2023; Luo et al., 2024; Portmann et al., 2022). Overall, forestation tends to increase low-level cloud cover locally, most strongly in the Tropics, partially counteracting the decrease in albedo (Cerasoli et al., 2021; Duveiller et al., 2021; Hua et al., 2023; Luo et al., 2024). The non-local effects of forestation on clouds are more uncertain, but most models point towards a decrease in non-local cloudiness in mid to high latitudes (De Hertog et al., 2023; Hua et al., 2023)..

*To facilitate comparison with models with atmospheric dynamics and cloud feedbacks we include a comparison of the surface energy fluxes between the UVic ESCM and CMIP6 models based on a deforestation experiment within the Land Use Model Intercomparison Project (LUMIP) in **Appendix B**. Consideration of cloud feedbacks in our simulations, including the effect of changes in atmospheric circulation on cloud cover, would likely result in a decrease in net shortwave radiation in the Tropics and an increase in net shortwave radiation at high latitudes (**Fig. B2d**). It would also change the strength of the water vapor feedback and hence the incoming longwave radiation, weakening it in the Tropics and strengthening it at high latitudes (**Fig. B2e**). These changes in surface energy fluxes would likely result in a weakening of the non-local warming effect in the Tropics and a strengthening at high latitudes. Most models incorporating cloud feedbacks show a global* T_{surf_land} *warming response to forestation driven by a strong non-local warming effect at high latitudes, a similar result to this study (Boysen et al., 2020; De Hertog et al., 2023; Liu et al., 2023). However, many models find a non-local cooling effect* *in the Tropics driven by atmospheric feedbacks, yet this effect is generally weaker and less widespread than the warming at high latitudes (De Hertog et al., 2023; Liu et al., 2023). Although it is likely that the amplifying role of the ocean found in this study remains valid in the presence of cloud feedbacks, a tropical non-local cooling would reduce the magnitude of this amplification.*

In the discussion, the authors note that some effects of vegetation greening are found here that are typically not present in previous research (line 380-381). One reason given is that greening is slow to establish. Could the authors clarify what is meant by this? Only a few previous studies employ dynamic vegetation; most rely on prescribed land-cover maps for forestation scenarios. Is that what is meant here, i.e. that differences arise (partially) due to the model setup? The underlying point is the same, but being more explicit would help the reader follow the argument.

Non-local warming effects driven by ocean dynamics take multiple centuries to emerge, which, combined with the slow rate of vegetation growth at high latitudes in the UVic ESCM, leads to the long timescale required for the development of the temperature–vegetation feedback at high latitudes. This explains why other studies that either do not use a dynamic vegetation model, or use one but run simulations over shorter timescales, may not have detected an increase in non-local warming associated with the temperature–vegetation feedback.

We have added a sentence in the Discussion section of the temperature-vegetation feedback to clarify this:

Although the biophysical warming effect of greening at high latitudes has been established in other studies (Li et al., 2023), this increase in the non-local warming effect of forestation due to Earth greening may not have been seen in other studies of the biogeophysical effects of forestation due to their shorter timeframes. The multiple century timescale needed for the full development of the temperature-vegetation feedback at high latitudes is due to the combined influence of ocean dynamics, which cause non-local effects to emerge over multiple centuries, and the slow growth of vegetation at those latitudes in the dynamic vegetation model.

Lastly, the authors acknowledge that their simulations differ significantly from results presented by Boysen et al. (2020) in the deforest-glob simulations, particularly in terms of latent heat flux. I follow the argument that, because of a high bias in sensible heat flux, the total non-radiative flux is comparable, implying that the results may still be reasonably comparable. However, I wonder whether the authors have any insight into why this bias occurs. Including some explanation of what happens within the land model, or at least a hypothesis regarding the possible cause, would help readers understand and contextualize the discrepancy relative to other models.

The UVic ESCM uses the MOSES (Met Office Surface Exchange Scheme) land surface model (Meissner et al., 2003). In MOSES, canopy transpiration is tightly coupled to photosynthesis through canopy conductance, which is primarily driven by carbon demand (Cox et al., 1999). Grasses are more productive than forests and therefore sustain higher leaf photosynthetic rates and leaf-level stomatal conductance (Cox et al., 1999). Moreover, the scaling of leaf stomatal conductance by Leaf Area Index saturates quickly at moderate leaf area, and the deeper roots of forests primarily influence soil moisture availability and do not impact transpiration in non-water limiting conditions (Cox et al., 1999). As a result, forests exhibit lower canopy conductance and reduced transpiration rates than grasses, leading to lower latent heat fluxes and compensating increases in sensible heat fluxes following reforestation.

