Reviewer 1:

This study investigates whether and how solar geoengineering affects wildfire impacts in CESM2 simulations by examining the major contributing factors to wildfire activity and how they change in response to geoengineering. The authors find that, in most regions, solar geoengineering causes reductions in wildfire activity, largely due to reduced surface temperatures and increased relative humidity and soil moisture, despite reduced precipitation.
Overall, this is a sound study with meaningful results, and reading it was interesting and informative; wildfires are an important aspect of the climate system, and a study about how solar geoengineering does or does not offset possible changes under global warming is an important contribution to the literature. However, the manuscript needs some work before it can be published. I have two major criticisms.

Firstly, the authors need to clarify their methods in some areas; it is not always clear how the authors computed certain numbers presented in their results, and the authors should explain more clearly whether they are averaging over a certain period or how they accounted for certain factors when computing statistics.
Response: Thank you. We have revised the manuscript to provide details and clarifications on the methods. Please see the response to the specific comments below for details.

Secondly, many of the figures are unpolished or incomplete, with missing uncertainties, ensemble spread, or statistical significance; inconsistent color schemes; frustrating or confusing color scales; and captions that do not fully explain how data are calculated. Correcting these issues would improve the clarity, ease of reading, and repeatability of the study. Specific comments and technical corrections are provided in the supplement, and I recommend that the study be accepted with minor revisions so that these findings can be published.
Response: We have revised the figures and addressed the issues pointed out by the reviewers. Please see the response to the specific comments below for details.

Specific Comments

Abstract

1. Lines 37-38: "a global reduction in burned area and fire carbon emissions" is somewhat misleading; solar geoengineering reduces these relative to SSP5-8.5, but burned area does not appear to be meaningfully reduced relative to present day
Response: Thank you for pointing this out. We have changed "a global reduction in burned area and fire carbon emissions" to "a global reduction in burned area and fire carbon emissions by the end of the century relative to their base-climate scenario SSP5-8.5".

Introduction

2. Lines 92-94: I was unable to find in Robock (2020) where he says that controlling for temperature overcompensates for changes in the hydrological cycle; he just mentions that GLENS "does not show that precipitation and temperature can be controlled at the same time". The following might be better citations here:

○ Lee, et al. (2020): Expanding the design space of stratospheric aerosol geoengineering to include precipitation-based metrics and explore trade-offs, Earth System Dynamics, doi:10.5194/esd-11-1051-2020.
○ Tilmes, et al. (2013): The hydrological impact of geoengineering in the Geoengineering Model Intercomparison Project (GeoMIP), JGR Atmospheres, doi:10.1002/jgrd.50868
○ Bala, et al. (2008): Impact of geoengineering schemes on the global hydrological cycle, PNAS, doi:10.1073/pnas.0711648105

Response: Thank you for the suggestion. We have changed the reference "Robock (2020)" to "Bala, et al. (2008), Tilmes, et al. (2013), and Lee, et al. (2020)".

3. Lines 101-102: You should elaborate on how important this feedback is (or isn't), so readers unfamiliar with fire schemes can get a sense of how meaningful the results are, and how much an improvement to the model to include this feedback would (or wouldn't) improve your results

Response: We added the following statement in the introduction:

"A coupling of fire emissions to the atmosphere would allow to identify additional climate feedback including changes to climate and the vegetation."

And we added the following statement to section 2.1 where we describe the fire scheme in CESM2/CLM5:

"Changes in fires can have an impact on radiation, precipitation, and therefore vegetation. However, since this paper mainly focuses on the impacts of solar geoengineering on wildfires instead of the other way around, we do not expect the uncoupled fire emissions to have a large impact on our results, but future studies will be needed to further understand the impact."

Model Description

4. Lines 128-129: "Agricultural fires" refers specifically to fires intentionally set for agricultural reasons, correct? If deforestation fires are also intentional, why are they included?

Response: Agricultural fires in the fire scheme in CESM2/CLM5 only refers to fires in cropland and does not include deforestation fires.

5. Lines 186-188: This is globally-averaged forcing, correct? Additionally, the wording "going from 8.5 W/m2 to 4.5 W/m2 by 2100" is a bit confusing. I would clarify - "Both of these geoengineering scenarios aim to reduce globally-averaged forcing from the ScenarioMIP Tier 1 high-forcing scenario (SSP5-8.5), which averages 8.5 W/m2 of forcing by 2100, to the medium-forcing scenario (SSP2-4.5), which averages 4.5 W/m2 of forcing by 2100." Additionally, you should clarify whether the goal of each experiment was to match the forcing directly (e.g., 8.5 W/m2 → 4.5 W/m2) or to match the surface temperature (e.g., surface temperature of 8.5 W/m2 → surface temperature of 4.5 W/m2).

Response: Thank you. We changed

"Both of these geoengineering scenarios aim to reduce forcing from ScenarioMIP Tier 1 high forcing scenario (SSP5-8.5) to the medium forcing scenario (SSP2-4.5), going from 8.5 to 4.5 Wm^{-2} in 2100."

to "Both of these geoengineering scenarios aim to reduce globally-averaged forcing from the ScenarioMIP Tier 1 high-forcing scenario (SSP5-8.5), which averages 8.5 W/m^2 of forcing by 2100, to the medium-forcing scenario (SSP2-4.5), which averages 4.5 W/m^2 of forcing by 2100. The geoengineering scenarios were designed to match the surface temperature of SSP2-4.5."

6. Lines 194-196: Can you elaborate on the feedback algorithm at all, for the benefit of those unfamiliar with it? Even one more sentence, such as "The feedback algorithm chooses the reduction in solar constant or SO2 injection quantity based on the prescribed goals, and it adjusts this quantity each year to correct for differences between the simulated climate state and the target" would be helpful.

Response: Thank you. We added the following statement to the text:
"The feedback algorithm identifies differences in the global mean surface temperature between the simulated and the prescribed target temperature each year and from that calculates required changes in the solar constant or SO_2 injections."

7. Lines 201-202: I was looking for the horizontal resolution back in 2.1, where you gave the vertical resolution of WACCM; consider moving it there

Response: We added the following statement to Section 2.1:
"The default horizontal resolution of WACCM6 is 1.25° × 0.9° (longitude × latitude)."

