

Impacts of future agricultural change on ecosystem service indicators

Supplementary Results

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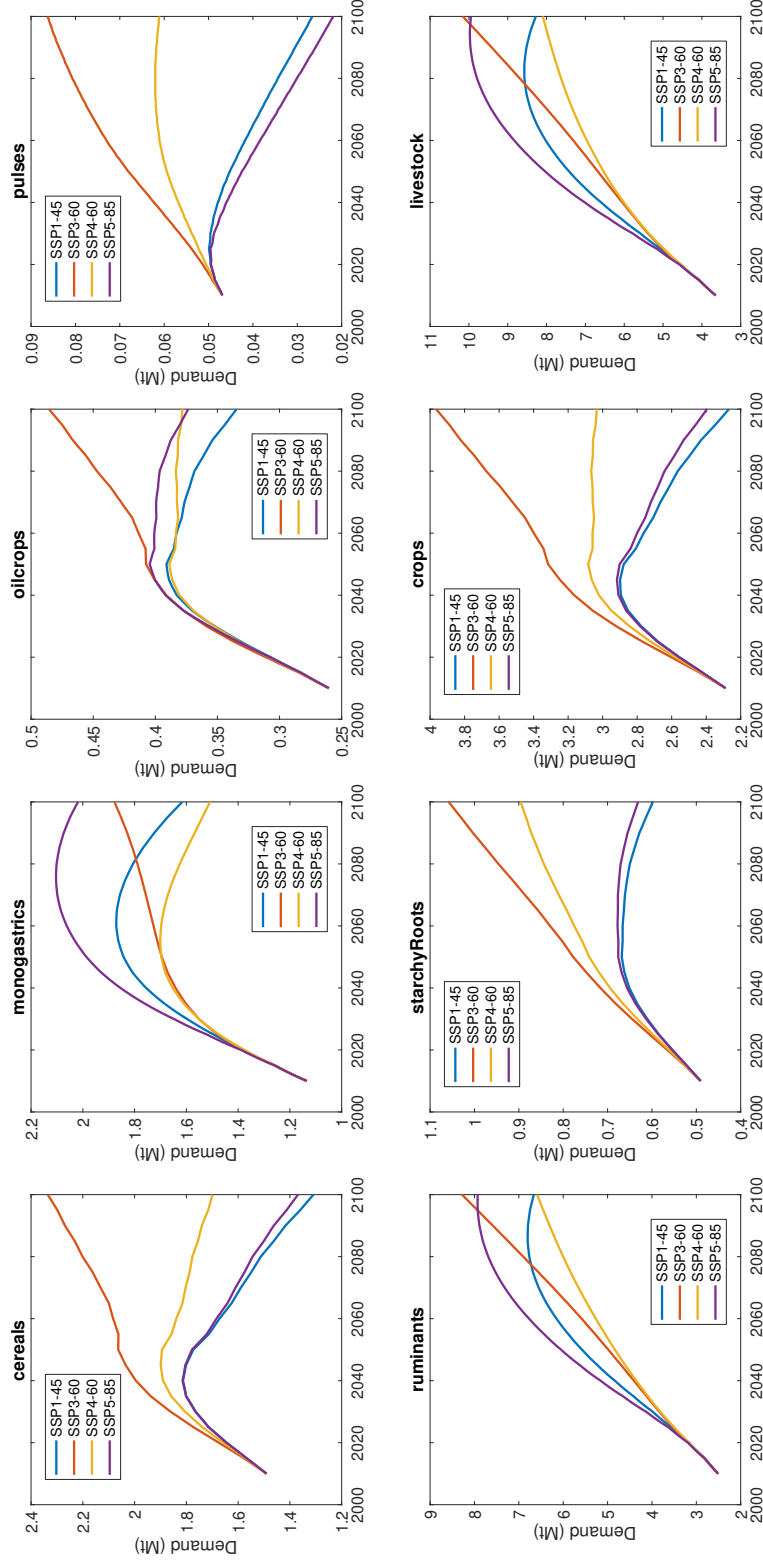


Figure SR1. Demand calculated by PLUM for each commodity in each scenario.

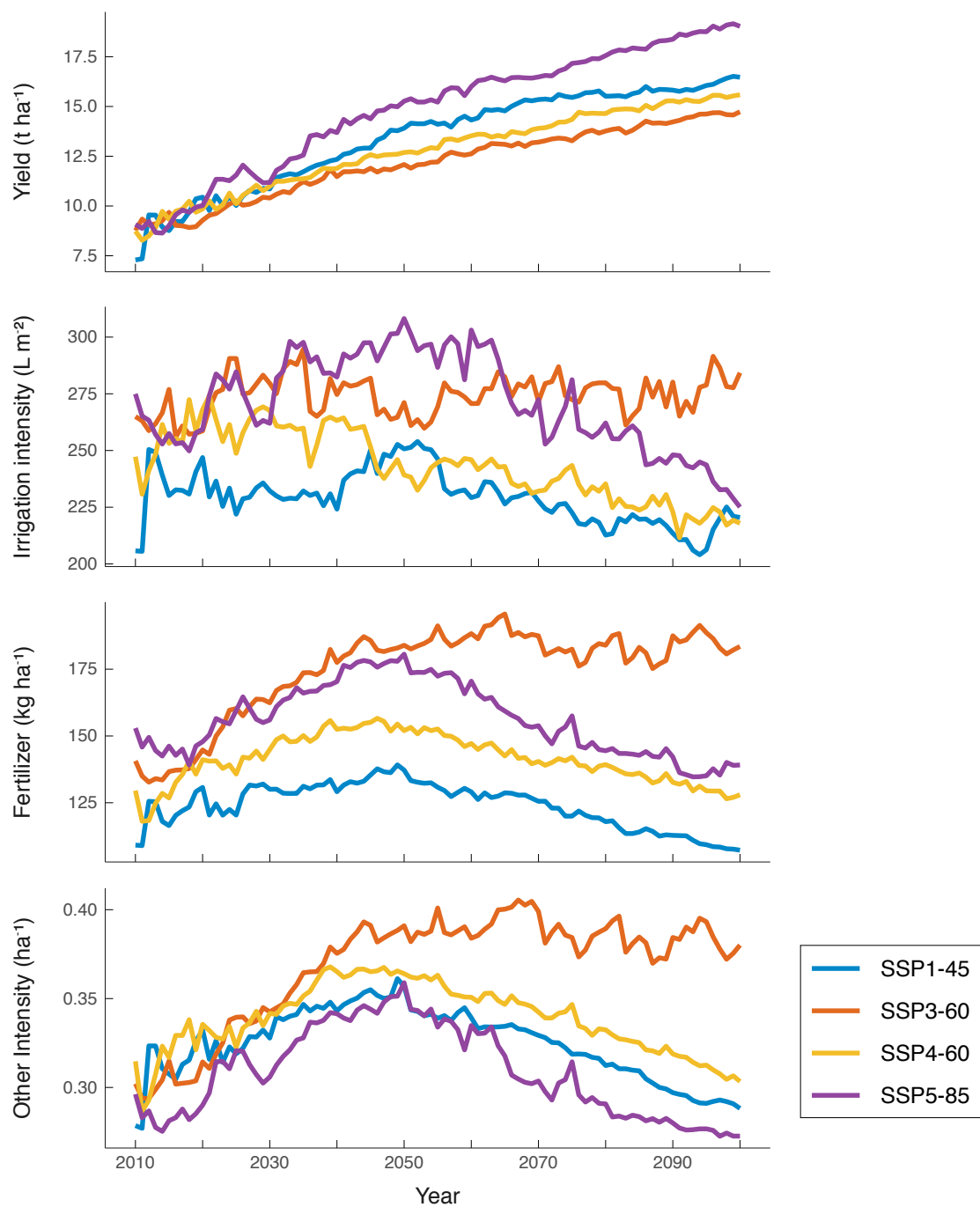


Figure SR2. Global management inputs and expected yields calculated by PLUM for each scenario. Averages per area of cropland.

