Global and Regional Hydroclimatic Responses to Alternative Global Reforestation Pathways

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This supplementary material provides additional figures supporting the analysis of hydroclimatic responses to alternative global reforestation pathways, including seasonal and large scale circulation diagnostics not shown in the main text.

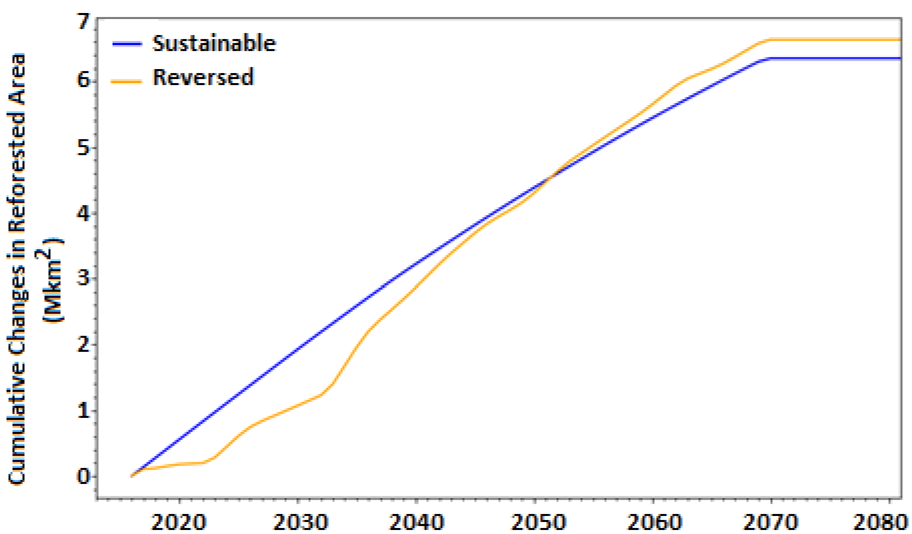

Figure S1. Tree cover changes for both reversed historical and sustainable reforestation scenarios