8. Lines 203-204: Whenever you direct someone to the supplementary, I recommend including exactly what they should expect to find. Right now you have "see Table S1"; I suggest changing to "see Table S1 for ensemble sizes" or similar

Response: Thank you. We changed "see Table S1" to "see Table S1 for ensemble sizes". We also changed "see Table S2" to "see Table S2 for projected regional and global change of burned area and fire carbon emissions in 2091-2100 relative to 2021-2030 (%) under different scenarios", and added "see Table S3 for averages of regional and global annual projected burned area (Mha/year) and fire carbon emissions in 2091-2100 under different scenarios" in Section 3.2.

Results

9. Line 211: I'm guessing that all your numbers in parentheses are averages for the 2091-2100 period relative to the 2021-2030 period. You should say this explicitly

Response: We changed "The largest increases in the global burned area are seen in the SSP5-8.5 scenarios (~20%) and SSP3-7.0 (~10%)." to "The largest increases (averages for the 2091-2100 period relative to the 2021-2030 period) in the global burned area are seen in the SSP5-8.5 scenarios (~20%) and SSP3-7.0 (~10%)."

10. Lines 215-216: It would be helpful if you could include some context about why burned area is expected to decrease in some regions under some scenarios; this is certainly explored in-depth later in the paper, but for a first-time reader, one sentence here - "while total burned area is expected to increase under most global warming scenarios, burned area may decrease in some regions due to reduced 2m relative humidity and reduced soil moisture" or similar - would be very helpful.

Response: We added the following statement to Section 3.1:
"While global total burned area is expected to increase under most global warming scenarios, burned area may decrease in some regions due to changes in anthropogenic activities or reduced 2m relative humidity and/or reduced soil moisture."

11. Line 231: Do the ranges represent ensemble spread? You should clarify your methods Explicitly.

Response: Thank you. We changed

"The change of the two geoengineering scenarios compared to SSP2-4.5 in the last decade of the century is small in burned area (-2% – -12%) but relatively large in fire carbon emissions (-18% – -23%)."

to

"The change of the two geoengineering scenarios compared to SSP2-4.5 in the last decade of the century is small in burned area (-2% for G6Solar and -12% for G6Sulfur) but relatively large in fire carbon emissions (-18% for G6Solar and -23% for G6Sulfur)."

Other similar sentences in the section have also been changed.

Mechanisms

12. Lines 296-297: "The correlations calculated here account for spatial variability within the region and interannual variability during 2091-2100" How, exactly? Please say explicitly what you did to account for this

Response: We added the following statement to Section 4.1 to demonstrate the method:

"For example, if a region consists of 500 individual model grids, as we use 10 years of annual data, there will be 5000 (500 × 10) pairs of ΔTS and ΔBA to calculate correlations."

13. Lines 307-308: "This suggests that the changes in area burnt in these regions are not predominantly driven by the surface temperature changes, but by other factors" This seems like an odd speculation to make, given that the purpose of your study is to determine how geoengineering affects fires - do your results support this, or not? This also contradicts what you say in the discussion, which is that these regions are not very sensitive to any of the factors considered in this study

Response: The purpose of this study is to determine how geoengineering affects fires, however geoengineering can impact fires through factors other than surface temperature changes. Here we found that burned areas and fire emissions are changed under geoengineering, however the impacts of surface temperature change over boreal regions are relatively small, therefore we hypothesize that they may be driven by other factors driven by geoengineering (e.g., hydrological cycle).

To clarify, we changed the statement

"This suggests that the changes in area burnt in these regions are not predominantly driven by the surface temperature changes, but by other factors."

to

"This suggests that the changes in area burnt in these regions might be predominantly driven by other factors changed by geoengineering (e.g., hydrological cycle) rather than the surface temperature changes, which will be analyzed in the following sub-sections."

14. Lines 349-352: If you're going to discuss this analysis, you should provide the actual numbers, either here or in the supplementary

Response: We added the values in Supplement (Table S4) and referred it in the main text.

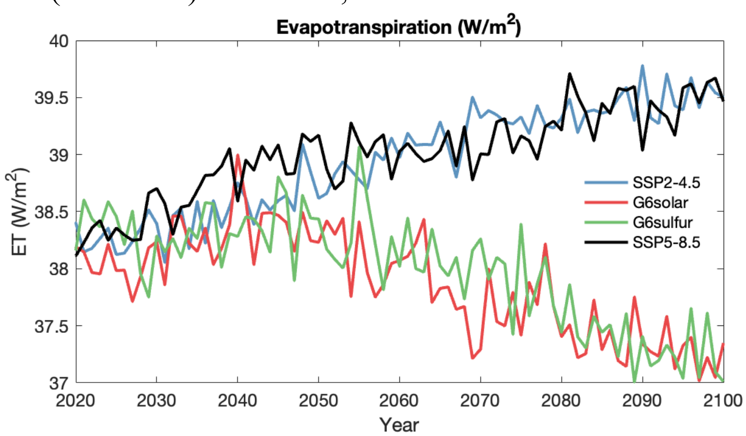
Table S4. 1-year lag correlations of precipitation change and burned area change and fire carbon emission change for SSP2-4.5, G6Solar, and G6Sulfur from SSP5-8.5.

	Burned area			Fire carbon emissions		
	SSP2-4.5	G6Solar	G6Sulfur	SSP2-4.5	G6Solar	G6Sulfur

BONA (Boreal North America)	-0.12	-0.09	-0.06	-0.20	-0.15	-0.10
TENA (Temperate North America)	0.04	/	-0.05	0.04	/	/
CEAM (Central America)	-0.21	-0.15	/	-0.28	-0.19	/
NHSA (Northern Hemisphere South America)	/	/	-0.18	/	-0.11	-0.29
SHSA (Southern Hemisphere South America)	-0.11	-0.31	-0.25	-0.08	-0.24	-0.21
EURO (Europe)	-0.11	-0.15	0.07	-0.06	-0.04	0.11
MIDE (Middle East)	-0.21	-0.11	0.06	-0.21	/	0.15
NHAF (Northern Hemisphere Africa)	-0.11	-0.07	-0.06	-0.05	-0.05	-0.05
SHAF (Southern Hemisphere Africa)	-0.26	-0.13	-0.20	-0.19	-0.03	-0.07
BOAS (Boreal Asia)	-0.06	-0.13	-0.06	-0.08	-0.18	-0.07
CEAS (Central Asia)	-0.10	/	0.05	-0.06	0.03	0.06
SEAS (Southeast Asia)	/	-0.07	/	/	-0.07	/
EQAS (Equatorial Asia)	0.14	/	0.11	0.17	/	0.17
AUST (Australia and New Zealand)	0.05	-0.07	-0.03	0.05	-0.06	/

15. Lines 371-374: Does the model output support this? It should be relatively easy to compute evapotranspiration and confirm or deny this

Response: Thank you. We checked the model evapotranspiration and the model results do not support this statement (see below). Therefore, we deleted it from the text.