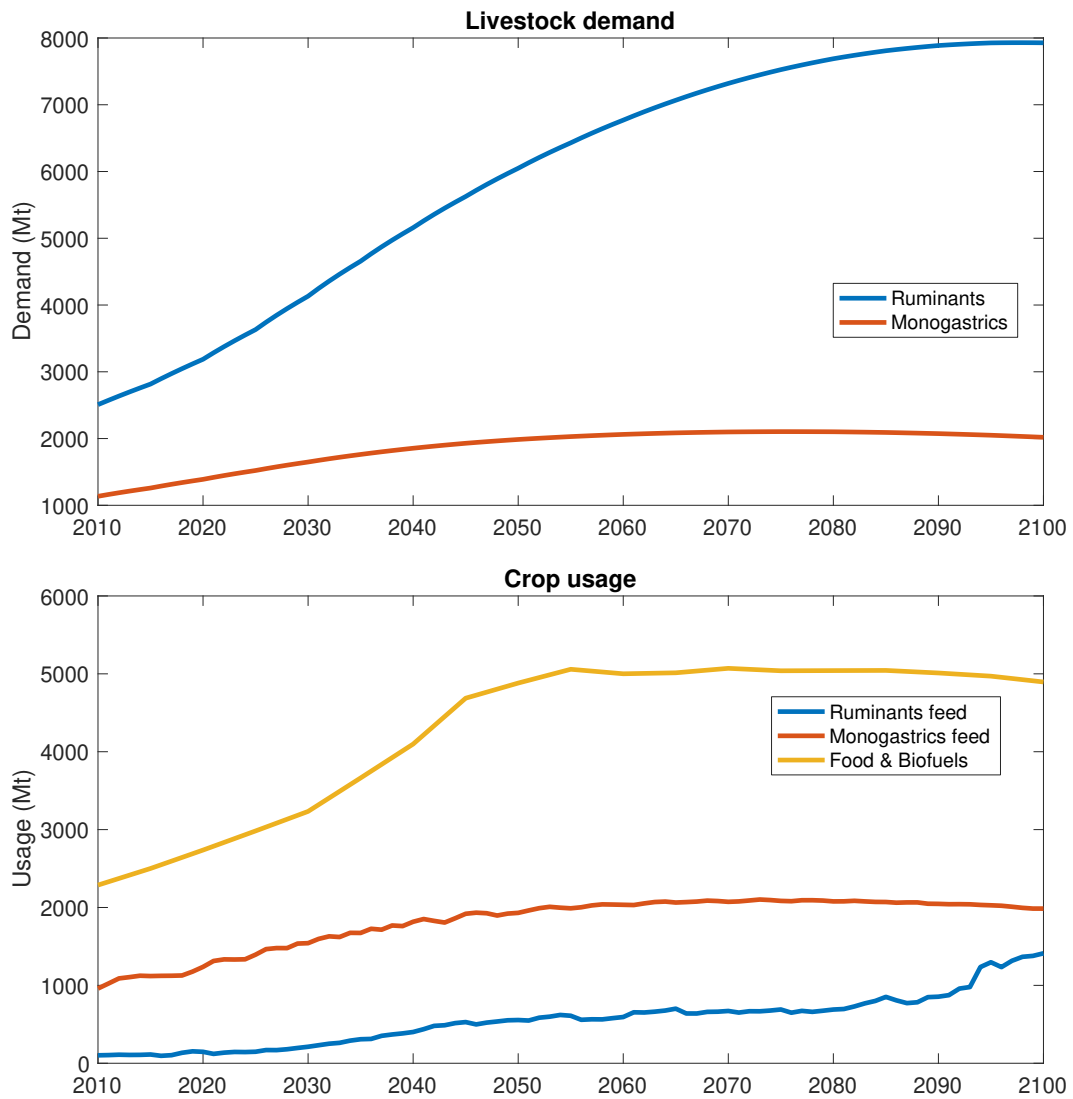


Figure SR3. SSP5-85 (**top**) livestock demand and (**bottom**) crop usage.

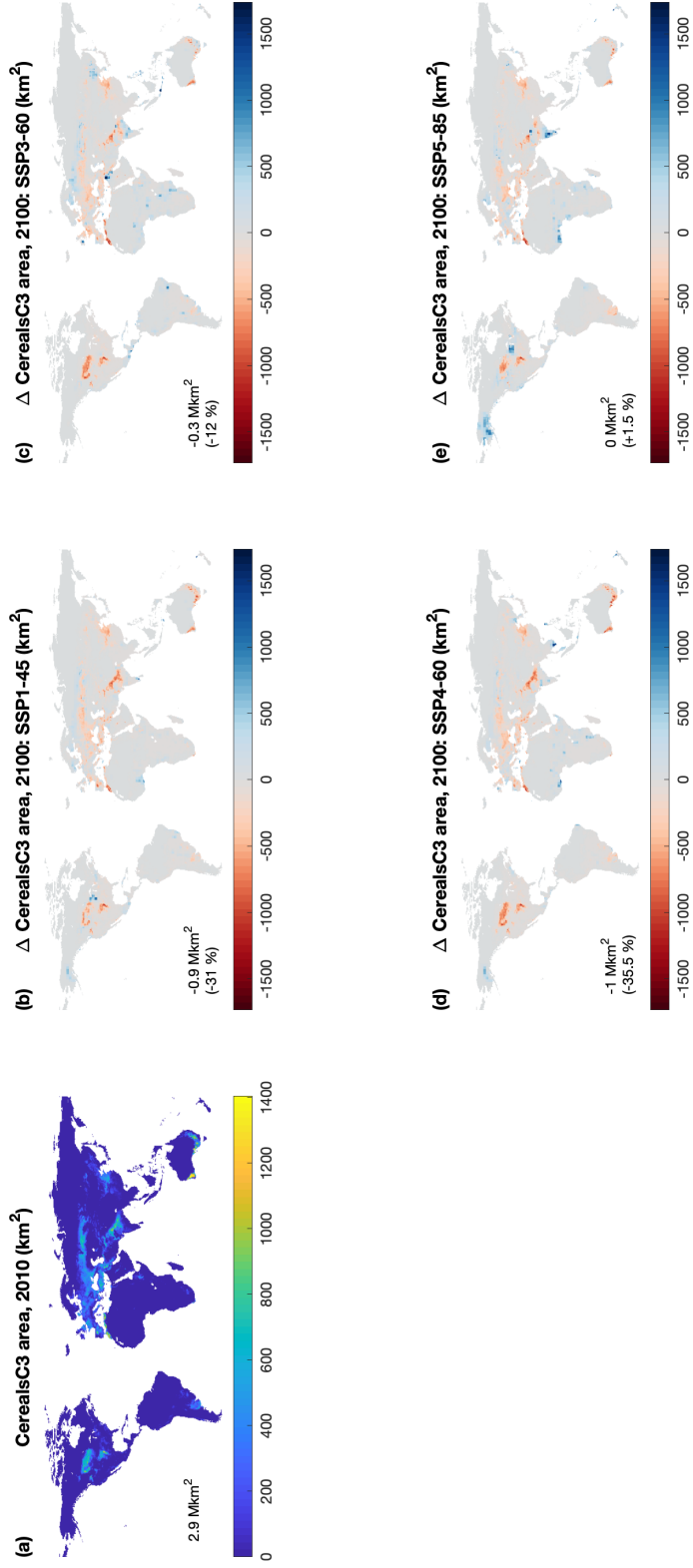


Figure SR4. (a) Area of cropland planted with CerealsC3 in 2010 from LUH2. (b–e) Difference between (a) and area in 2100 from PLUM for (b) SSP3-60, (c) SSP3-60, (d) SSP1-45, (e) SSP4-60.