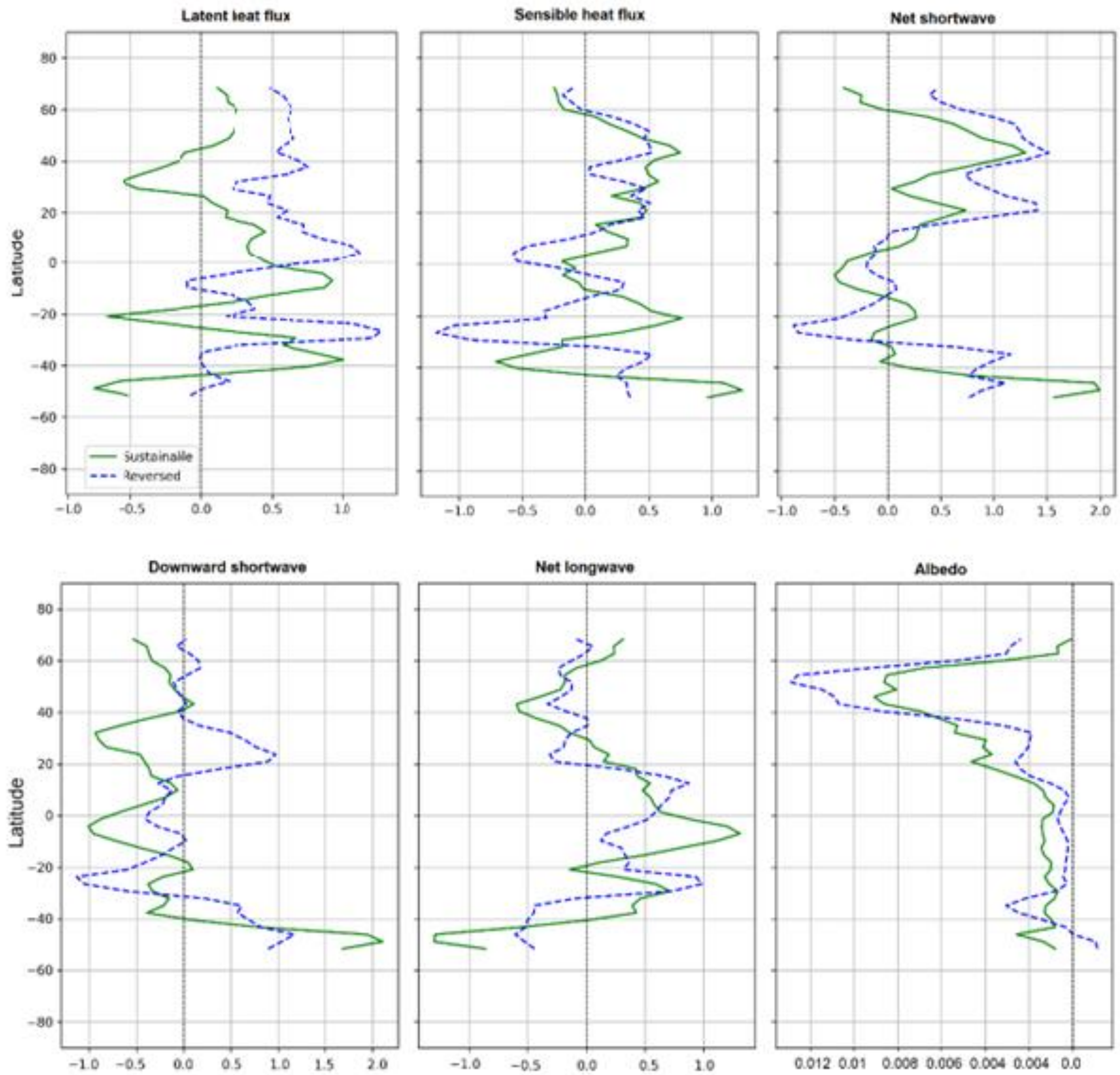

Figure S2. The zonal changes (10-degree mean) in the energy balance parameters (W/m2) and unitless albedo in the reforested area for two land cover scenarios, including latent and sensible heat fluxes, incoming short-wave and net short-wave and long-wave radiation. The changes are calculated by the difference between the 2100:2090-2110 mean for each scenario and the baseline simulation. Colors are blue for the Reversed and green for the Sustainable scenarios. Note that each plot has a different scale