16. Lines 465-468: I disagree with this sentence; G6Solar does not provide more "direct" climate impacts than G6Sulfur, and it does not follow that G6Solar would therefore be expected to have larger impacts, as both experiments have similar reductions in downward forcing and surface temperature

Response: We changed

"This is expected since the climate impacts of solar irradiance reduction (G6Solar) is more direct than that of stratospheric sulfate aerosols (G6Sulfur) and stratospheric sulfate aerosols can yield to additional changes (such as higher diffuse radiation that benefits plant growth)."

to

"It is possible that stratospheric sulfate aerosols could yield to additional changes such as higher diffuse radiation that benefits plant growth, which reduces the correlations of the analyzed factors with fires."

17. Lines 468-470: Without shading or error bars in the figure, there is no way to know whether or not the differences between G6Solar and G6Sulfur are significant
Response: We deleted the statement.

Conclusions

18. Line 535-537: Be careful with wording; burned area decreases in the geoengineering scenarios relative to SSP5-8.5, but there is no decrease relative to present day, or SSP2-4.5, that is statistically significant in Fig. 1
Response: We changed the statement to "The global total wildfire burned area is projected to increase under the unmitigated scenario (SSP5-8.5), and decrease under the two geoengineering scenarios (solar irradiance reduction and stratospheric sulfate aerosols) comparing the averages of 2091-2100 relative to 2021-2030."

Figures

19. Figures 1, 2, and 4: I would like to see uncertainty better represented in these figures. Ensemble spread is missing for SSP2-4.5 in Fig. 1a and 1c, for SSP2-4.5 and SSP5-8.5 in Fig. 1b and 1d, for all simulations in Fig. 2b and 2d, and everywhere in Fig. 4. For time series, I would like to at least see the ensemble spread; ideally, the uncertainty introduced by taking the 5-year running average would also be accounted for. For plots showing a difference between two time periods, the uncertainty for both the experimental period and the reference period should be reflected.
Response: In this study, different scenarios have different numbers of ensemble sizes. Reviewer 2 was concerned that different ensemble sizes may result in biases in the ensemble ranges, which may be misleading. I.e., a scenario with larger ensemble spread may be due to larger ensemble size rather than larger variabilities. In addition, in Section 4 (mechanism of geoengineering impacting fires), we only used the ensemble mean values and the analyses does not involve ensemble spread. Therefore, to be consistent among scenarios and avoid the confusion, we changed the Section 3 and corresponding figures (Figures 1, 2, and S4) and tables (Tables 2 and 3) to only show ensemble mean values rather than spread. Please see the updated manuscript for more information.

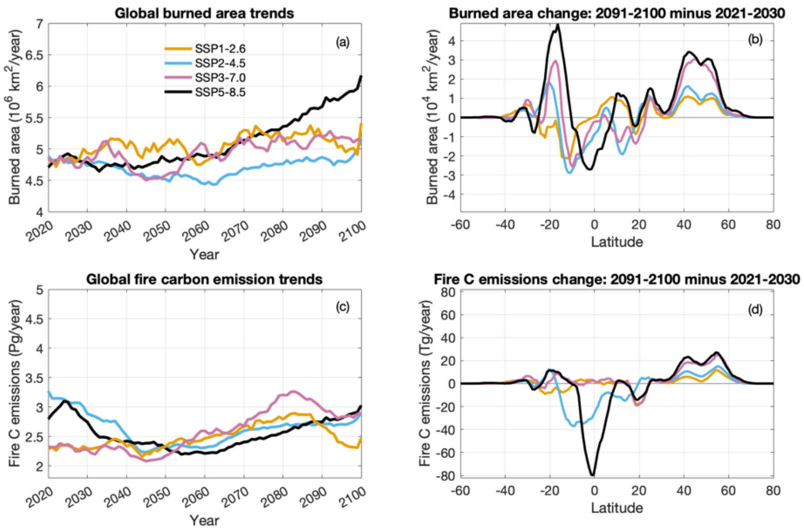


Figure 1. Overall global burned area and fire carbon emission trends and changes under SSP scenarios. (a) Time series of global burned area from 2020 to 2100 under the SSP1-2.6, SSP2-4.5, SSP3-7.0, and SSP5-8.5 scenarios (represented by different colors). The time series are shown as 5-year moving averages. (b) Zonal changes (absolute value) of burned area in the period 2091-2100 relative to the period 2021-2030 (calculated by the value in 2091-2100 minus the value in 2021-2030), under the SSP1-2.6, SSP2-4.5, SSP3-7.0, and SSP5-8.5 scenarios (represented by different colors, color code is the same as it in panel a). 5-degree moving average were applied to the shown zonal changes. Panels (c) and (d) are similar to panels (a) and (b), respectively, but for fire carbon emissions.