We have made the following changes to the model description:

On land, vegetation dynamics are based on the Dynamic Global Vegetation Model TRIFFID (Top-down Representation of Interactive Foliage and Flora Including Dynamics) which allows for five plant functional types (PFTs; broadleaf and needleleaf trees, C3 and C4 grasses, and shrubs) to compete for space based on Lotka–Volterra equations (Cox, 2001). Vegetation changes are driven by net carbon fluxes derived from a coupled photosynthesis – stomatal conductance model (Cox et al., 1999; Meissner et al., 2003). TRIFFID is coupled to a modified version of the Met Office Surface Exchange Scheme (MOSES) land surface model, where canopy transpiration is a function of canopy conductance, which is itself regulated by the carbon demand of the vegetation (Meissner et al., 2003; Mengis et al., 2020). This framework results in a tight coupling between photosynthesis and transpiration through the canopy conductance formulation.

We have also made changes to the Discussion section of the latent heat fluxes, which now reads as follows:

*Secondly, as mentioned earlier, in the UVic ESCM, forestation leads to a decrease in latent heat flux on land, which is contrary to most models (**Fig. B2a**). This decrease in latent heat flux arises from the structure of the land surface model used in the UVic ESCM, where canopy transpiration is tightly coupled to photosynthesis via a* *canopy conductance formulation that is driven by carbon demand. Grasses are more productive than forests and therefore sustain higher leaf photosynthetic rates and leaf-level stomatal conductance (Cox et al., 1999). Moreover, the scaling of leaf stomatal conductance by Leaf Area Index saturates quickly at moderate leaf area, and the deeper roots of forests primarily influence soil moisture availability and do not impact transpiration in non-water limiting conditions (Cox et al., 1999). As a result, forests exhibit lower canopy conductance and reduced transpiration rates than grasses. However, since the increase in sensible heat flux more than offsets the decrease in latent heat flux, the increase in the total non-radiative flux (sensible heat flux + latent heat flux) is consistent with other models (Boysen et al., 2020; De Hertog et al., 2023). Differences in the latent heat flux over reforested areas should not impact the long-term non-local warming trend found in this study as both latent and sensible heat fluxes contribute to the warming of* T_{air}*. On the other hand, since evapotranspiration leads to an increase in the water vapor content of the atmosphere, the strength of the water vapor feedback may be impacted.*

Comments from Victor Brovkin

The manuscript by Banville et al. is a well-written paper that addresses the issue of dynamic ocean feedback in simulations of the biogeophysical impacts of afforestation. In their manuscript, they discuss in detail the mechanisms of amplification of forest change by the ocean and compare the local and non-local effects of partial reforestation. Based on a series of numerical experiments using the UVIC model, they concluded that the dynamic ocean amplifies warming from reforestation compared to prescribed SSTs.

Thank you very much for taking the time to review and providing thoughtful comments.

Major comments

The results of their analysis are strongly influenced by the well-known limitation of the UVIC model due to non-interactive cloud cover. The authors acknowledge this limitation, but the discussion of the impact of fixed cloud cover could be more detailed. As we know from many studies (e.g. the recent study by de Vrese et al., 2024), interactive clouds play an important role in the feedbacks between land surface and climate. Clouds influence planetary albedo, and assuming that clouds do not change would alter the impact of changes in the hydrological cycle on climate.

We agree that interactive clouds play an important role in the feedbacks between land surface and climate. We noted that forestation tends to increase low-level cloud coverage locally, most strongly in the Tropics, partially counteracting the decrease in albedo (Cerasoli et al., 2021; Duveiller et al., 2021; Hua et al., 2023; Luo et al., 2024). However, the non-local effects on clouds are more uncertain, but most models point towards a decrease in non-local cloudiness in mid to high latitudes (De Hertog et al., 2023; Hua et al., 2023).

To facilitate comparison with models with a fully dynamic atmosphere, we included a comparison of the surface energy fluxes between the UVic ESCM and CMIP6 models based on a deforestation experiment within the Land Use Model Intercomparison Project (LUMIP) in **Appendix B**. Based on this comparison, we concluded that consideration of cloud feedbacks in our simulations would likely result in a decrease in net shortwave radiation in the Tropics and an increase in net shortwave radiation at high latitudes (**Fig. B2d**). Moreover, we indicated that including cloud feedbacks would also change the strength of the water vapor feedback and hence the incoming longwave radiation, weakening it in the Tropics and strengthening it at high latitudes (**Fig. B2e**).

Finally, we noted that most models incorporating cloud dynamics show a global warming response to forestation driven by a strong non-local warming effect at high latitudes, a similar result to our study (Boysen et al., 2020; De Hertog et al., 2023; Liu et al., 2023). However, we commented that many models find a non-local cooling effect in the Tropics driven by atmospheric feedbacks, yet this effect is generally weaker and less widespread than the warming at high latitudes (De Hertog et al., 2023; Liu et al., 2023). We concluded that, although it is likely that the amplifying role of the ocean found in this study remains valid in the presence of cloud feedbacks, a tropical non-local cooling would reduce the magnitude of this amplification.