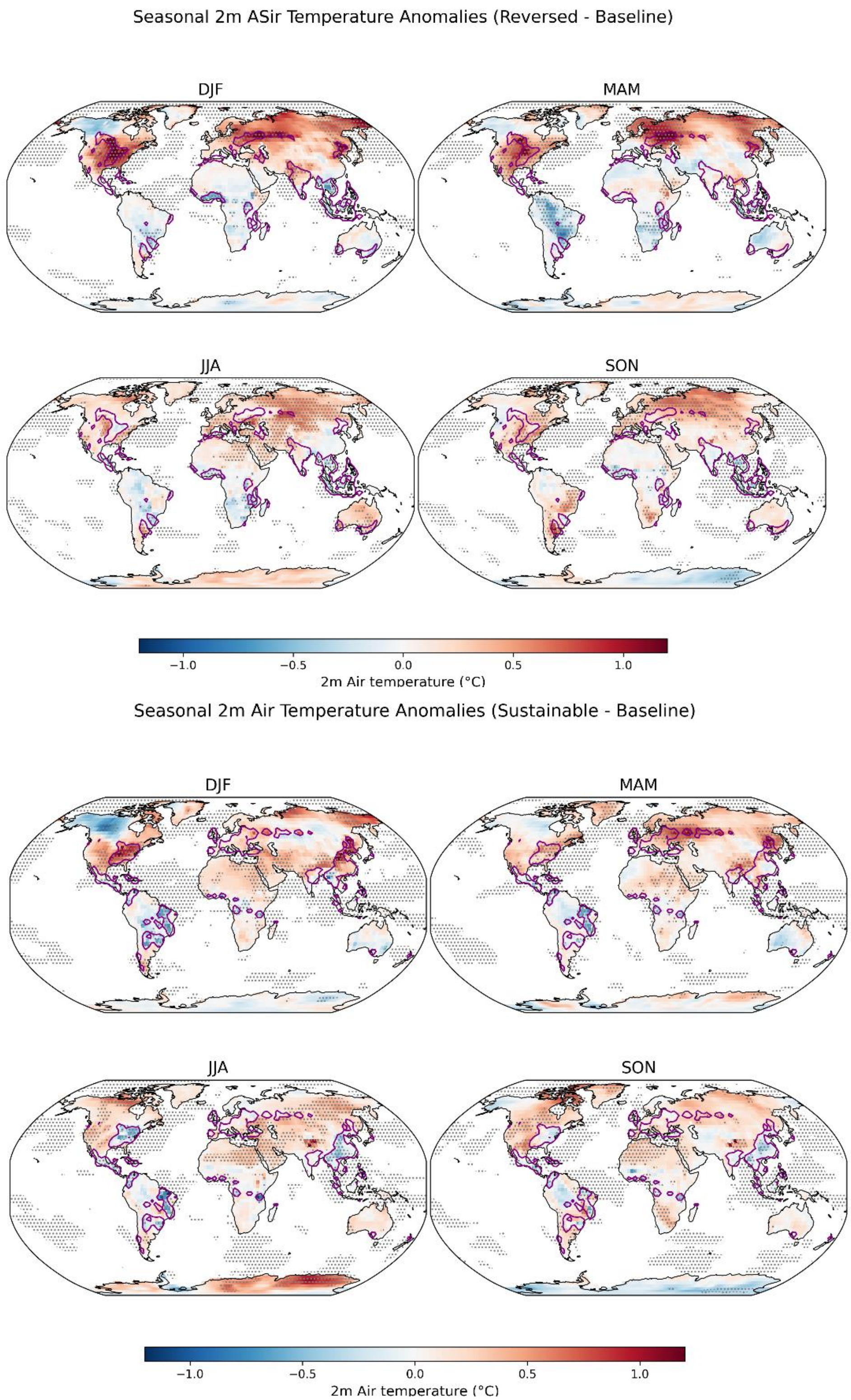

Figure S3. Seasonal changes in 2m air temperature for the reversed scenario (top) and the sustainable scenario(bottom). Black dots indicate statistical significance of differences assessed using a Wilcoxon test at $p < 0.05$; Land only zonal 10-degree means of the differences are shown on the right. The purple lines indicate the maximum forest borders for each scenario, where the change in tree cover exceeds 10%.