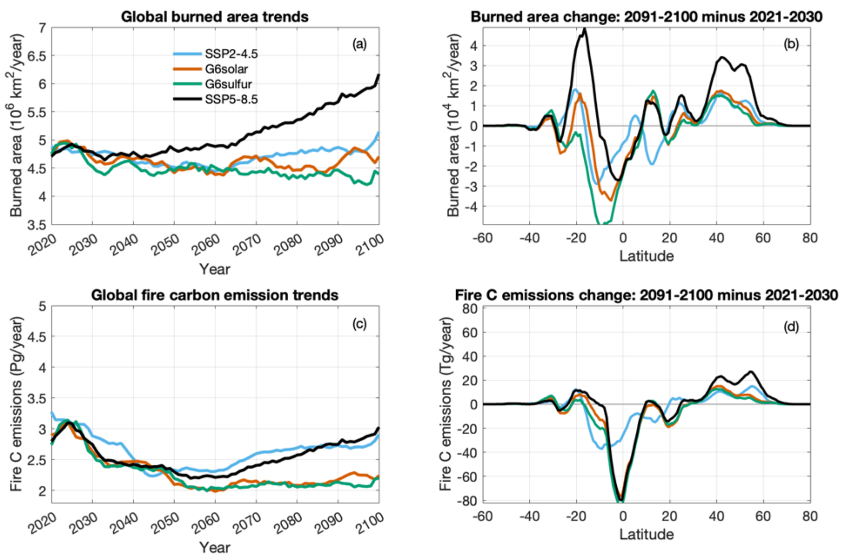


Figure 2. Overall global burned area and fire carbon emission trends and changes under the G6sulfur and G6solar geoengineering scenarios relative to SSP2-4.5 and SSP5-8.5. (a) Time series of global burned area from 2020 to 2100 under the G6sulfur, G6solar, SSP2-4.5, and SSP5-8.5 scenarios (represented by different colors). The time series are shown as 5-year moving averages. (b) Zonal changes (absolute value) of burned area in the period 2091-2100 relative to the period 2021-2030 (calculated by the value in 2091-2100 minus the value in 2021-2030), under the G6sulfur, G6solar, SSP2-4.5, and SSP5-8.5 scenarios (represented by different colors, color code is the same as it in panel a). 5-degree moving average were applied to the shown zonal changes. Panels (c) and (d) are similar to panels (a) and (b), respectively, but for fire carbon emissions.

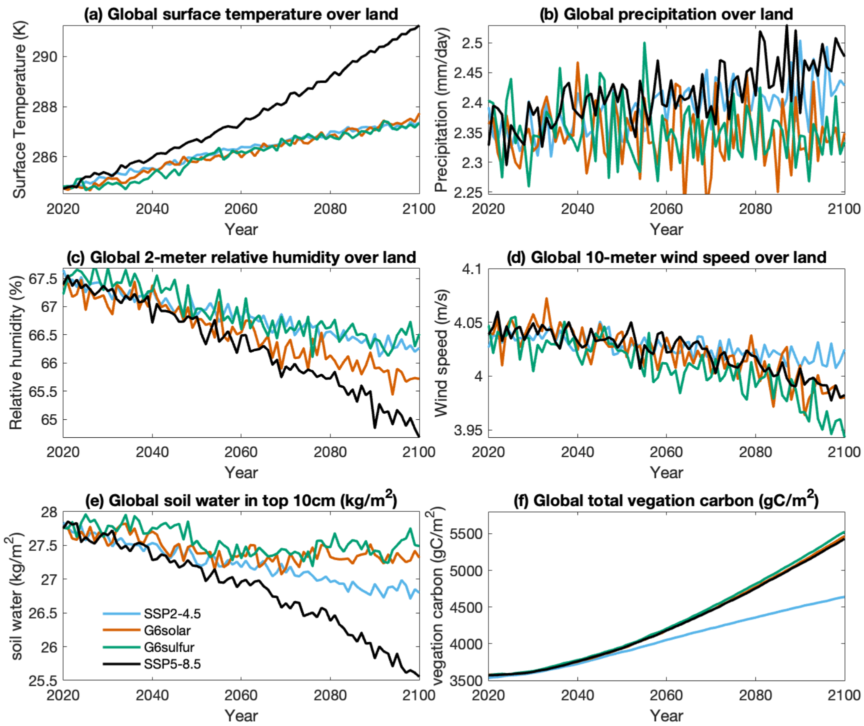


Figure 4. Time series of mean (a) surface temperature (K), (b) precipitation (mm/day) over the land, (c) 2-meter relative humidity (%) over the land, (d) 10-meter wind speed (m/s) over the land, (e) soil water content at top 10 cm (kg/m^2), and (f) vegetation carbon excluding carbon pool (Gc/m^2). For a scenario with multiple simulations (i.e., SSP5-8.5, SSP2-4.5, G6Sulfur, and G6Solar), simulation means are shown.

20. Figure 1: I suggest flipping the axes for panels b and d (latitude, the independent variable, on the horizontal axis; burned area or C emissions, the dependent variables, on the vertical axis).

Response: We flipped the axes for panels b and d in Figures 1 and 2. Please see the updated figures in Response to Comment #19.

21. Figure 1: The "10^4" for panel b (At least, I think it belongs to panel b and not d) is very out of the way - I suggest making it easier to find, perhaps by including it in the axis description: "Burned Area (10^4 km2/yr)"

Response: We revised the axis description in Figures 1 and 2. Please see the updated figures in Response to Comment #19.

22. Figure 1: According to Table S1, SSP2-4.5 also has multiple ensemble members; why isn't there shading to show the ensemble spread like there is for SSP5-8.5? Why isn't there shading in panels b and d at all?

Response: We removed ensemble spread from all figures. Please see the updated figures in Response to Comment #19.

23. Figure 2: Same comment as above about 10^4 for panel b

Response: We revised the axis description. Please Please see the updated figures in Response to Comment #19.

24. Figure 2: The color scheme should be consistent with Figure 1. SSP2-4.5 and SSP5-8.5 were red and purple in Fig. 1 and they're blue and black in Fig. 2. Using the same colors for each run throughout the paper would be very helpful

Response: We thank the reviewer for pointing this out. We have revised Figures 1, 2, and 4 to use the consistent and colorblind friendly colors. Please see the updated figures in Response to Comment #19.

25. Figures 3, 5, and 7: I would like to see statistical significance on all of these maps, i.e., hatching or shading where the changes are not significant.

Response: Figure 3 is updated to only show results where fractional burned area or fire carbon emissions not equals to 0. Figures 5 and 7 are updated with insignificant points marked on the maps. Please see the updated figure below.

