

Impacts of Different Land Use Scenarios on Future Global and Regional Climate Extremes

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Table S1. Definition and description of extreme temperature and extreme precipitation indices.

Index	Description
TXx	Annual maximum value of daily maximum temperature (°C)
TXn	Annual minimum value of daily maximum temperature (°C)
TNx	Annual maximum value of daily minimum temperature (°C)
TNn	Annual minimum value of daily minimum temperature (°C)
TX10p	Percentage of days when daily maximum temperature <10th percentile (%)
TX90p	Percentage of days when daily maximum temperature >90th percentile (%)
TN10p	Percentage of days when daily minimum temperature <10th percentile (%)
TN90p	Percentage of days when daily minimum temperature >90th percentile (%)
WSDI	Annual count of days with at least 6 consecutive days when TX > 90th percentile (days)
CSDI	Annual count of days with at least 6 consecutive days when TN < 10th percentile (days)
Rx1day	Annual maximum 1-day precipitation (mm)
Rx5day	Annual maximum consecutive 5-day precipitation (mm)
RR1	Annual count of days when precipitation ≥ 1 mm (days)
R10mm	Annual count of days when precipitation ≥ 10 mm (days)
R20mm	Annual count of days when precipitation ≥ 20 mm (days)
CDD	maximum number of consecutive days with precipitation < 1mm (days)
CWD	maximum number of consecutive days with precipitation ≥ 1mm (days)
PRCPTOT	Annual total precipitation on wet (precipitation ≥1mm) days (mm)
R95pTOT	Contribution to total precipitation from very wet (precipitation > 95th percentile) days (%)
R99pTOT	Contribution to total precipitation from very wet (precipitation > 99th percentile) days (%)