In light of your comment, we have added further explanation on the importance and impact of cloud feedbacks:

Regarding cloud feedbacks, changes in cloud cover affect not only the planetary albedo, but also the hydrological cycle, including the strength and geographic distribution of surface evaporative fluxes, and the amount and distribution of water vapor in the atmosphere (Bonan et al., 2025; Laguë et al., 2023; de Vrese et al., 2024). Forestation influences cloud cover locally through changes in surface energy balance and non-locally via remote changes in temperature, humidity, and atmospheric circulation (Cerasoli et al., 2021; De Hertog et al., 2023; Duveiller et al., 2021; Hua et al., 2023; Luo et al., 2024; Portmann et al., 2022).

The impact on surface temperature of changes in the hydrological cycle resulting from cloud cover changes was addressed through our discussion of how cloud feedbacks influence the water vapor feedback.

For clarity, we have also added the following sentence following our description of the impact of cloud feedbacks on surface energy fluxes:

"These changes in surface energy fluxes would likely result in a weakening of the non-local warming effect in the Tropics and a strengthening at high latitudes".

Please note that this Discussion section was also amended to add considerations of atmospheric dynamics, as per the comments from the first reviewer. See response to the first reviewer for the full manuscript changes to this section.

In contrast to many other studies on changes in forest cover, reforestation in the UVIC experiments leads to a reduction in latent heat flux on land. This is likely due to parameterization of evapotranspiration. How does transpiration depend on the parameters of the plant functional types in the land surface model (e.g. LAI, root depth)? Could the authors provide more details about their land surface model?

This is a very similar comment to the first reviewer, for which we responded as follows:

The UVic ESCM uses the MOSES (Met Office Surface Exchange Scheme) land surface model (Meissner et al., 2003). In MOSES, canopy transpiration is tightly coupled to photosynthesis through canopy conductance, which is primarily driven by carbon demand (Cox et al., 1999). Grasses are more productive than forests and therefore sustain higher leaf photosynthetic rates and leaf-level stomatal conductance (Cox et al., 1999). Moreover, the scaling of leaf stomatal conductance by Leaf Area Index saturates quickly at moderate leaf area, and the deeper roots of forests primarily influence soil moisture availability and do not impact transpiration in non-water limiting conditions (Cox et al., 1999). As a result, forests exhibit lower canopy conductance and reduced transpiration rates than grasses, leading to lower latent heat fluxes and compensating increases in sensible heat fluxes following reforestation.

As a result, changes were made in the model description and in the Discussion section of the latent heat fluxes. See response to the first reviewer for the full manuscript changes.

Minor comments

Is the dynamic vegetation model (TRIFFID) active in the reforestation simulations? If so, how does it enable reforestation in the areas that were not previously deforested? I guess, this is a limitation on how much forest can regrow, especially in the boreal zone.

In our experiments, first, we performed a global deforestation simulation, deforesting all grid cells. Then, we performed reforestation simulations where we allowed forest to regrow on a subset of the grid cells (50% or 25%, based on Table 1). TRIFFID is indeed active in the reforestation simulations. Non-forest vegetation (i.e. grasses) can continue to grow in areas that remain deforested (non-reforested grid cells) based on climate conditions. Non-reforested grid cells do not experience any tree growth at any point during the reforestation simulations. For clarity, we have added this sentence in the description of the model experiments:

"With the dynamic vegetation model, reforested grid cells can experience changes in all PFTs based on competition dynamics and climate conditions, whereas grid cells that remain deforested are limited to changes in C3 and C4 grasses."

As a result of the non-local warming effect, we see an increase in temperature both in areas that remained deforested and in areas subject to reforestation, particularly at high latitudes, which leads to further growth in vegetation in those areas due to the temperature-vegetation feedback. In the areas that remained deforested, the additional growth, measured through an increase in Leaf Area Index, is for grasses, not forests, whereas it is for all PFTs in areas subject to reforestation. We have therefore made the following wording changes in the Results section discussing the temperature-vegetation feedback:

*Finally, the non-local increase in temperature ~~at high latitudes~~ triggers a temperature-vegetation feedback, more pronounced at high latitudes due to the stronger temperature increase. An increase in temperature increases the total Leaf Area Index of all PFTs combined in grid cells that have been reforested and of C3 and C4 grasses only in grid cells that remained deforested (**Fig. A9**).*

In addition to simulating reforestation, the authors also carry out simulations of deforestation. This leads to global cooling (Fig. A1). After 500 years of free forest dynamics, the forest cover returns to the initial state, indicating that there is no multi-stability of tree cover. These experiments are similar to the deforestation and free dynamics experiments with MPI-ESM (Brovkin et al., 2009), with which it is worth comparing.