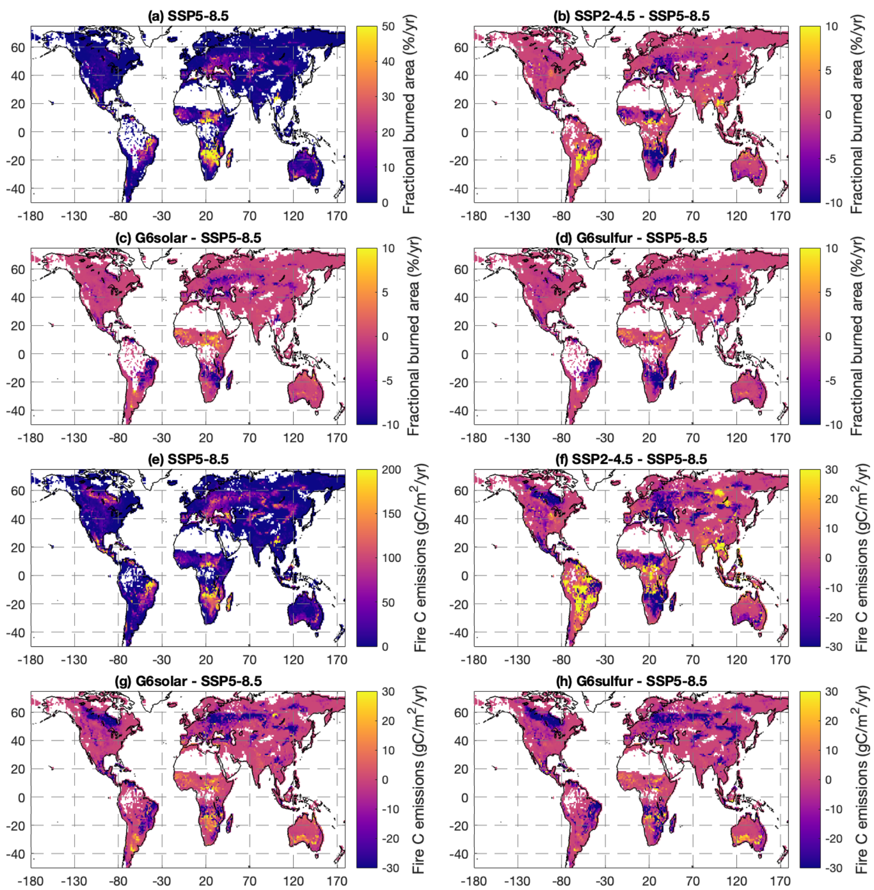


Figure 3. Fractional burned area (%/year) and fire carbon missions (gC/m^2/year) averaged for 2091-2100. (a) Spatial distribution of fractional burned area (%/year) averaged for 2091-2100 under SSP5-8.5. Results are not shown for model grids where fractional burned area equals to 0. The difference in fractional burned area of (b) SSP2-4.5 from SSP5-8.5 (c) G6Solar from SSP5-8.5, and (d) G6Sulfur from SSP5-8.5 averaged for 2091-2100. Results are not shown for model grids where the difference in fractional burned area equals to 0. (e-h) are similar to (a-d) but for fire carbon missions (gC/m^2/year). For a scenario with multiple simulations (i.e., SSP5-8.5, SSP2-4.5, G6Sulfur, and G6Solar), simulation mean is shown.

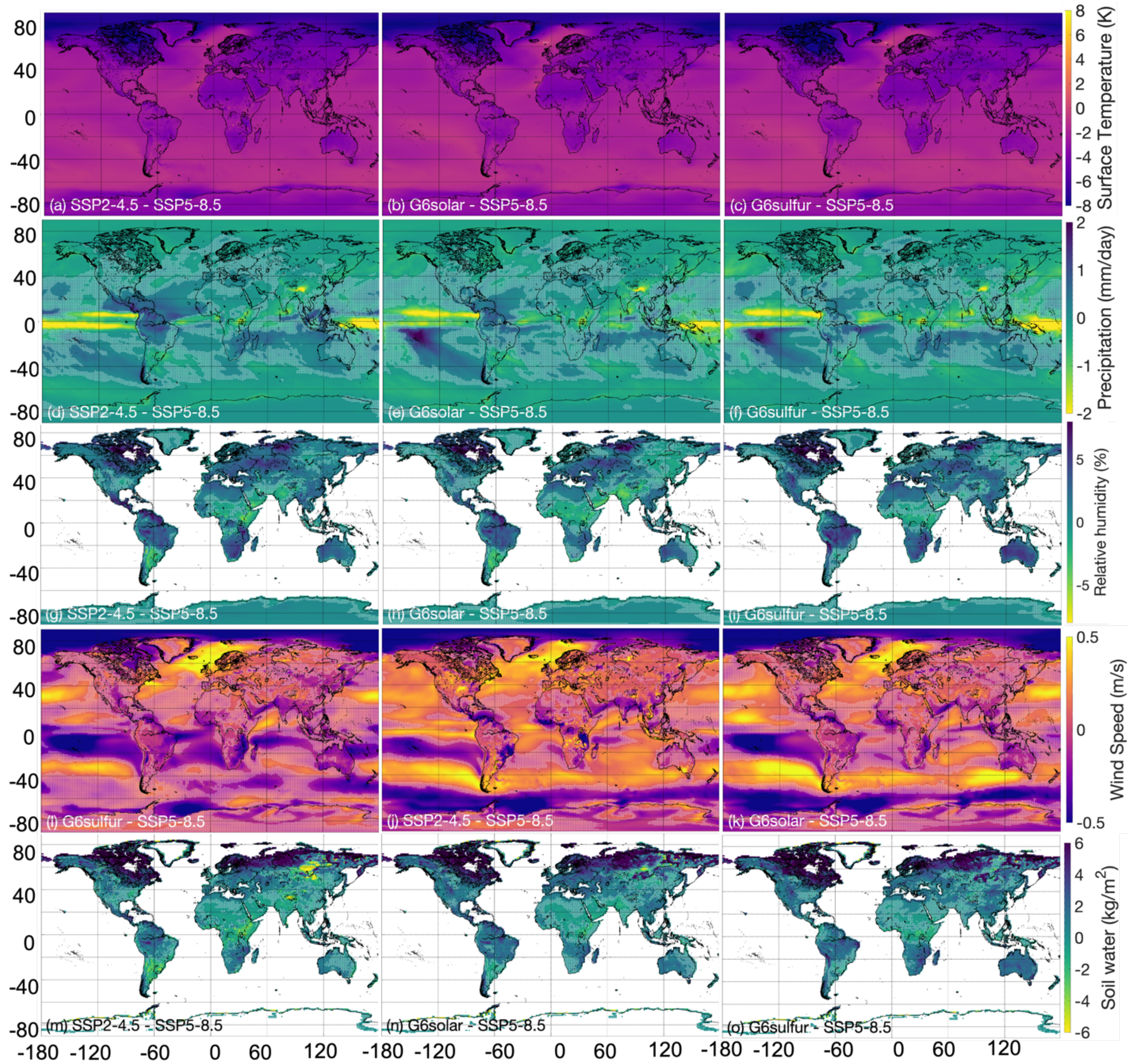


Figure 5. The difference in surface temperature (K) of (a) SSP2-4.5 from SSP5-8.5 (b) G6Solar from SSP5-8.5, (c) G6Sulfur from SSP5-8.5. (d-f) are the same as (a-c) but for precipitation (mm/day). (g-i) are the same as (a-c) but for 2-meter relative humidity (%). (j-l) are the same as (a-c) but for 10-meter wind speed (m/s). (m-o) are the same as (a-c) but for soil water content at top 10 cm (kg/m^2). The grids where SSP2-4.5, G6Sulfur, or G6Solar is not significantly different from SSP5-8.5 is marked with white shade. Taking precipitation of SSP2-4.5 as an example, the significance for each model grid is calculated by student t-test (p value is 0.1) using 10 years of SSP2-4.5 precipitation (10 data points) and 10 years of SSP5-8.5 precipitation (10 data points).