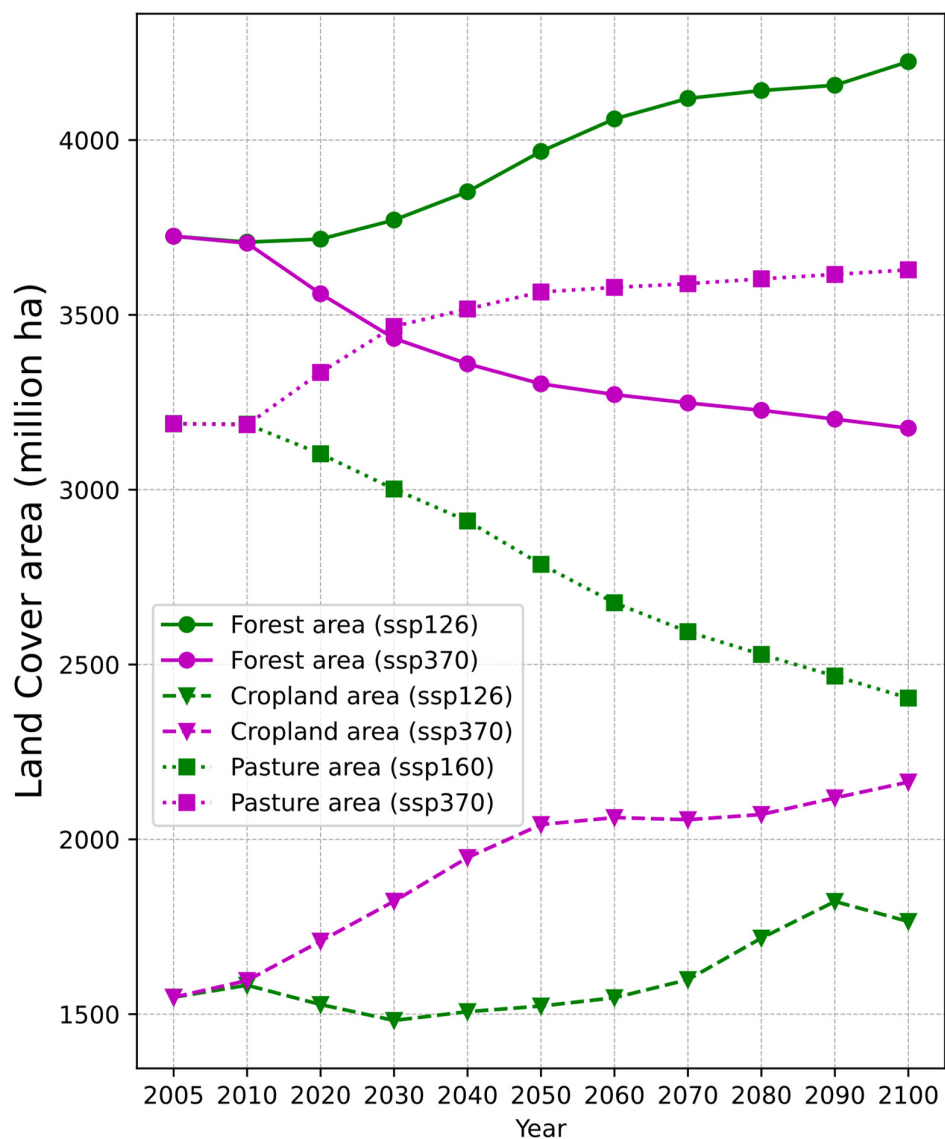


Figure S1. Time series of projected global average forest cover, cropland and pasture area under SSP1-2.6 and SSP3-7.0 land use scenarios (2015-2100), data are from the SSP Database (<https://tntcat.iiasa.ac.at/SspDb>, last access: 23 May 2022) performed by IAMs (Integrated Assessment Models).

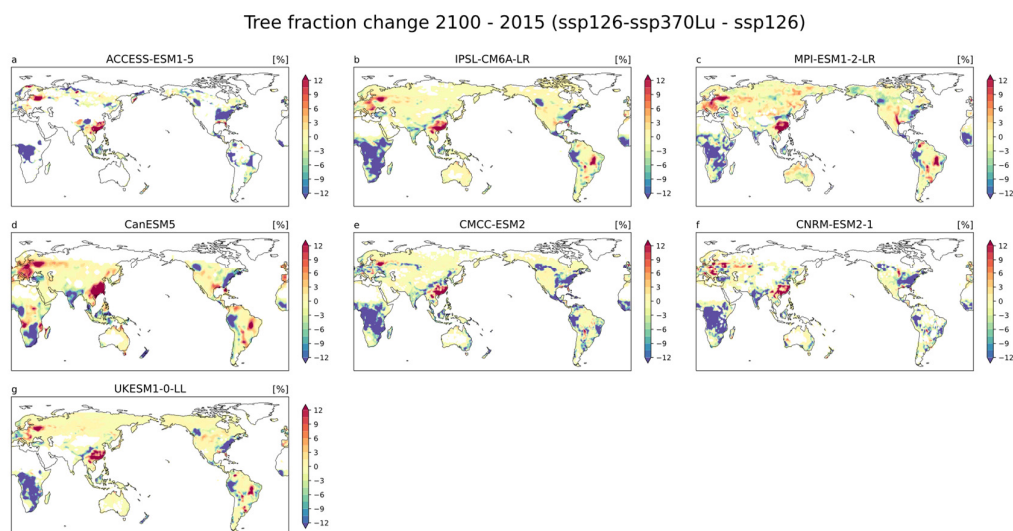


Figure S2. The differences of tree fraction cover changes (2100 - 2015) between ssp126-ssp370Lu and ssp126 simulation, performed by each CMIP6 model. (a) ACCESS-ESM1-5, (b) IPSL-CM6A-LR, (c) MPI-ESM1-2-LR, (d) CanESM5, (e) CMCC-ESM2, (f) CNRM-ESM2-1, (g) UKESM1-0-LL.