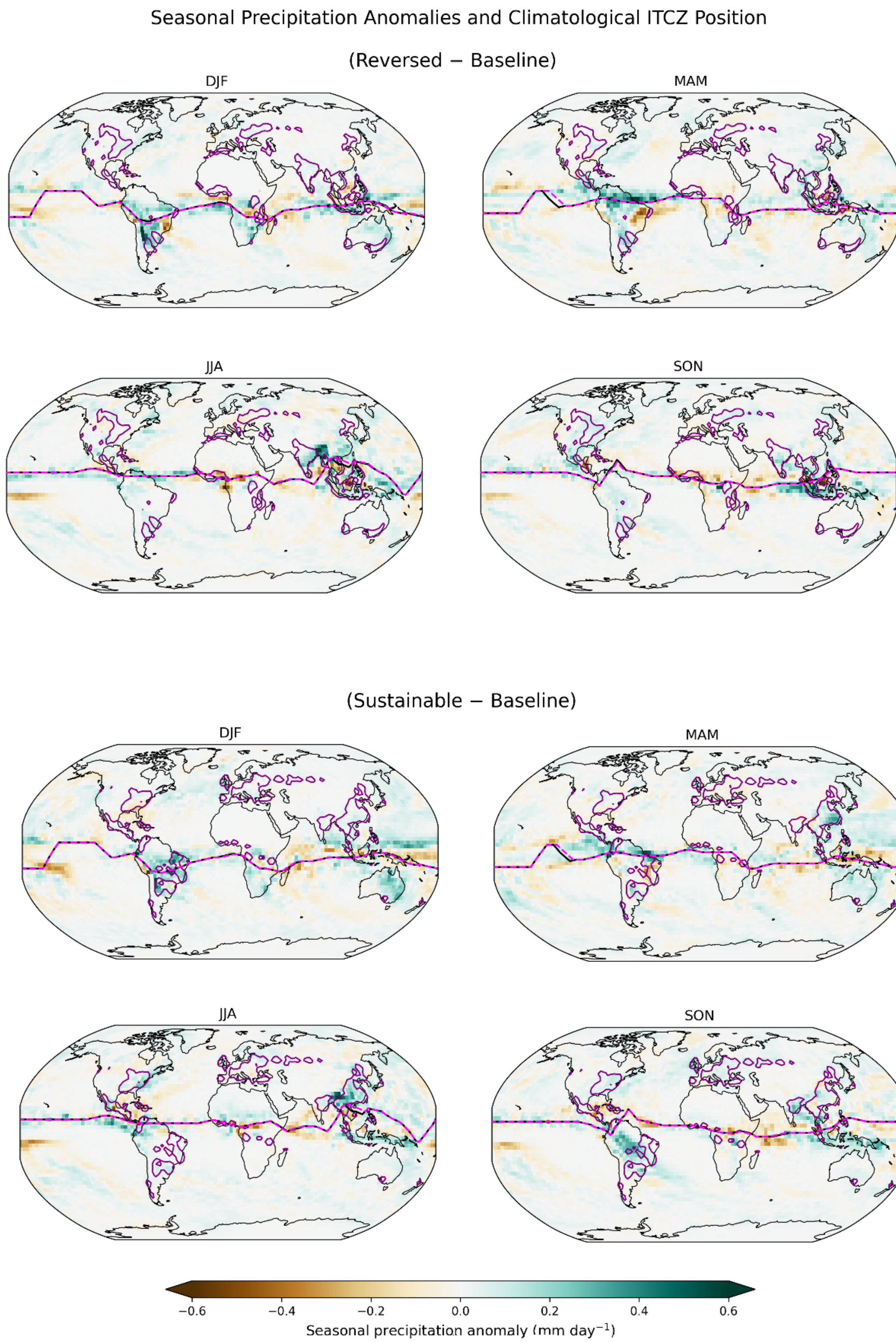

Figure S4. Seasonal changes in Runoff for the reversed scenario (top) and the sustainable scenario(bottom). Black dots indicate statistical significance of differences assessed using a Wilcoxon test at $p < 0.05$; Land only zonal 10-degree means of the differences are shown on the right. The purple lines indicate the maximum forest borders for each scenario, where the change in tree cover exceeds 10%.