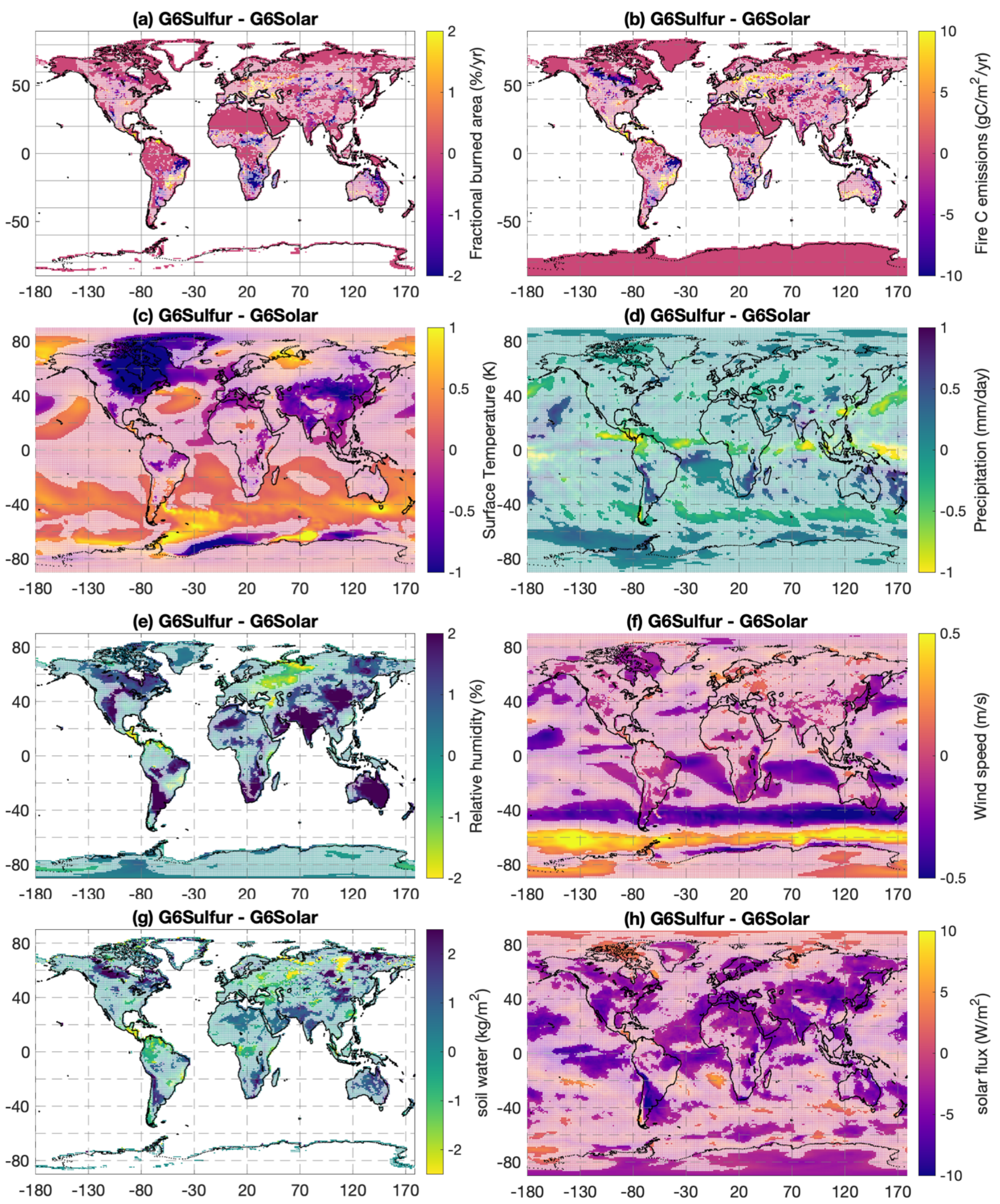


Figure 7. The difference between G6Sulfur and G6Solar in (a) burned area fraction (BA; %/yr), (b) fire carbon emissions (Cemis; gC/m^2/yr), (c) surface temperature (TS; K), (d) precipitation (Precip; mm/day), (e) 2-meter relative humidity (RH; %), (f) 10-meter wind speed (U10; m/s), (g) soil water content at top 10 cm (Soilwater; kg/m^2), and (h) downwelling solar flux at the surface (FSDS; W/m^2) averaged for 2091-2100. The grids where SSP2-4.5, G6Sulfur, or G6Solar is not significantly different from SSP5-8.5 is marked with white shade. Taking precipitation of SSP2-

4.5 as an example, the significance for each model grid is calculated by student t-test (p value is 0.1) using 10 years of SSP2-4.5 precipitation data during 2091-2100 (10 data points) and 10 years of SSP5-8.5 precipitation data during 2091-2100 (10 data points).

26. Figure 4: same comment about color scheme consistency across figures

Response: We thank the reviewer for pointing this out. We have revised Figures 1, 2, and 4 to use the consistent and colorblind friendly colors. Please see the updated figures in Response to Comment #19.

27. Figure 5: for the temperature plots, I strongly recommend a different color scheme. For every other plot in this figure, yellow represents no change, but on the temperature plots, both red and blue represent cooling, and yellow indicates moderate cooling. This is quite confusing; I suggest either changing the limits of the color scheme from +8 to -8 to match the other plots, with red for warming, yellow for no change, and blue for cooling (even though there's no warming), or keep it from 0 to -8 and have the color scale just be yellow and blue. Either way, I advise no red on the temperature plots if there's no warming!

Response: We changed the color scheme from +8 to -8 to match the other plots. Please see the updated figures in Response to Comment #25.