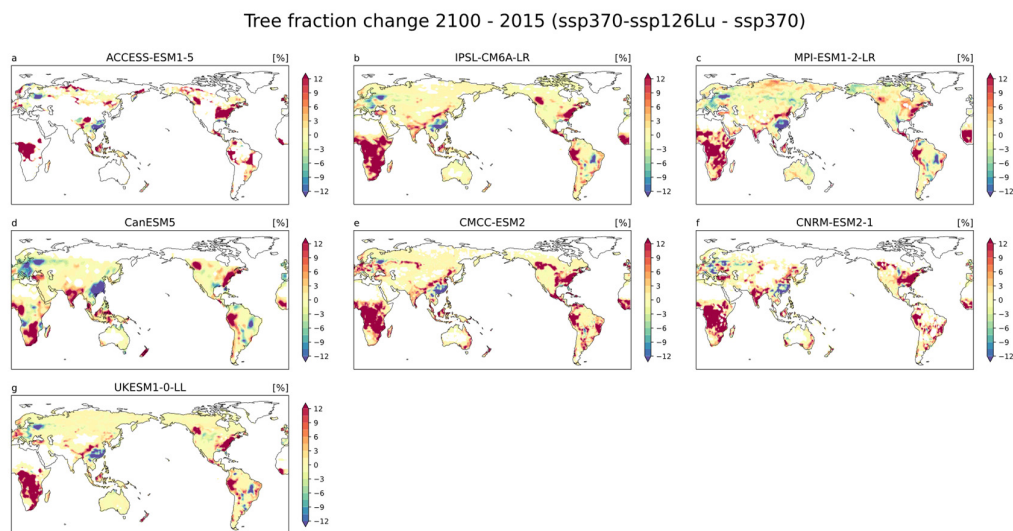


Figure S3. Similar to Supplementary Figure S2 but for differences between ssp370-ssp126Lu and ssp370 simulation. (a) ACCESS-ESM1-5, (b) IPSL-CM6A-LR, (c) MPI-ESM1-2-LR, (d) CanESM5, (e) CMCC-ESM2, (f) CNRM-ESM2-1, (g) UKESM1-0-LL.

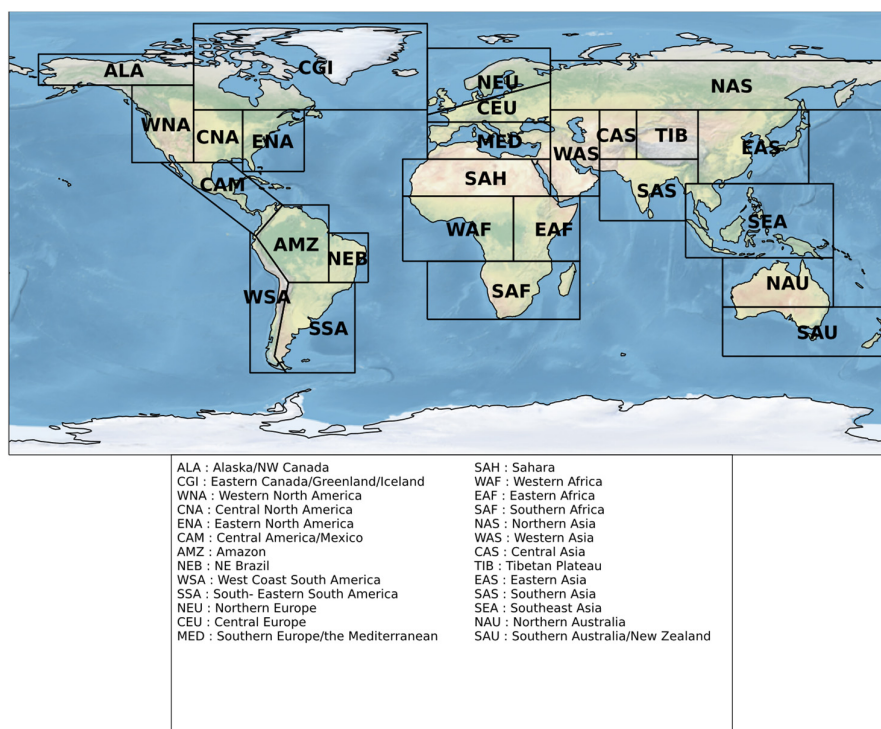


Figure S4. Spatial boundaries of the geographical regions defined in the IPCC 5th Assessment Report.