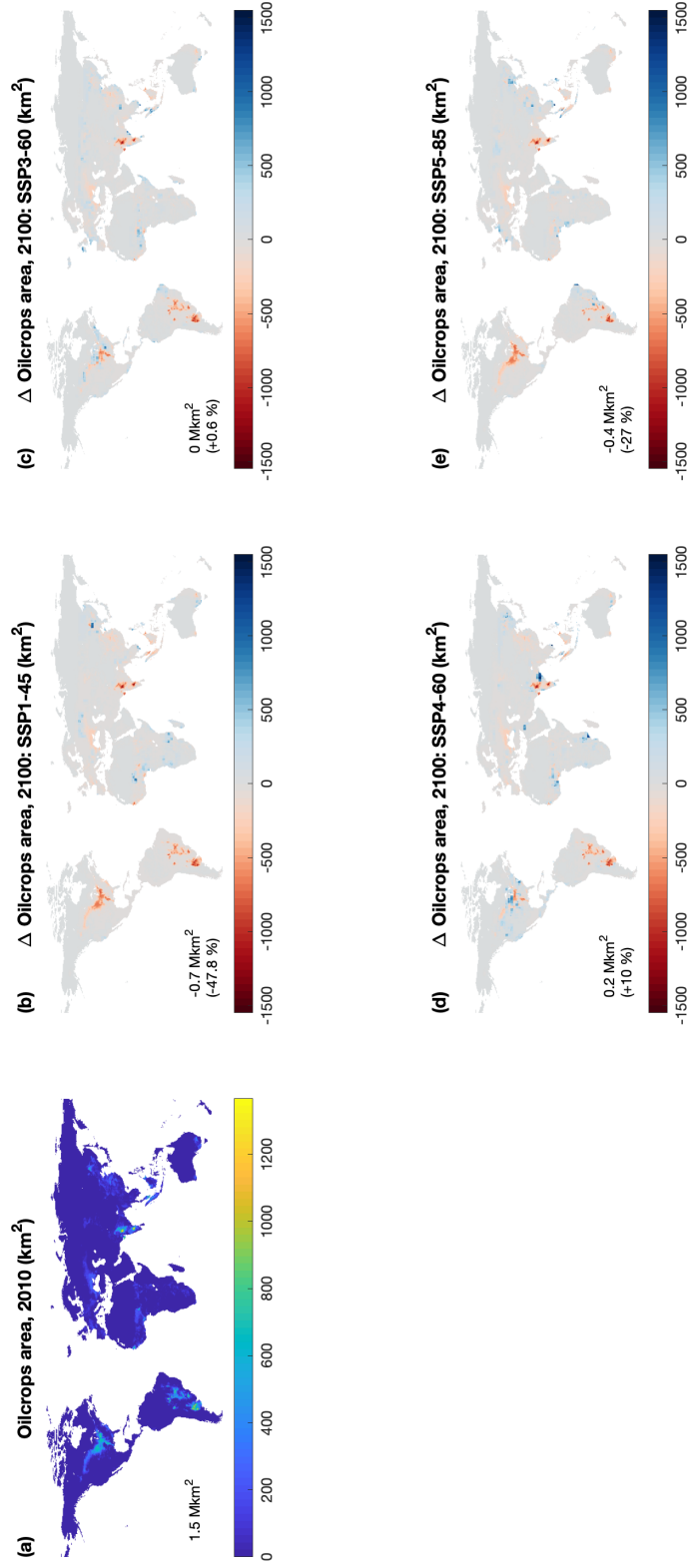


Figure SR5. As Figure SR4, but for Oilcrops.

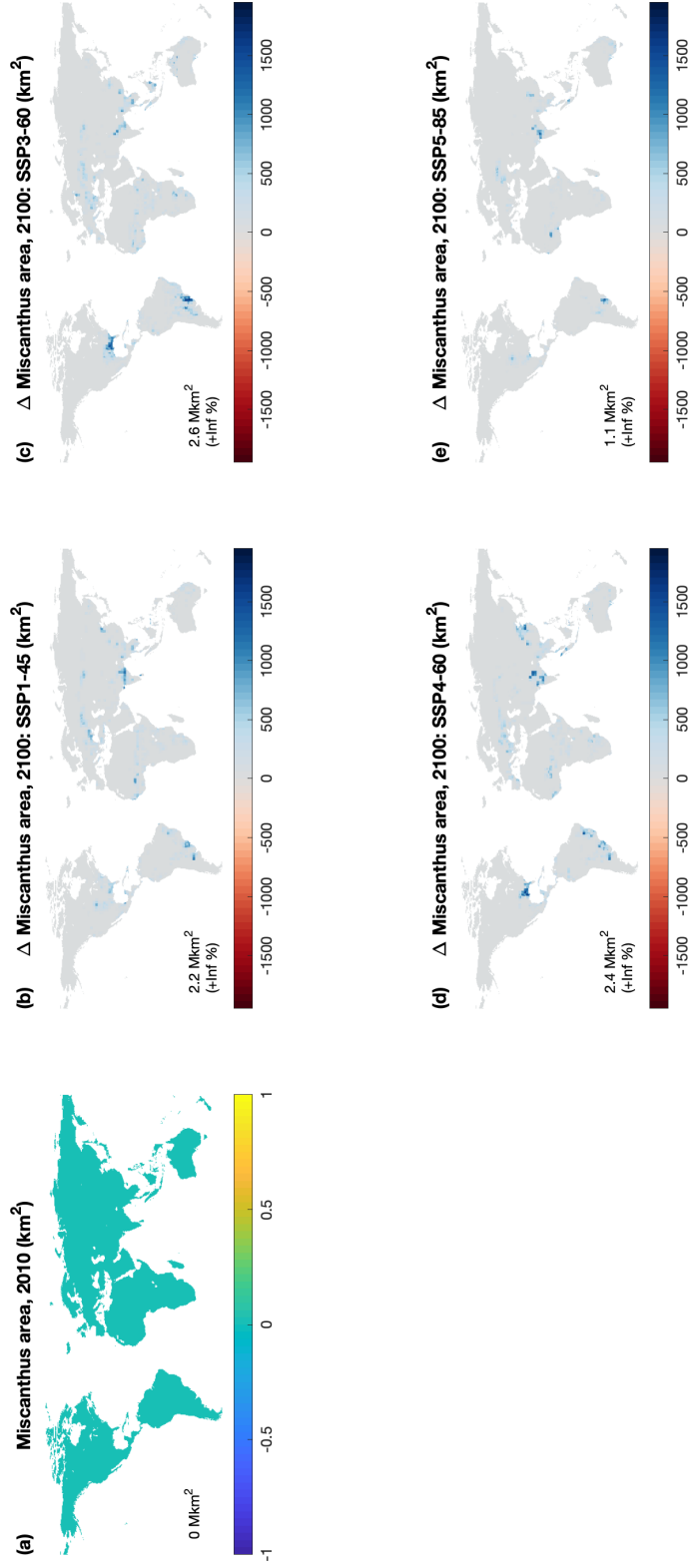


Figure SR6. As Figure SR4, but for *Miscanthus*.

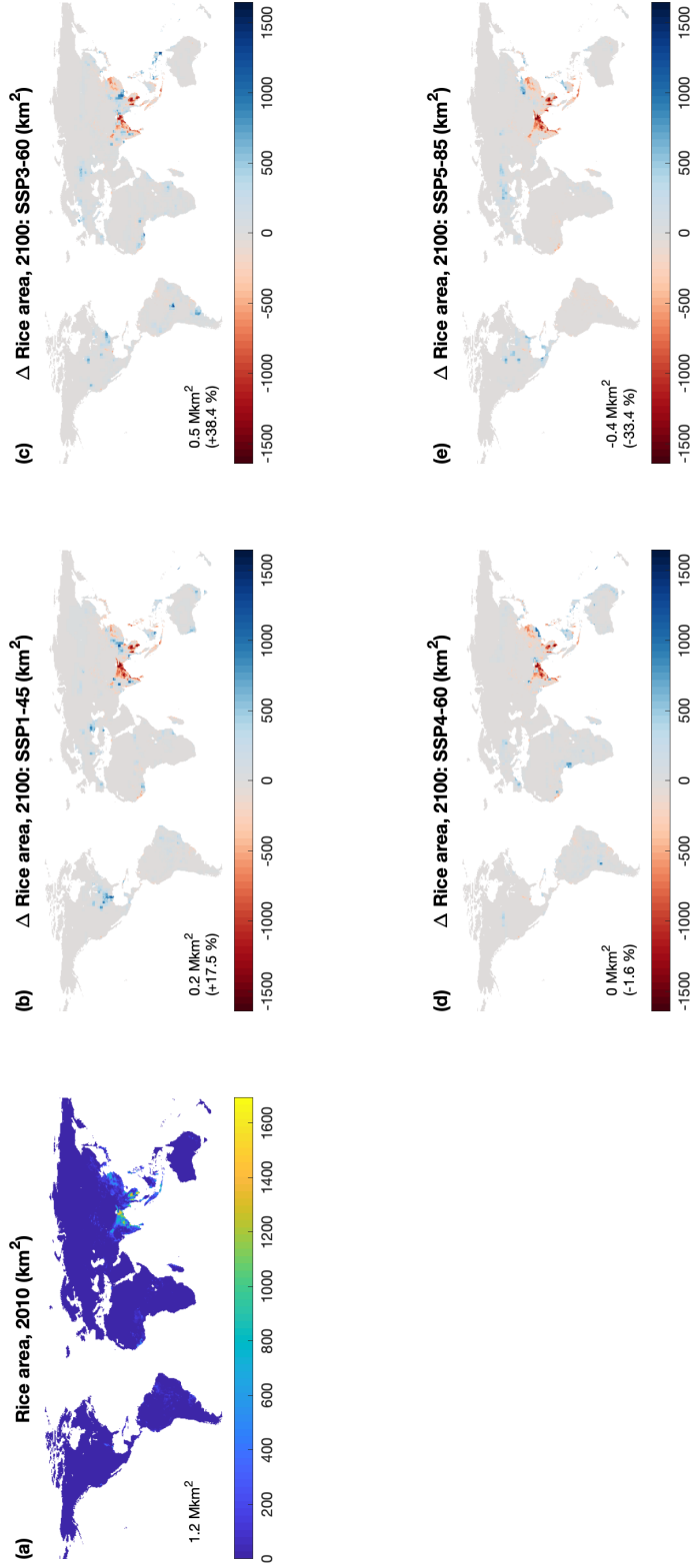


Figure SR7. As Figure SR4, but for Rice.