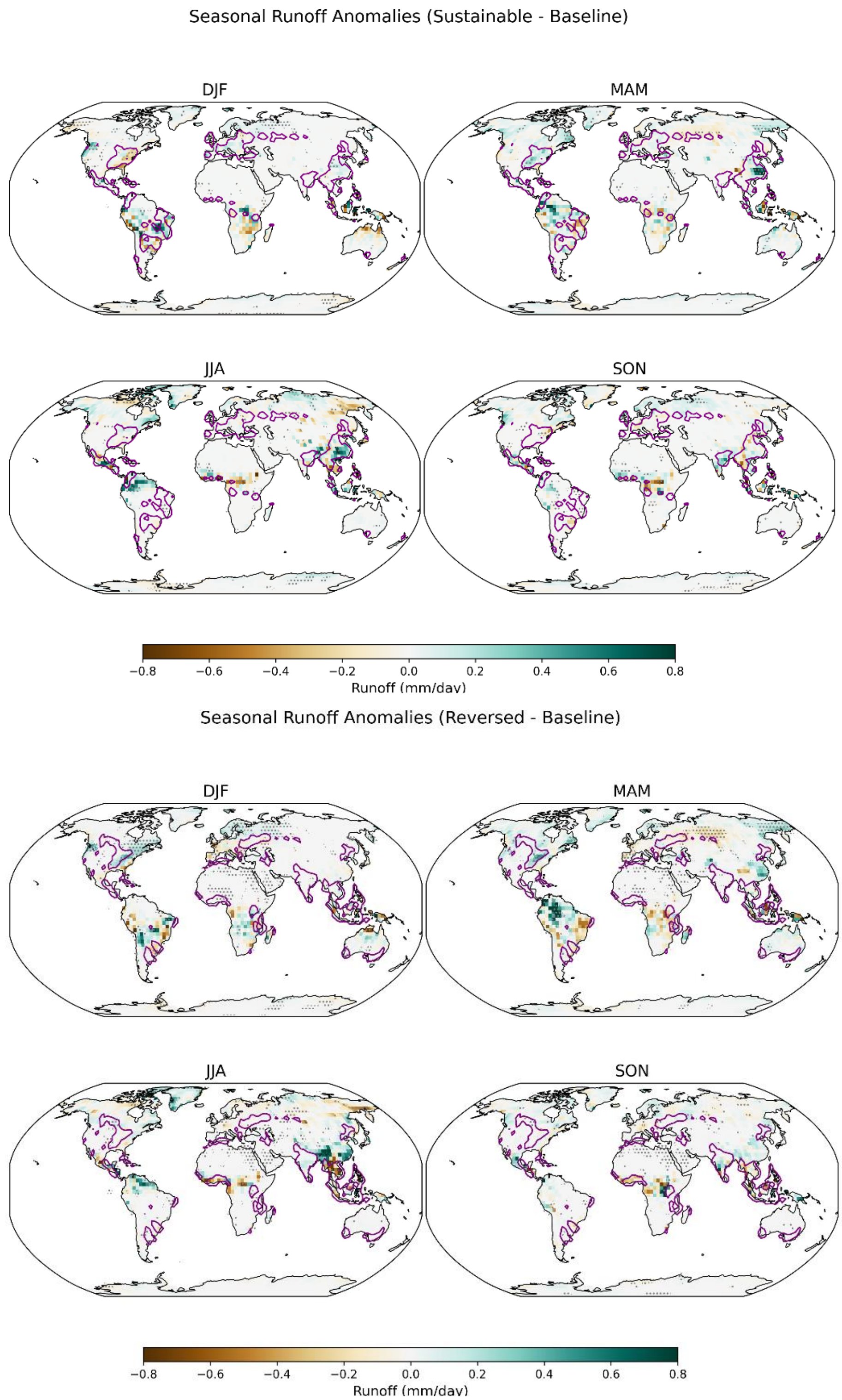

Figure S5. Seasonal changes in Runoff for the reversed scenario (top) and the sustainable scenario(bottom). Black dots indicate statistical significance of differences assessed using a Wilcoxon test at $p < 0.05$; Land only zonal 10-degree means of the differences are shown on the right. The purple lines indicate the maximum forest borders for each scenario, where the change in tree cover exceeds 10%.