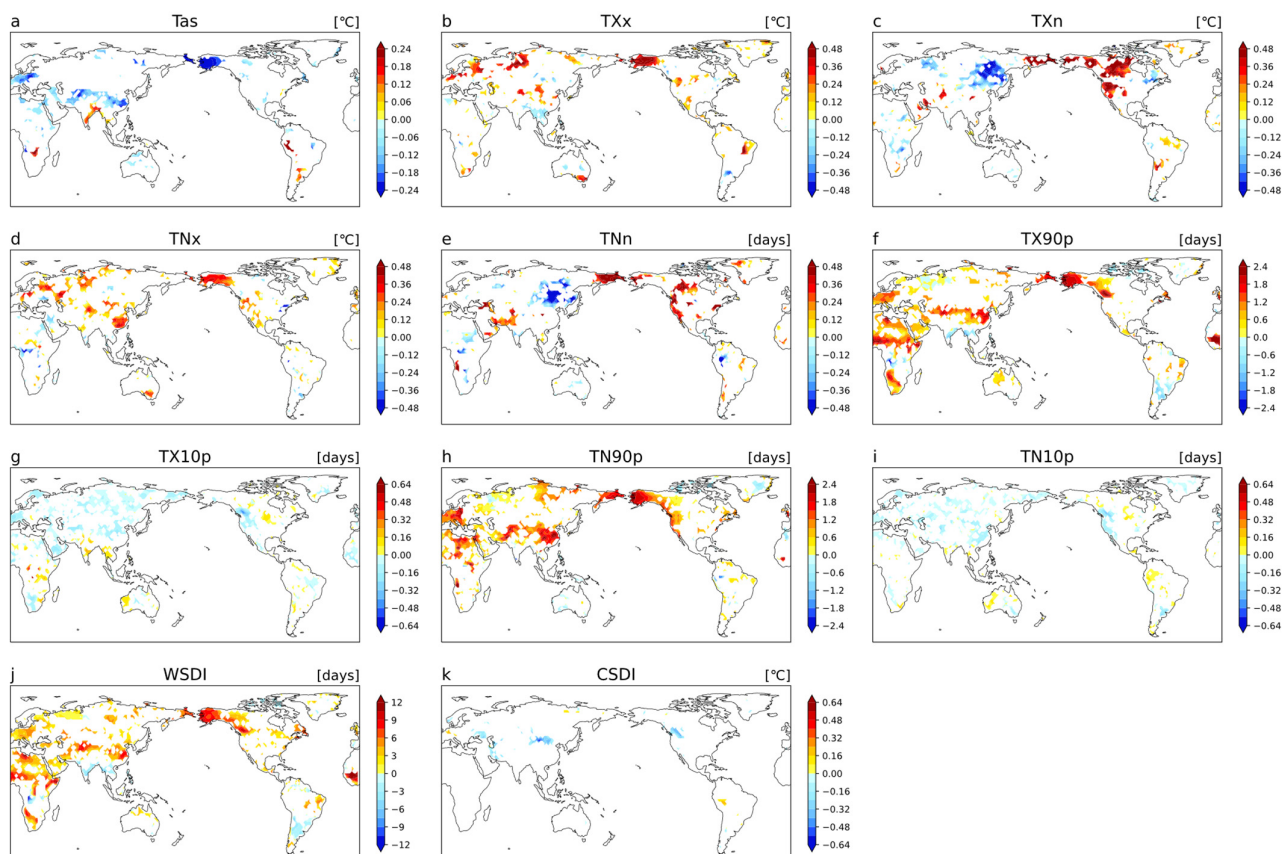


Figure S5. Similar to Figure 1 but for impact of land use change under SSP3-7.0 scenario (i.e. ssp370-ssp126lu – ssp370). (a) mean temperature, (b) TXx, (c) TXn, (d) TNx, (e) TNn, (f) TX90p, (g) TX10p, (h) TN90p, (i) TN10p, (j) WSDI, (k) CSDI.