USA + Canada

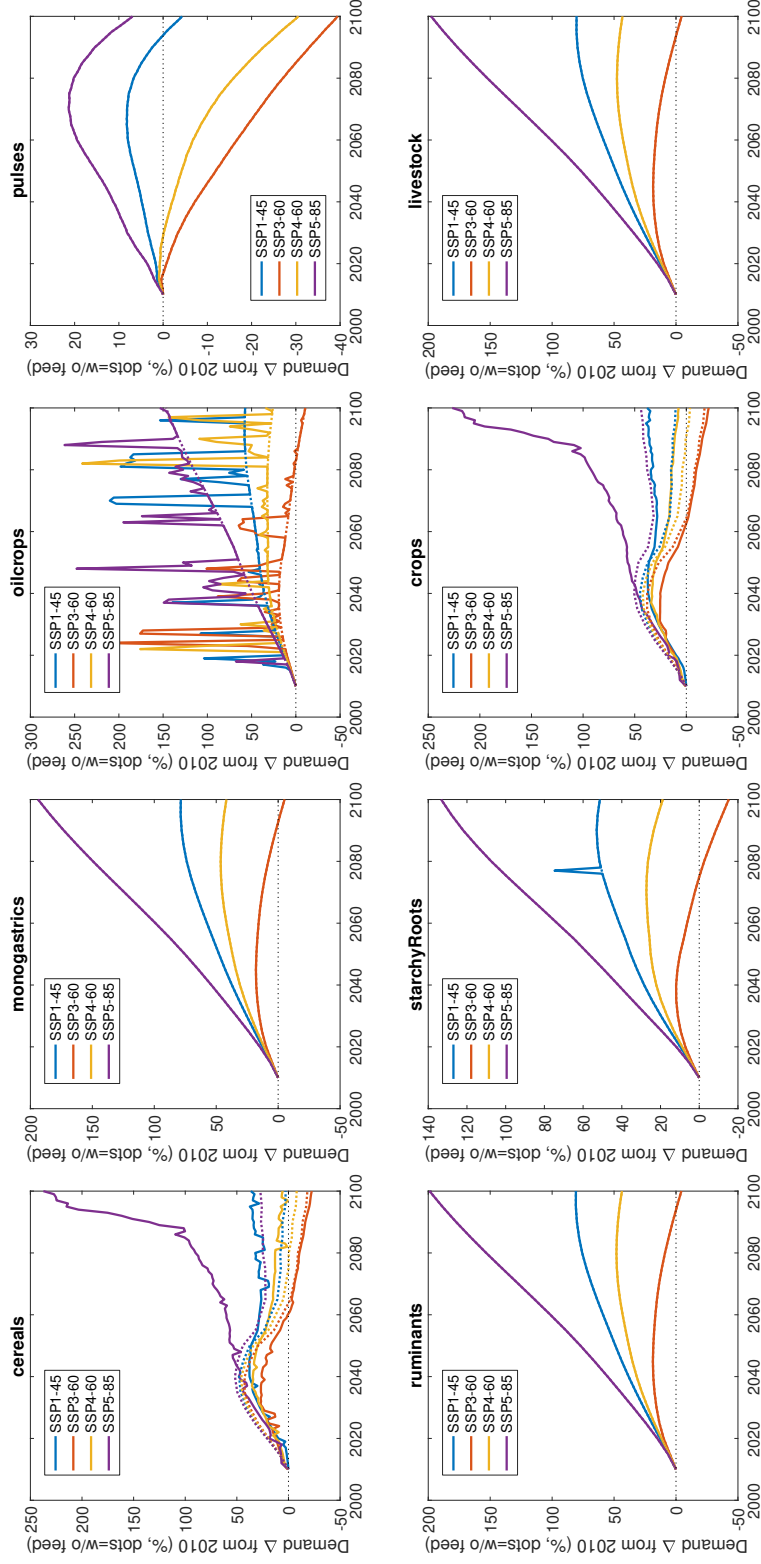


Figure SR8. Percentage change in demand in North America (United States and Canada) for commodities and commodity groups in each scenario. Solid lines include all uses; dotted lines exclude feed.

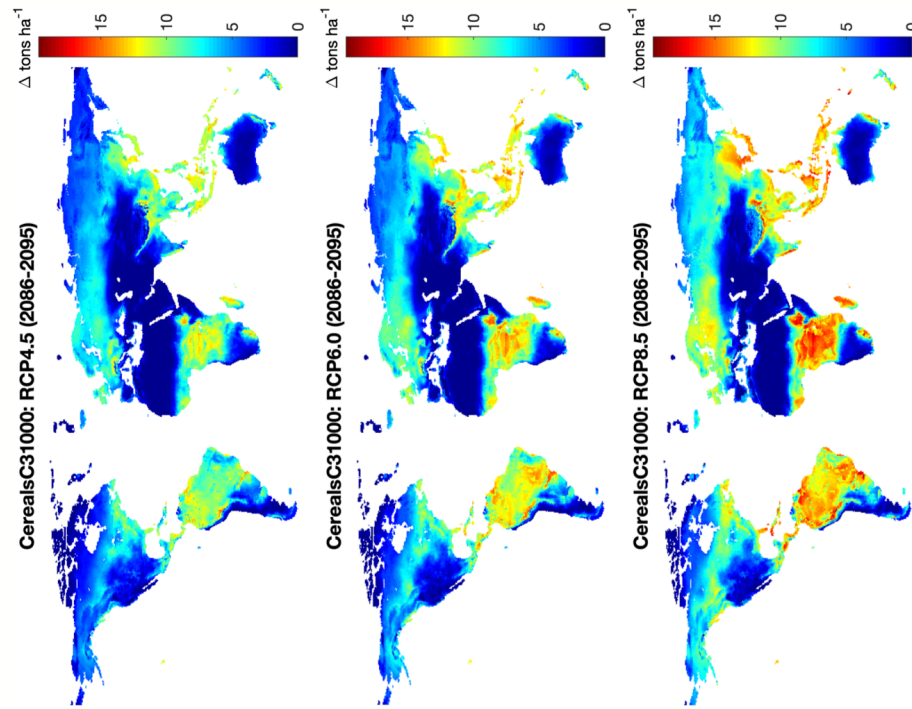
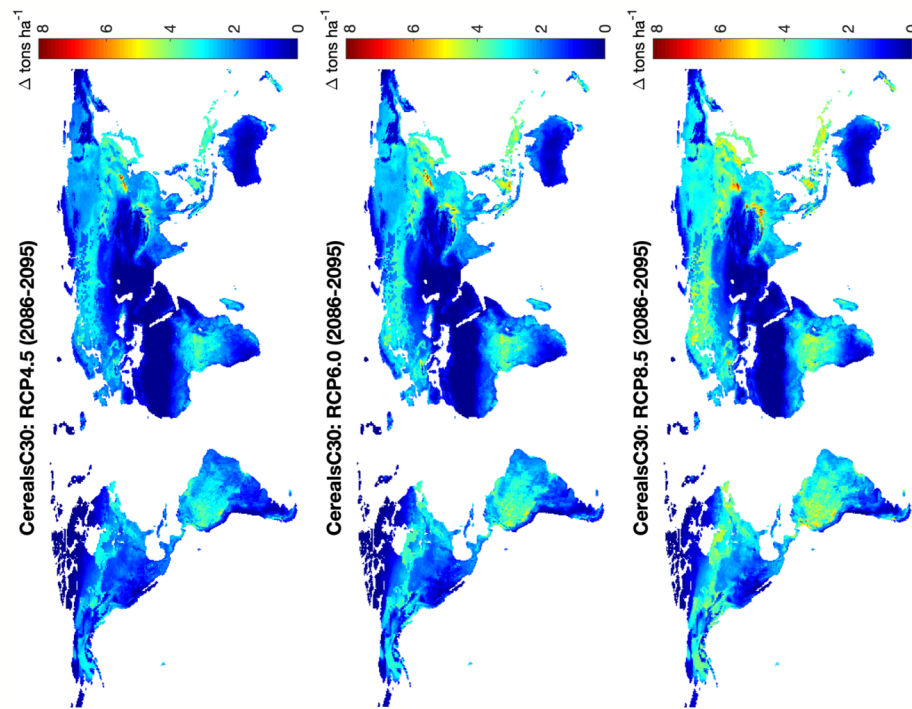


Figure SR9. LPJ-GUESS simulated mean yield in 2086–2095 (not including PLUM calibration factors) for rainfed CerealsC3 with (columns) 0 and 1000 kgN ha⁻¹ (rows) in each climate scenario, from yield-generating potential runs. Note different color scales between columns.