28. Figure 5: for precipitation, humidity, and soil moisture plots, by convention, red is usually used for drier conditions and blue for wetter conditions. I recommend you flip the color scale

Response: We flip the color scale for precipitation, humidity, and soil moisture plots. Please see the updated figures in Response to Comment #25.

29. Figure 6: This plot is very hard to read, for two reasons: firstly, all the panels have different color scales, and secondly, the different shades of yellow and orange blend together and make it hard to search for a specific result. I recommend you change the color scheme to be more like Figure S5; that plot uses a consistent color scheme for the entire figure, and the contrasting blues and reds make it much easier to identify patterns.

Response: We updated Figure 6 using the same color scale and color scheme. Please see below.

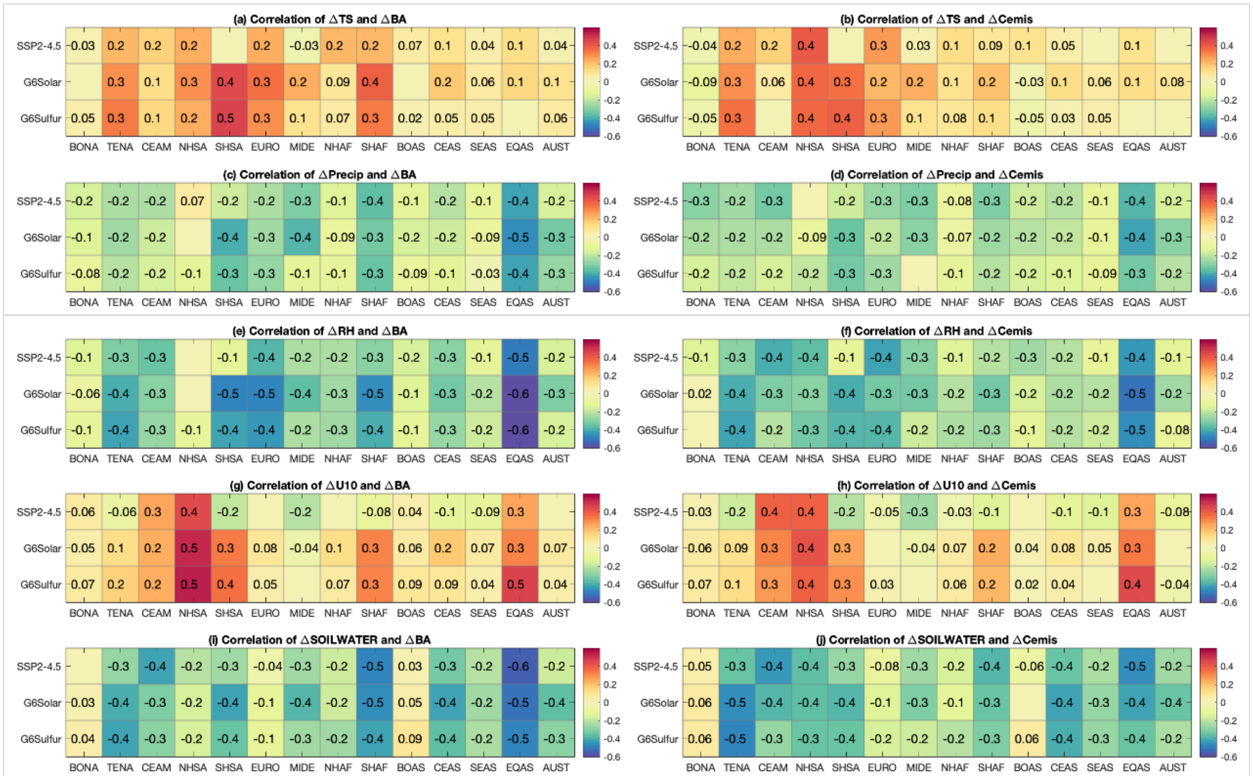


Figure 6. Correlations of (a) surface temperature change (ΔTS) and burned area change for SSP2-4.5, G6Solar, and G6Sulfur, and (b) ΔTS and fire carbon emission change (ΔCemis) for SSP2-4.5, G6Solar, and G6Sulfur. Only correlations that are significant are labeled (p value <= 0.1). For SSP2-4.5, ΔTS is calculated for individual model grids within the region and annual values. It is defined as TS of SSP2-4.5 minus TS of SSP5-8.5 (the reference case). For G6Solar and G6Sulfur, ΔTS is defined in the same way as SSP2-4.5. ΔBA and ΔCemis are defined in the same way as ΔTS. (c-d) are the same as (a-b) but for precipitation change (ΔPrecip). (e-f) are the same as (a-b) but for relative humidity change (ΔRH). (g-h) are the same as (a-b) but for 10-meter wind speed change (ΔU10). (i-j) are the same as (a-b) but for the change in soil water content at top 10 cm (ΔSOILWATER). Correlations are calculated for 14 fire regions (x-axis), following Giglio et al. (2010), namely Boreal North America (BONA), Temperate North America (TENA), Central America (CEAM), Northern Hemisphere South America (NHSA), Southern Hemisphere South America (SHSA), Europe (EURO), Middle East (MIDE), Northern Hemisphere Africa (NHAF), Southern Hemisphere Africa (SHAF), Boreal Asia (BOAS), Central Asia (CEAS), Southeast Asia (SEAS), Equatorial Asia (EQAS), and Australia and New Zealand (AUST). The definition of the regions can be found in Figure S3.

30. Figure 7: see previous comments on plots in Fig. 5; here, red = warming and blue = cooling, and this one is much easier to interpret. Same comments about the hydrological plots

Response: We flip the color scale for precipitation, humidity, and soil moisture plots. Please see the updated figures in Response to Comment #25.

31. Figures 8-9: I assume that all "changes" refer to 2091-2100 averages? You should say this explicitly in the caption

Response: We updated the captions for Figures 8 and 9.

32. Figures 8-9: Some of the number labels are covered up by other data points; can you fix this?

Response: It is hard to show all the data points and number labels in one figure without overlapping. We added the following figures in the supplement showing each variable separately.