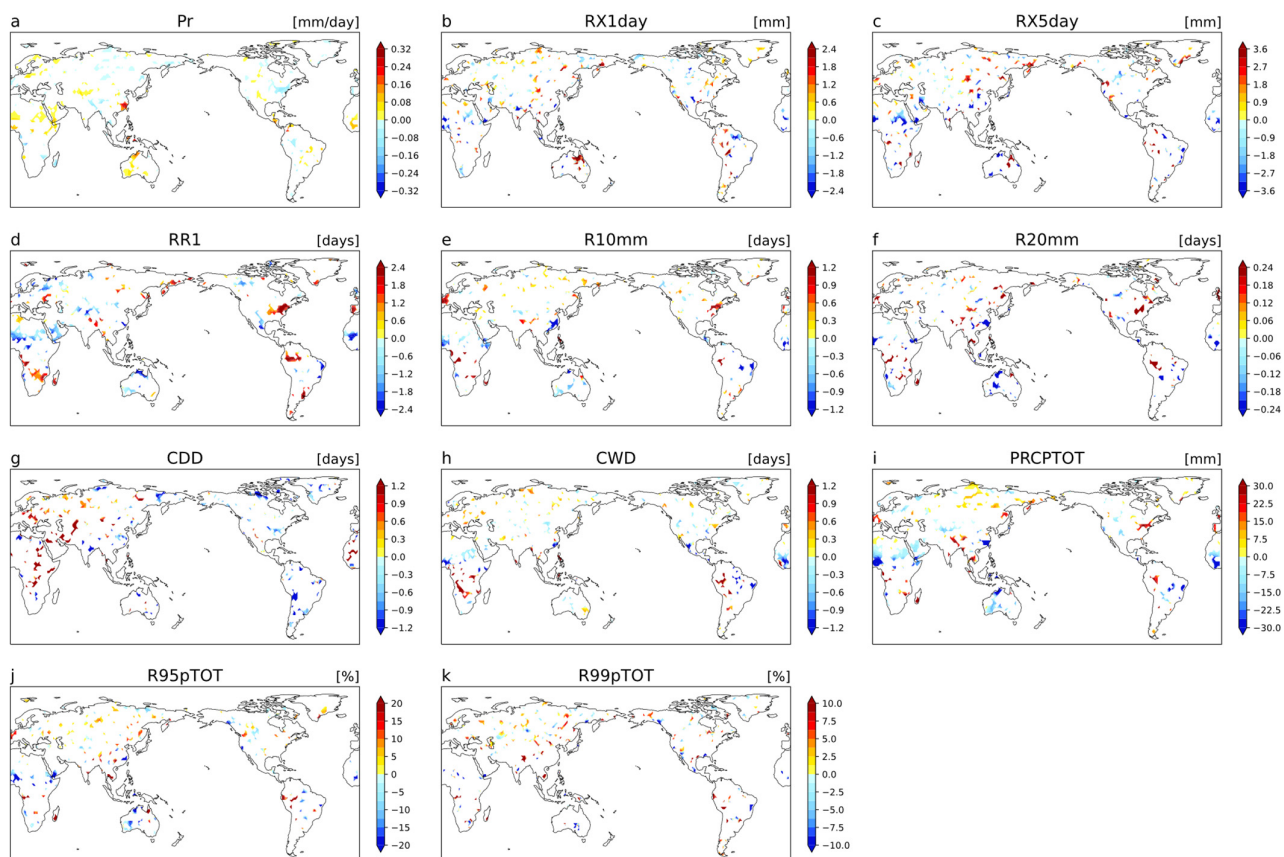


Figure S6. Similar to Figure 2 but for impact of land use change under SSP3-7.0 scenario (i.e. ssp370-ssp126lu – ssp370). (a) mean precipitation, (b) RX1day, (c) RX5day, (d) RR1, (e) R10mm, (f) R20mm, (g) CDD, (h) CWD, (i) PRCPTOT, (j) R95pTOT, (k) R99pTOT.