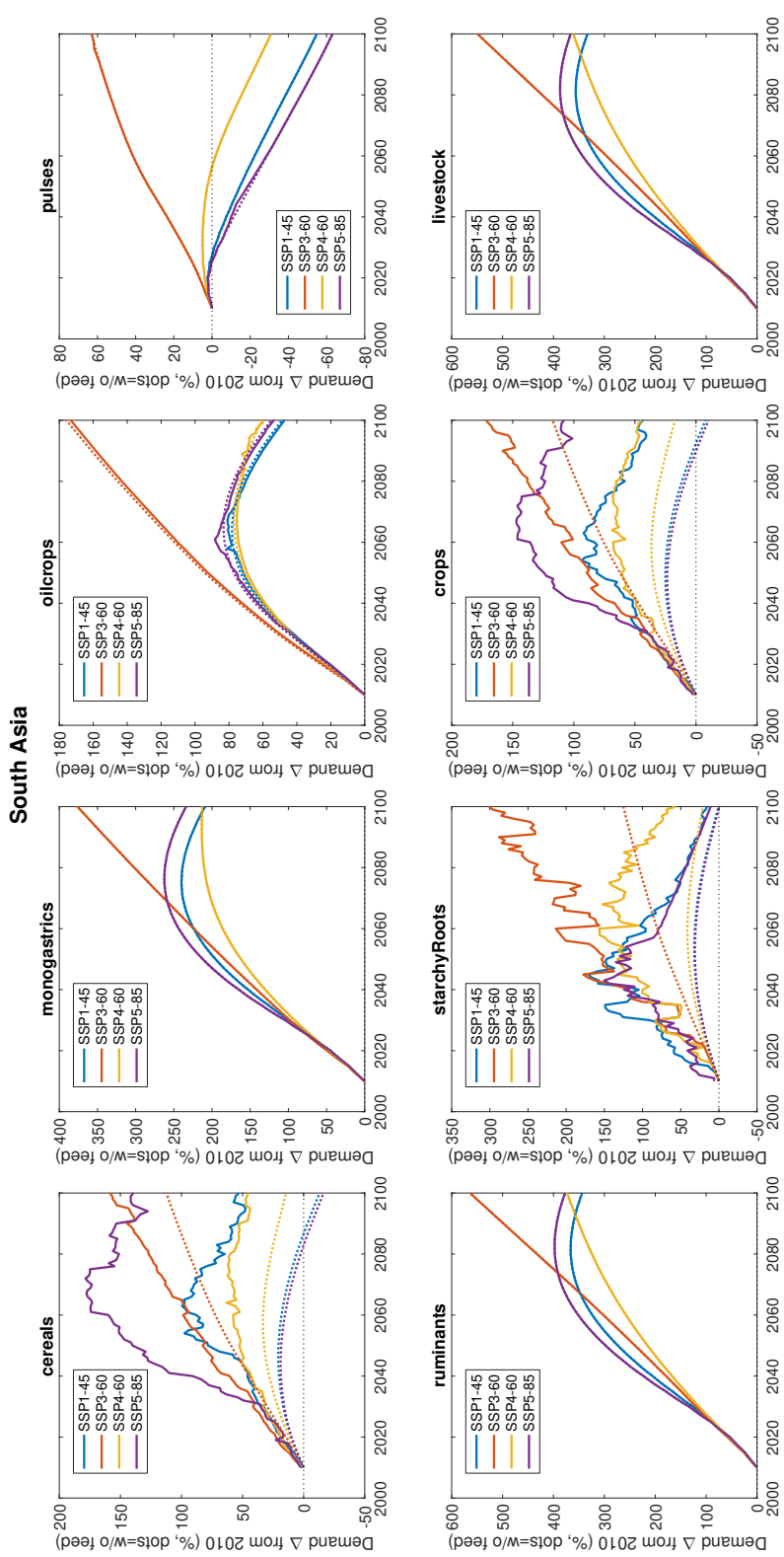


Figure SR10. As Fig. SR8 but for South Asia (India, Sri Lanka, Pakistan, Afghanistan, Bhutan, and Nepal).

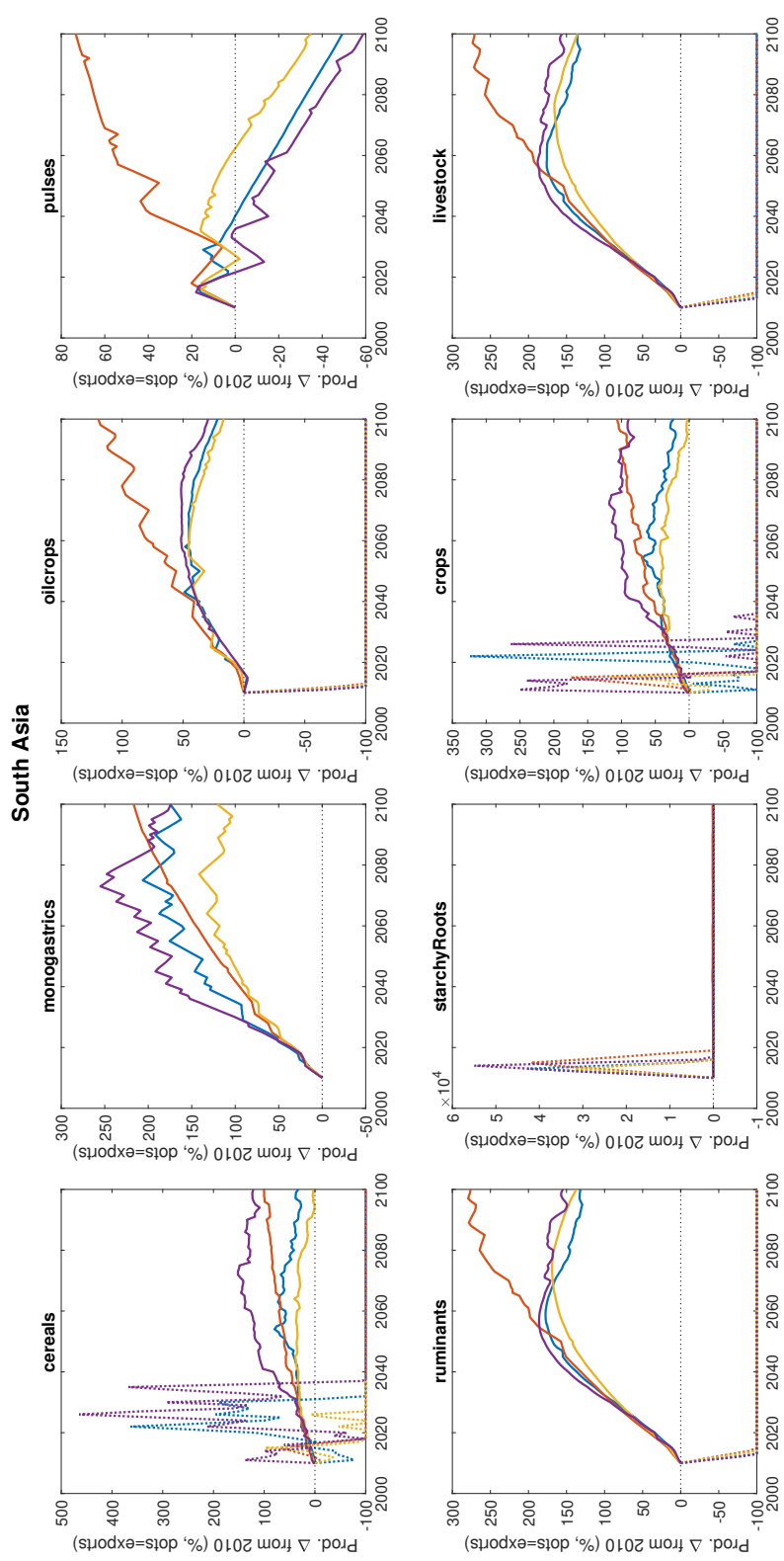


Figure SR11. Percentage change in PLUM-expected production in South Asia (India, Sri Lanka, Pakistan, Afghanistan, Bhutan, and Nepal) for commodities and commodity groups in each scenario. Solid lines include production for domestic use and exports; dotted lines include only exports.