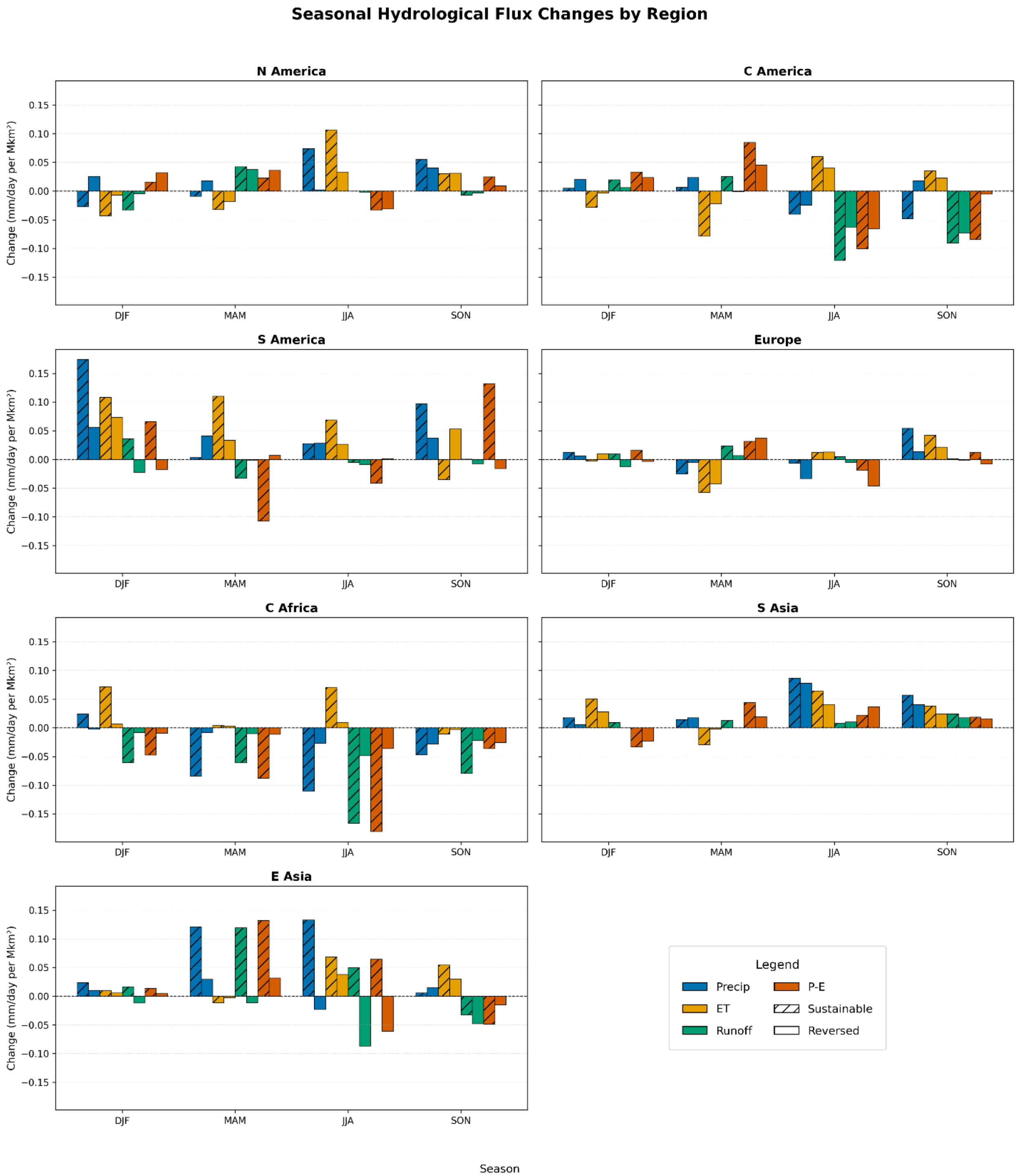

Figure S5. Seasonal hydrologic component changes per km² reforested area in 2100 for two land cover scenarios (Sustainable and Reversed) compared to the baseline scenario (with fixed land cover).