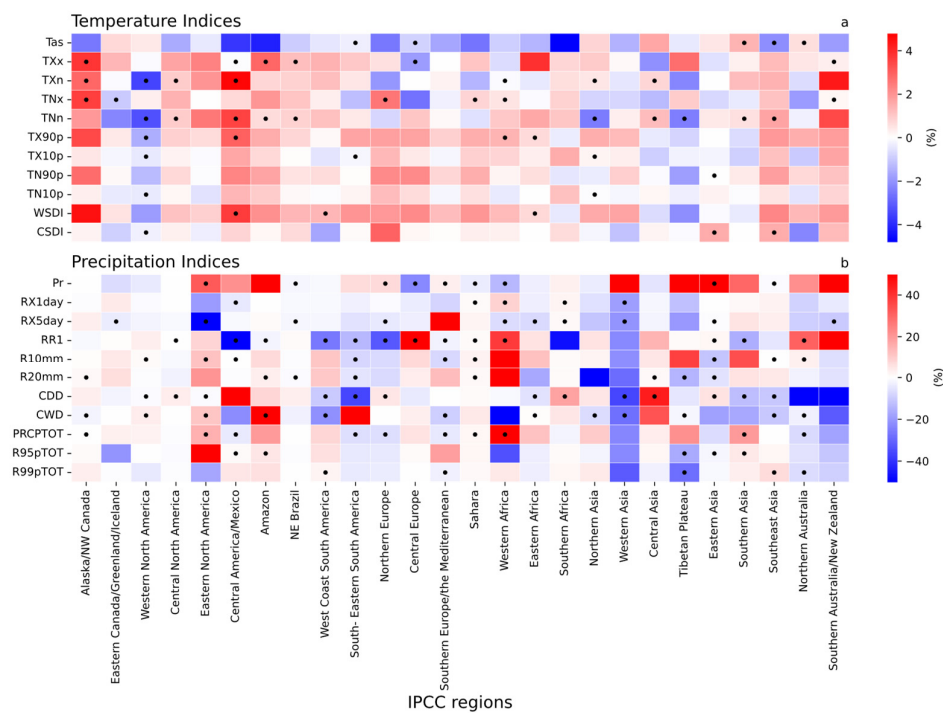


Figure S7. Similar to Figure 3 but for regional relative contribution of land use change (i.e. ssp370-ssp126lu – ssp370) under SSP3-7.0 scenario.

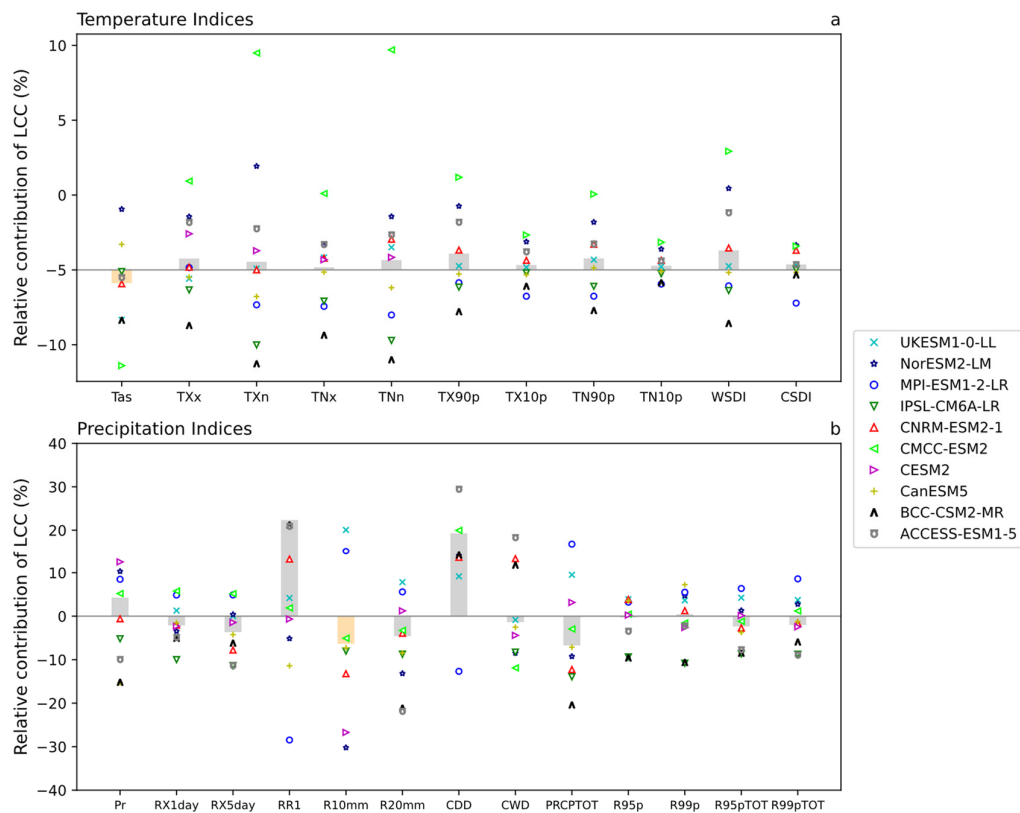


Figure S8. Similar to Figure 4 but for global-averaged relative contribution of land use change (i.e. ssp370-ssp126lu – ssp370) under SSP3-7.0 scenario.