Thank you for this. We have revised this section of the Discussion based on your comments:

In the UVic ESCM, the forest regrows globally when starting from a fully deforested state, as observed in Brovkin et al. (2009). It therefore does not reproduce alternative stable states in tropical forests found in other studies (Hirota *et al., 2011). It takes approximately 500 years for the Reforested State to be reached due to the slow regrowth of needleleaf trees at high latitudes, a timescale consistent with other ESMs that include vegetation dynamics (Brovkin et al., 2009).*

Fig.1 Why is the boreal forest in northern Eurasia not growing back, is this due to the active TRIFFID model?

This area is biased towards shrubs when the Reforested State is reached. See the first comment for the first reviewer explaining the differences in the distribution of PFT between the vegetation module that we used and present-day conditions.

Fig. A4: The local effects are negligible. Why is this the case?

Local effects on surface air temperature are negligible due to the UVic ESCM's definition of surface air temperature and its single-layer energy-moisture balance model of the atmosphere. Surface air temperature in the UVic ESCM is defined as the sea level air temperature determined from the vertically-integrated atmospheric energy balance equation (described in Section 2.3). Due to the single-layer energy-moisture balance model of the atmosphere, heat is efficiently transported between neighboring grid cells via advection and diffusion resulting in no significant differences in surface air temperature between grid cells that remain deforested and adjacent grid cells that are reforested. As a result, changes in surface air temperature fall primarily under non-local effects. This is different from other Earth System Models with multiple atmospheric layers and atmospheric dynamics, where non-negligible local effects have been observed. This is why we have focused on surface temperature in the main text to compare local and non-local effects, and only included surface air temperature as a comparison in the Appendix.

To clarify this process, we have added the following to the description of Figure A4:

Figure A4: *Total, non-local, and local biogeophysical effects of reforestation of 50% of grid cells on Surface Air Temperature (T_{air}) when the Reforested State is reached in the Dynamic Ocean Simulation. Due to the single-layer energy-moisture balance model of the atmosphere, heat is efficiently transported between neighboring grid cells via advection and diffusion, resulting in no significant differences in T_{air} between grid cells that remain deforested and adjacent grid cells that are reforested. As a result, the local effects are marginal and the non-local effects are approximately equal to the total effects.*

Fig. A9: What determines the time scale of reforestation? Why are the changes in forest cover in the tropics so small?

The time scale of reforestation is determined by the TRIFFID model and the changes in climate resulting from land cover changes, such as the non-local effects driven by ocean dynamics that are slow to fully emerge. For the TRIFFID model, the parameterized growth limit per time step for each PFT influences the timescale of reforestation.

The temperature–vegetation feedback operates through a warming-induced increase in total leaf area index, which reduces surface albedo and enhances net incoming shortwave radiation, thereby amplifying surface warming. This feedback is particularly strong at high latitudes, where the non-local warming driven by ocean dynamics is most pronounced. As a result, both the temperature–vegetation feedback and the associated changes in forest cover are stronger at high latitudes than in the Tropics.

In the Results section describing the temperature-vegetation feedback, we have made the following change:

Finally, the non-local increase in temperature ~~at high latitudes~~ triggers a temperature-vegetation feedback, more pronounced at high latitudes due to the stronger temperature increase.

In the Discussion section of the temperature-vegetation feedback, we have also added the following sentence:

Although the biophysical warming effect of greening at high latitudes has been established in other studies (Li et al., 2023), this increase in the non-local warming effect of forestation due to Earth greening may not have been seen in other studies of the biogeophysical effects of forestation due to their shorter timeframes. The multiple century timescale needed for the full development of the temperature-vegetation feedback at high latitudes is due to the combined influence of ocean dynamics, which cause non-local effects to emerge over multiple centuries, and the slow growth of vegetation at those latitudes in the dynamic vegetation model.

Fig. A11/A12: Are the global temperature changes scalable with the change in forest cover (25 vs. 50 % change)? In other words, is the effect of reforestation on climate a linear function of forest cover?

In those figures, we are focusing on the non-local effects. We discuss at the end of the Discussion section that the committed non-local warming driven by ocean dynamics appears to be approximately proportional to the area of reforestation based on our 25% and 50% reforestation simulations, but there may be a reforestation area threshold under which the committed non-local warming may be negligible. We would need more data points to make the claim that the non-local effects are directly scalable with changes in forest cover, which is beyond the scope of this manuscript.

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