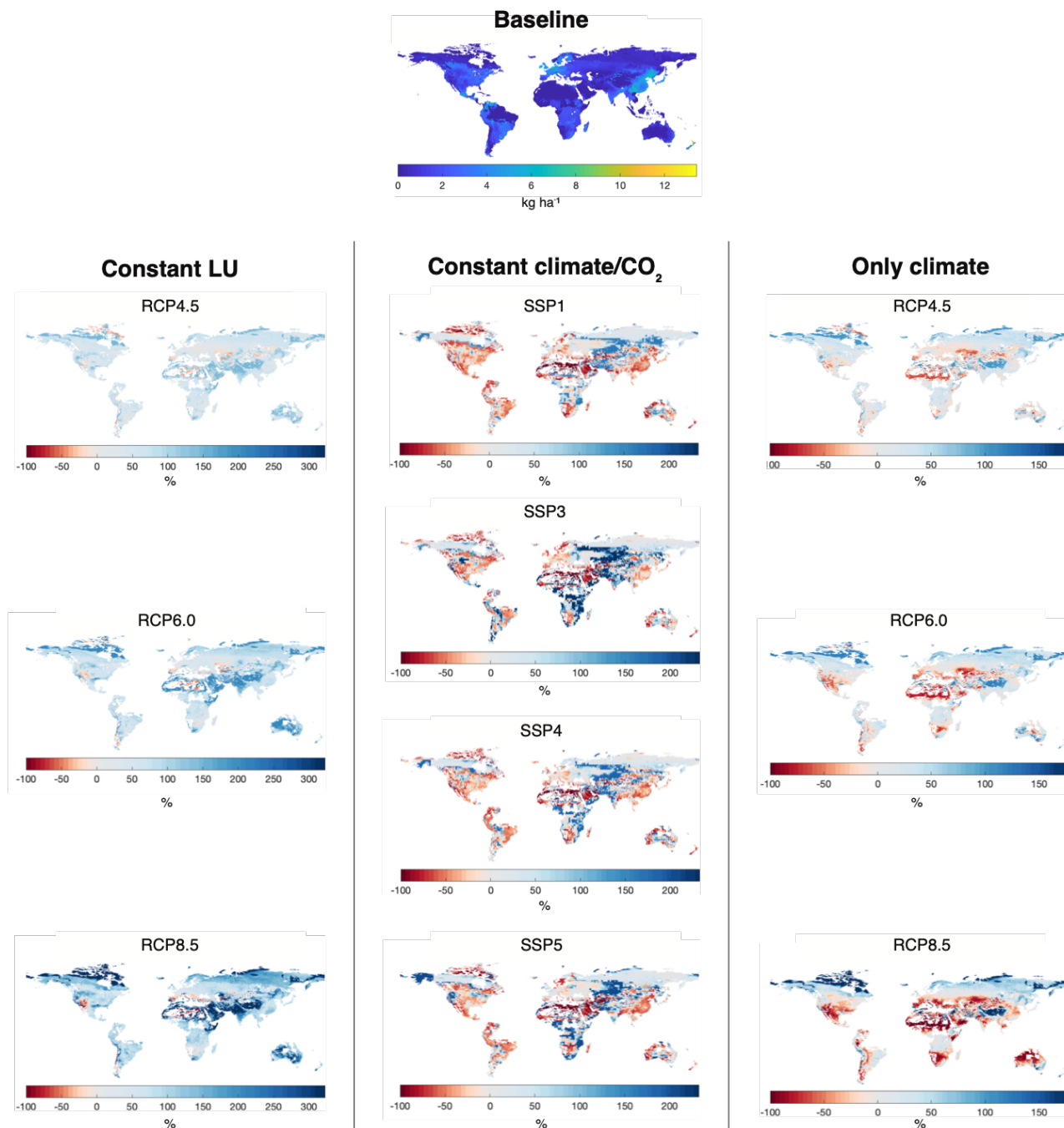


Figure SR12. Percent change in mean yield (kg ha⁻¹ yr⁻¹) of CerealsC3 from 2001–2010 ("Baseline") to 2091–2100 in Constant-LU (left), Constant Climate+CO₂ (center), and Only Climate experiments for each scenario. Note that color scales differ between columns.

Sub-Saharan Africa

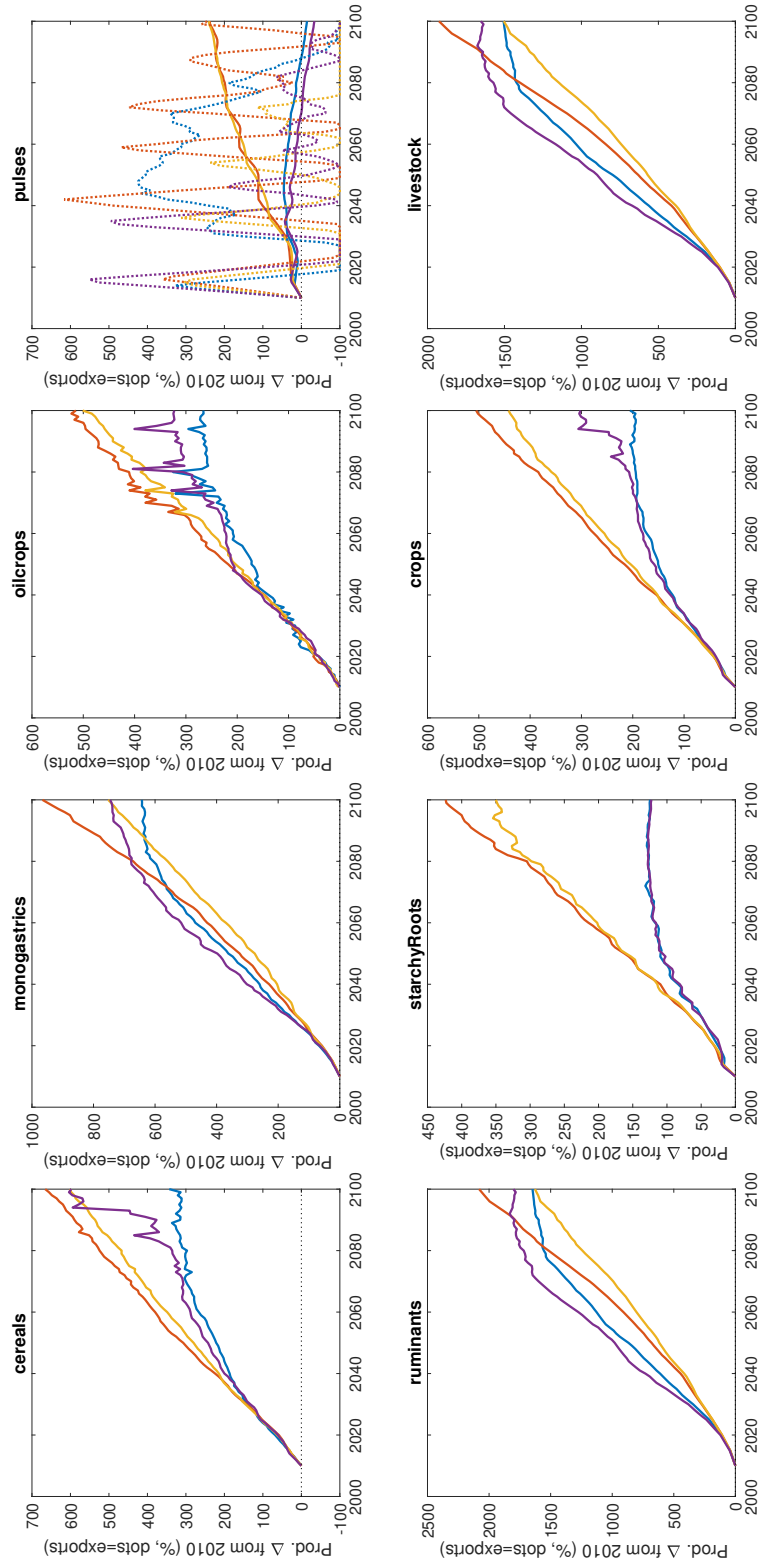


Figure SR13. As Fig. SR11 but for Sub-Saharan Africa (Madagascar plus all continental African countries except Algeria, Djibouti, Egypt, Morocco, Libya, and Tunisia).

