Supplement of

Impacts of land use and land cover change and reforestation on summer rainfall in the Yangtze River basin

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Impacts of land use/cover change and reforestation on summer rainfall for the Yangtze River Basin

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Supplement

Table S1. The percentages of land use classes under four scenarios after resampling.

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Cropland (%)</th>
<th>Forest (%)</th>
<th>Grassland (%)</th>
<th>Water and wetland (%)</th>
<th>Urban (%)</th>
<th>Unused land (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990 scenario</td>
<td>28.67</td>
<td>44.37</td>
<td>24.63</td>
<td>0.58</td>
<td>0.06</td>
<td>1.69</td>
</tr>
<tr>
<td>2010 scenario</td>
<td>28.12</td>
<td>45.02</td>
<td>24.60</td>
<td>0.69</td>
<td>0.45</td>
<td>1.12</td>
</tr>
<tr>
<td>20% scenario</td>
<td>22.97</td>
<td>49.85</td>
<td>24.83</td>
<td>0.69</td>
<td>0.54</td>
<td>1.12</td>
</tr>
<tr>
<td>50% scenario</td>
<td>14.76</td>
<td>57.53</td>
<td>25.32</td>
<td>0.69</td>
<td>0.58</td>
<td>1.12</td>
</tr>
</tbody>
</table>
Figure S1. The biases of (a) latent heat flux (%), (b) sensible heat flux (%) and (c) PBL height (%) between the 2010 scenario and observed data. The stippling regions show statistically significance of changes identified by t-test at a 5% significance level.
Figure S2. The changes in (a) average summer rainfall (mm), (b) 90th percentile summer rainfall (mm/day) and (c) 99th percentile summer rainfall (mm/day) between the 2010 scenario and 1990 scenario in ALL-YRB and PDG-YRB area.
Figure S3. The changes in maximum 1-, 3-, 5-day rainfall between the 2010 scenario and 1990 scenario in ALL-YRB and PDG-YRB area.
Figure S4. The probability distribution functions of summer rainfall in 2010 and 1990 scenarios in (a) ALL-YRB and (b) PDG-YRB; The changes in multiyear-averaged summer monthly rainfall between the 2010 scenario and 1990 scenario in (c) ALL-YRB and (d) PDG-YRB.
Figure S5. The changes in (a-b) 2m air temperature (°C) and (c-d) surface skin temperature (°C) between the 20% scenario and 2010 scenario, and between the 50% scenario and 2010 scenario. The stippling regions show statistically significance of changes identified by t-test at a 5% significance level.
Figure S6. The changes in (a-b) upward moisture flux at the surface (kg/m²) between the 20% scenario and 2010 scenario, and between the 50% scenario and 2010 scenario. The stippling regions show statistically significance of changes identified by t-test at a 5% significance level.
Figure S7. The changes in (a-b) 10m wind (m s\(^{-1}\)) between the 20\% scenario and 2010 scenario, and between the 50\% scenario and 2010 scenario. The stippling regions show statistically significance of changes identified by t-test at a 5\% significance level.
Figure S8. The bias of (a) average summer rainfall (mm), (b) 90th percentile summer rainfall (mm/day) and (c) 99th percentile summer rainfall (mm/day) between the 2010 scenario and observed data, and (d) the qq-plot of observed rainfall versus simulated rainfall. The stippling regions show statistically significance of bias identified by t-test at a 5% significance level.
Figure S9. (a) The biases of average summer temperature (°C) between the 2010 scenario and observed data, the stippling regions show statistically significance of bias identified by t-test at a 5% significance level.; (b) The qq-plot of observed temperature versus simulated temperature; (c) The basin-averaged summer temperature processes of observation, ERA5 and 2010 scenario.
Figure S10. The changes in (a-b) short wave radiation (W/m$^2$) between the 20% scenario and 2010 scenario, and between the 50% scenario and 2010 scenario. The stippling regions show statistically significance of changes identified by t-test at a 5% significance level.