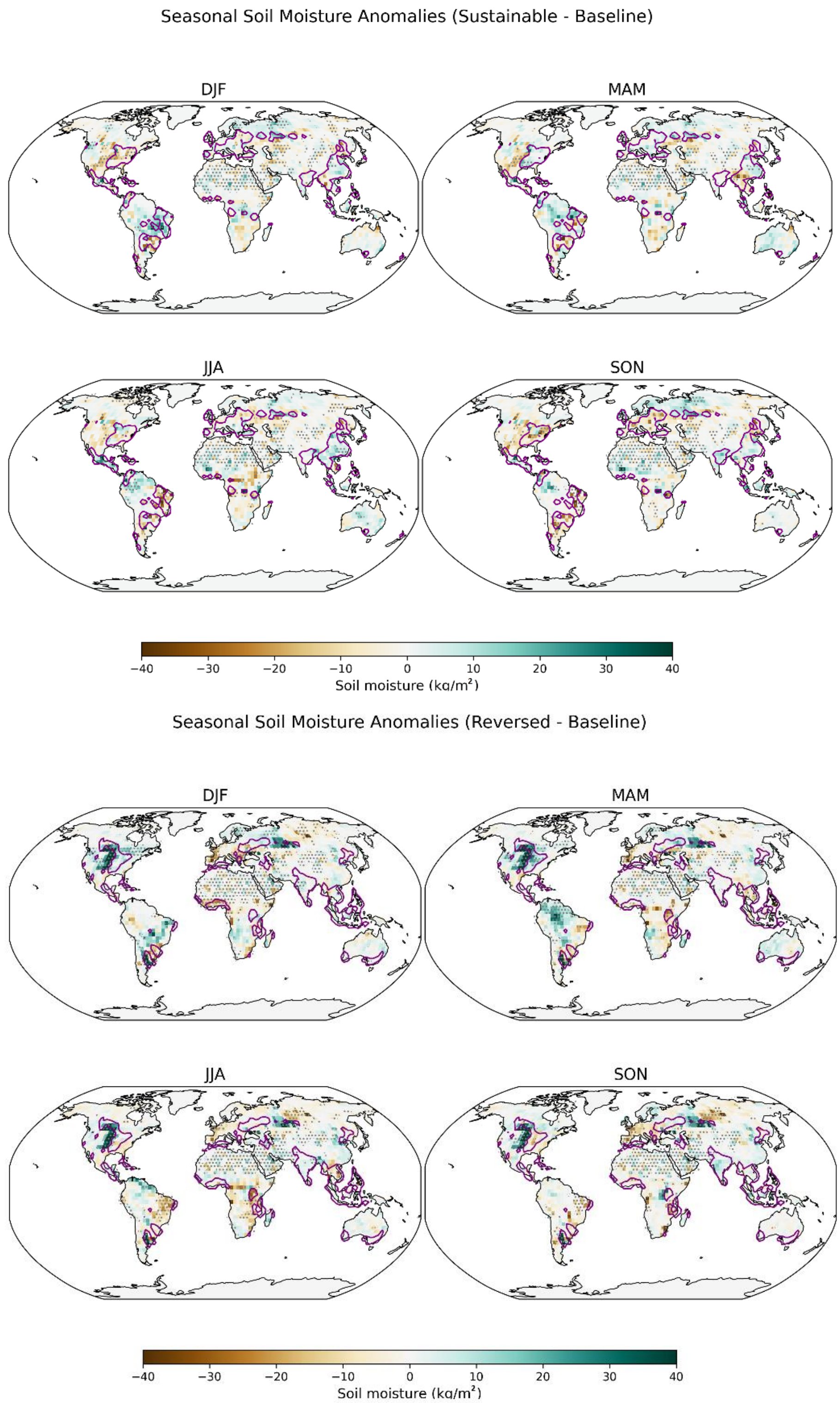

Figure S6. Seasonal changes in Soil moisture (kg/m^2) for the reversed scenario (top) and the sustainable scenario(bottom). Black dots indicate statistical significance of differences assessed using a Wilcoxon test at $p < 0.05$; Land only zonal 10-degree means of the differences are shown on the right. The purple lines indicate the maximum forest borders for each scenario, where the change in tree cover exceeds 10%.