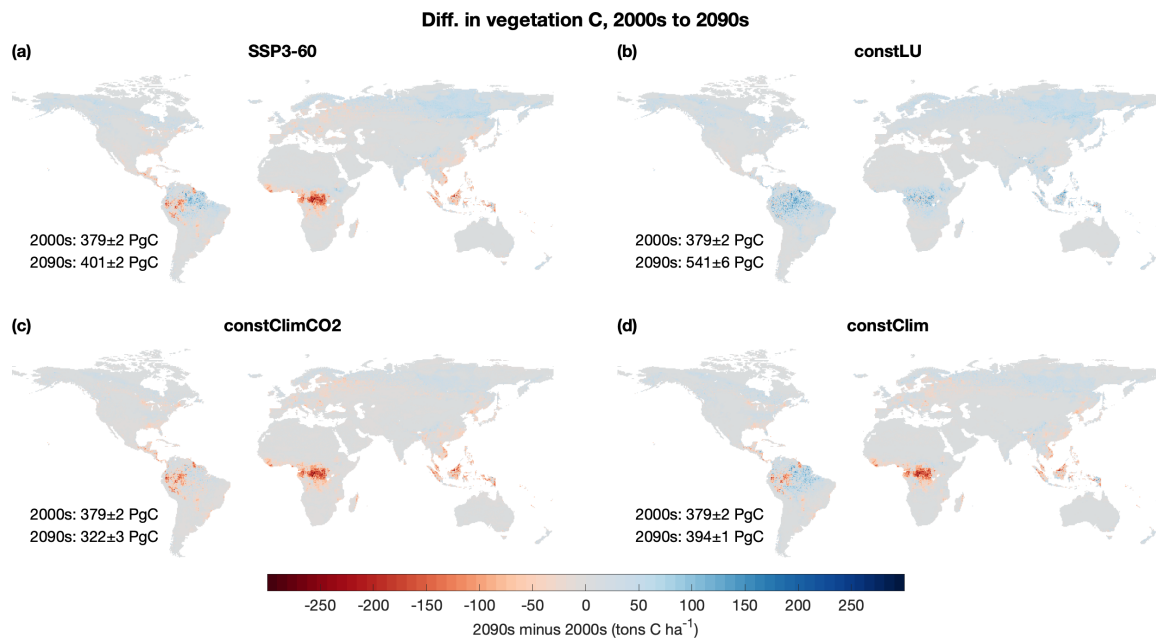


Figure SR14. Maps showing difference in mean vegetation carbon between 2001–2010 (“2000s”) and 2091–2100 (“2090s”) for **(a)** SSP3-60, **(b–e)** related experiments with land use, climate, and/or CO₂ held constant. Overlaid text provides decadal means and standard deviations.

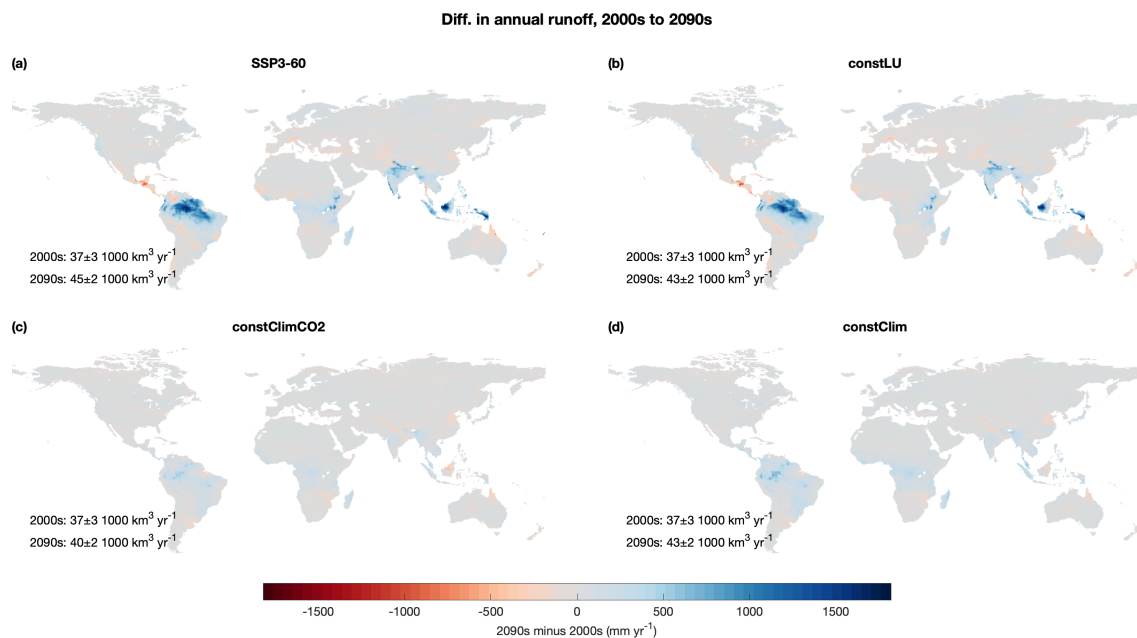


Figure SR15. Maps showing difference in mean annual runoff between 2001–2010 (“2000s”) and 2091–2100 (“2090s”) for **(a)** SSP3-60, **(b–e)** related experiments with land use, climate, and/or CO₂ held constant. Overlaid text provides decadal means and standard deviations.

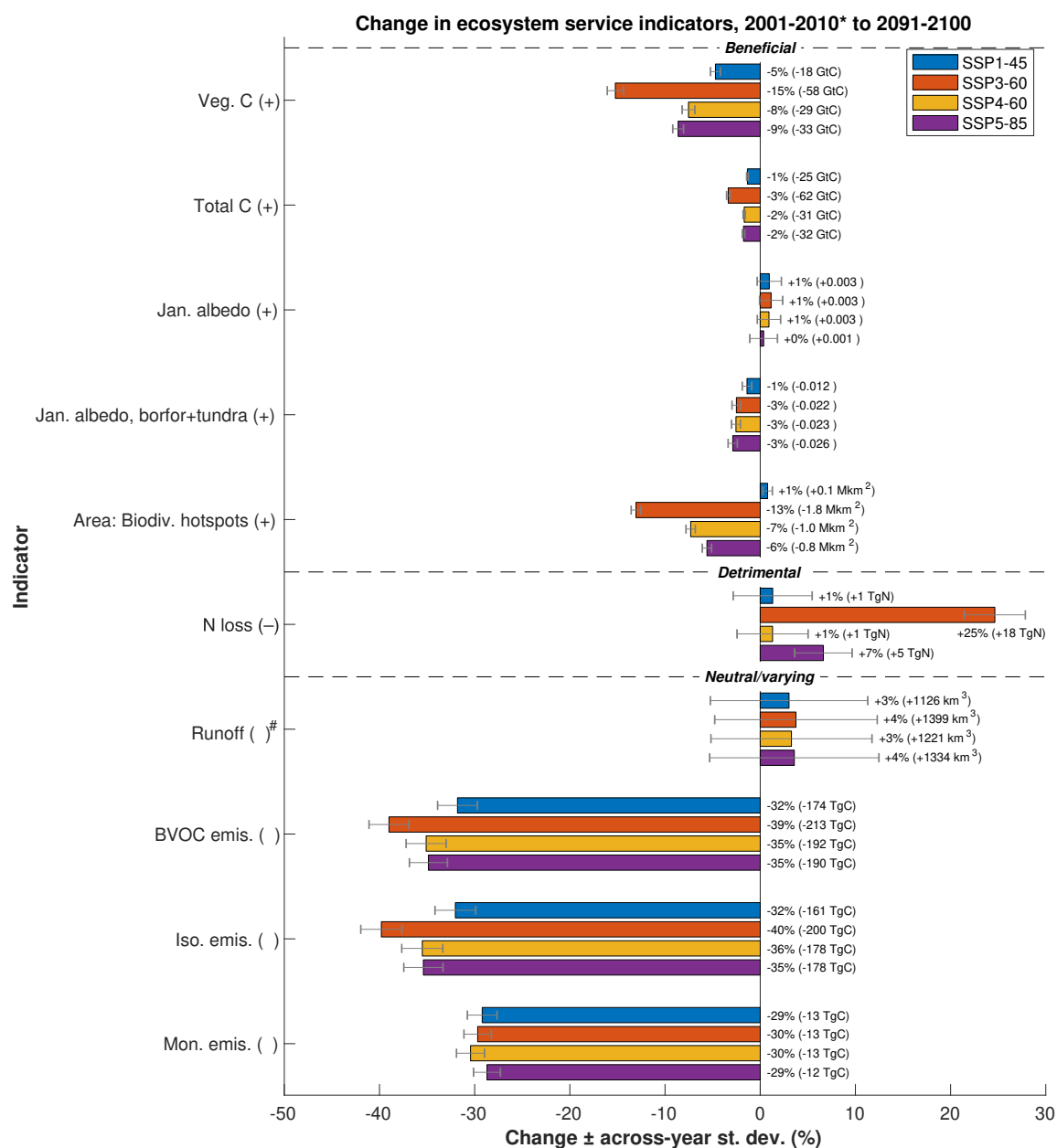
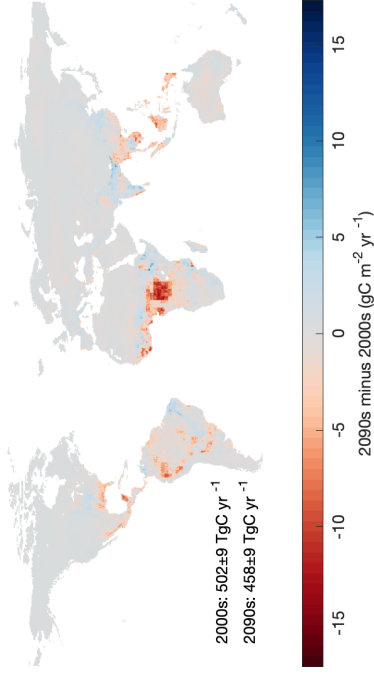
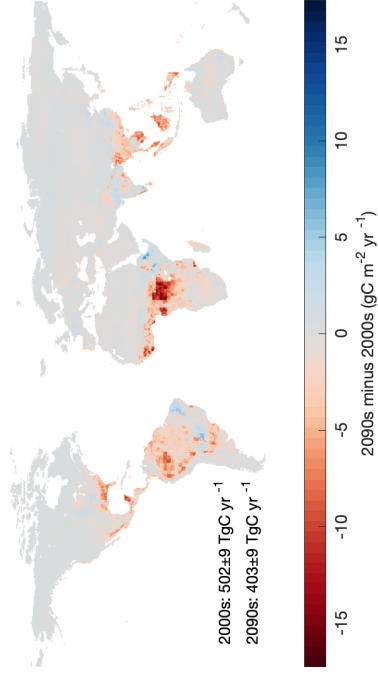


Figure SR16. As Figure 3, but for the Constant Climate+CO2 experiment.

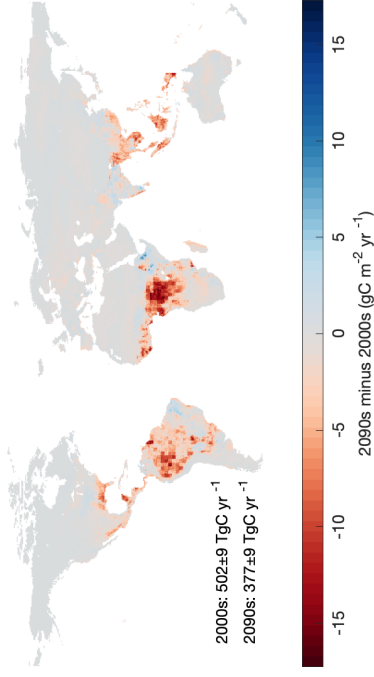
(a) Diff. in isoprene emissions, 2001-2010 to 2091-2100 (SSP1-45)



(c) Diff. in isoprene emissions, 2001-2010 to 2091-2100 (SSP4-60)



(b) Diff. in isoprene emissions, 2001-2010 to 2091-2100 (SSP3-60)



(d) Diff. in isoprene emissions, 2001-2010 to 2091-2100 (SSP5-85)

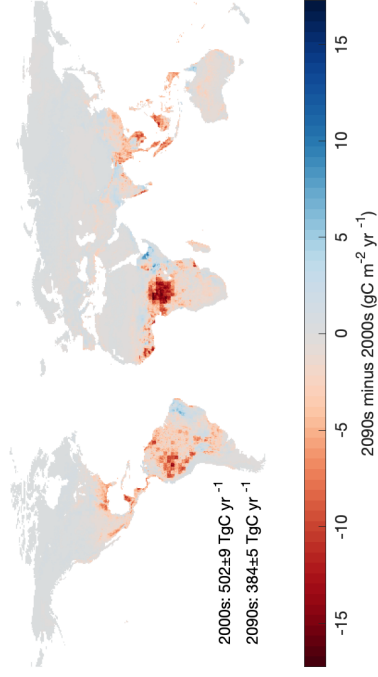


Figure SR17. Difference in isoprene emissions (gC m⁻² yr⁻¹ between 2001–2010 and 2091–2100 in each scenario.

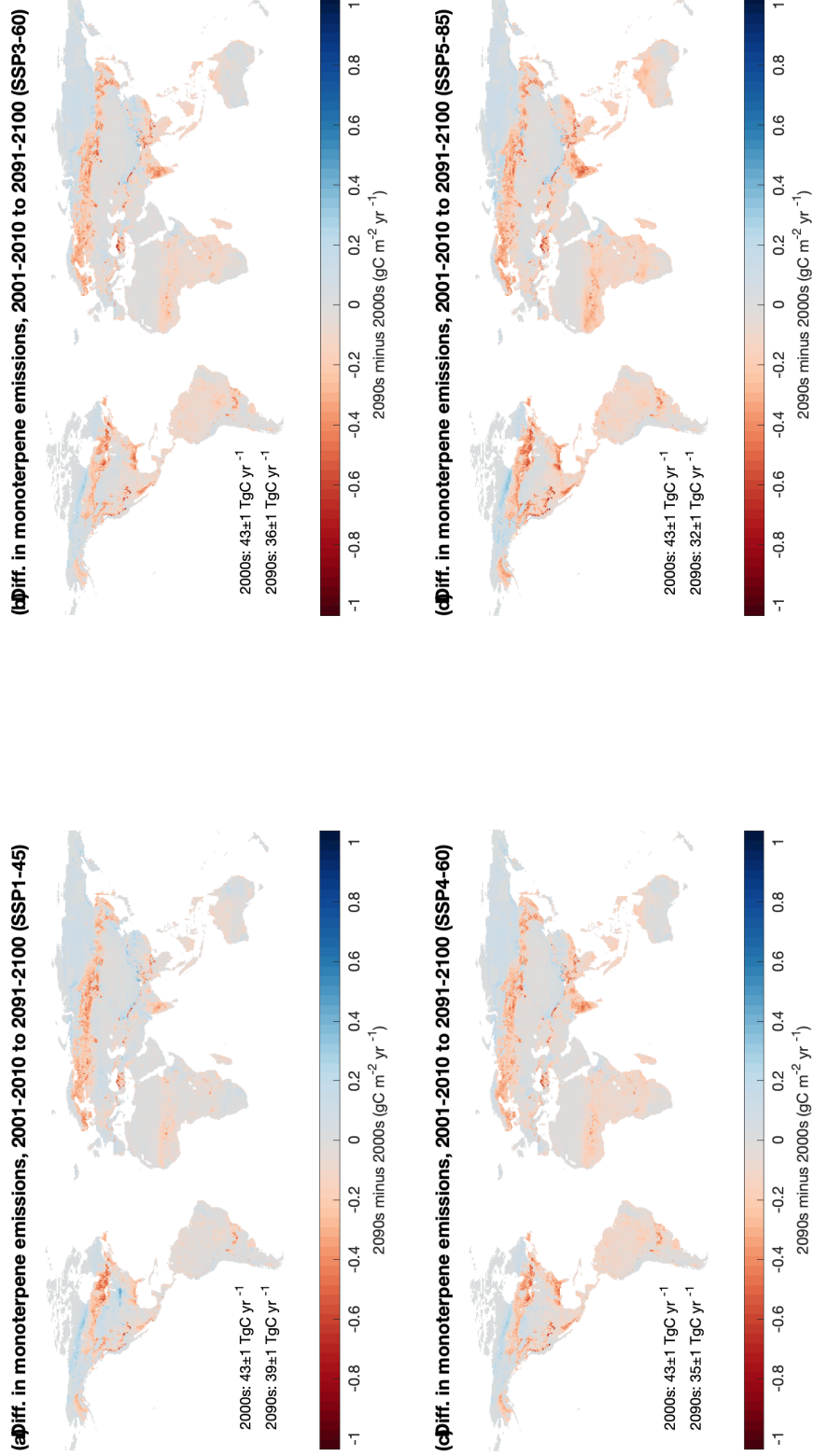


Figure SR18. Difference in monoterpene emissions ($\text{gC m}^{-2} \text{ yr}^{-1}$) between 2001–2010 and 2091–2100 in each scenario.

References