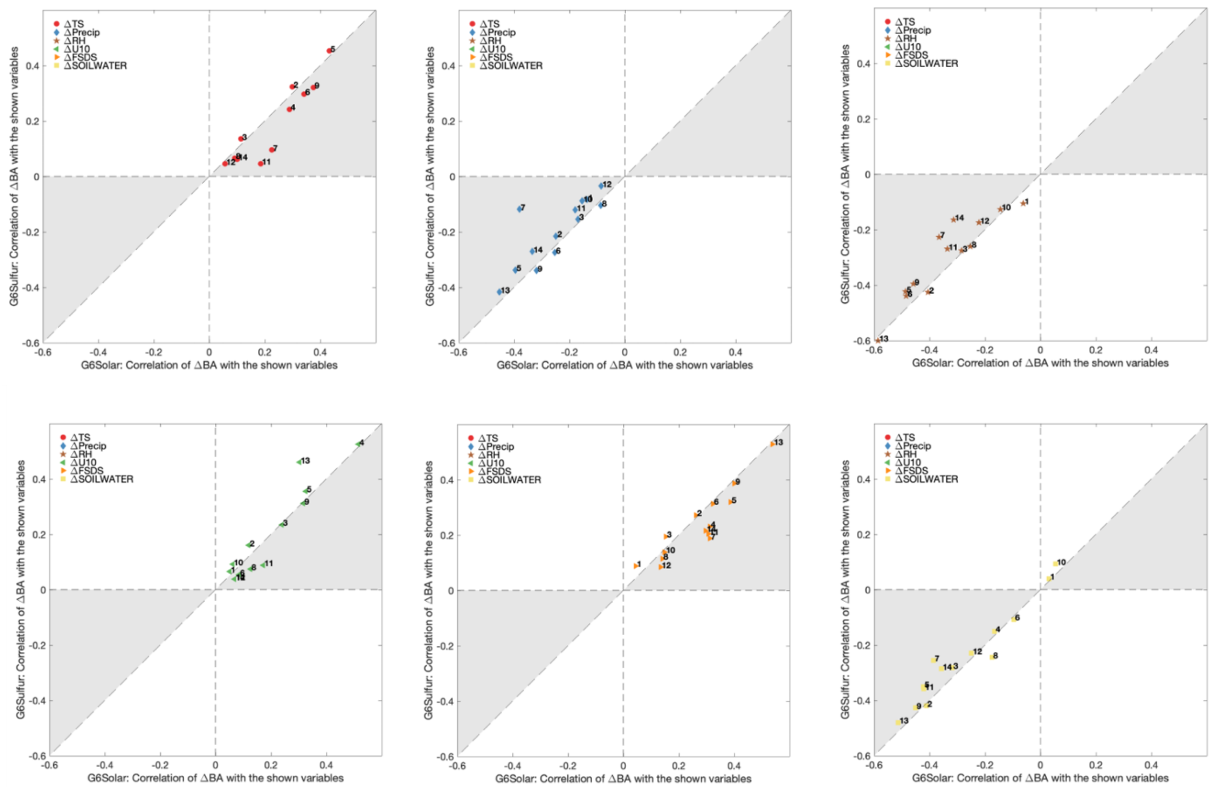


Figure S13. Same as Figure 8 but showing each variable separately.

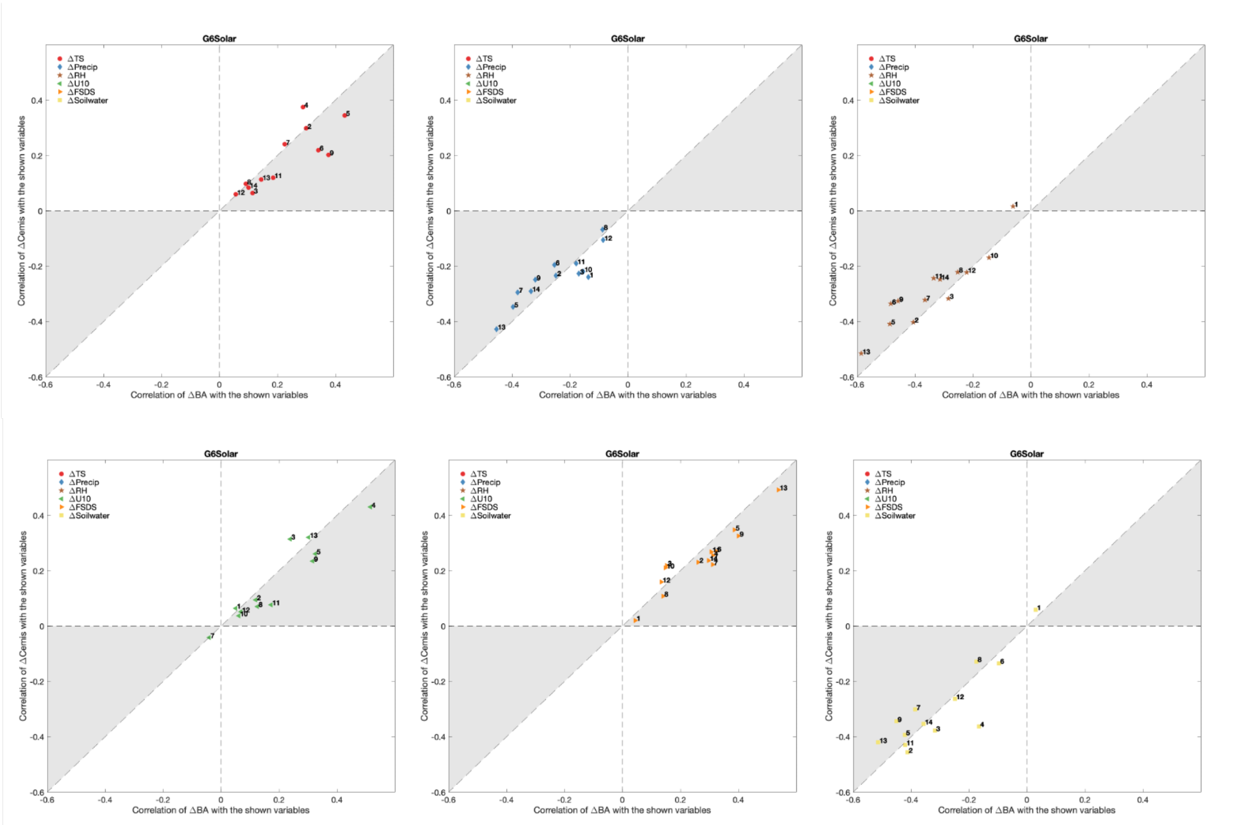


Figure S14. Same as Figure 9a but showing each variable separately.

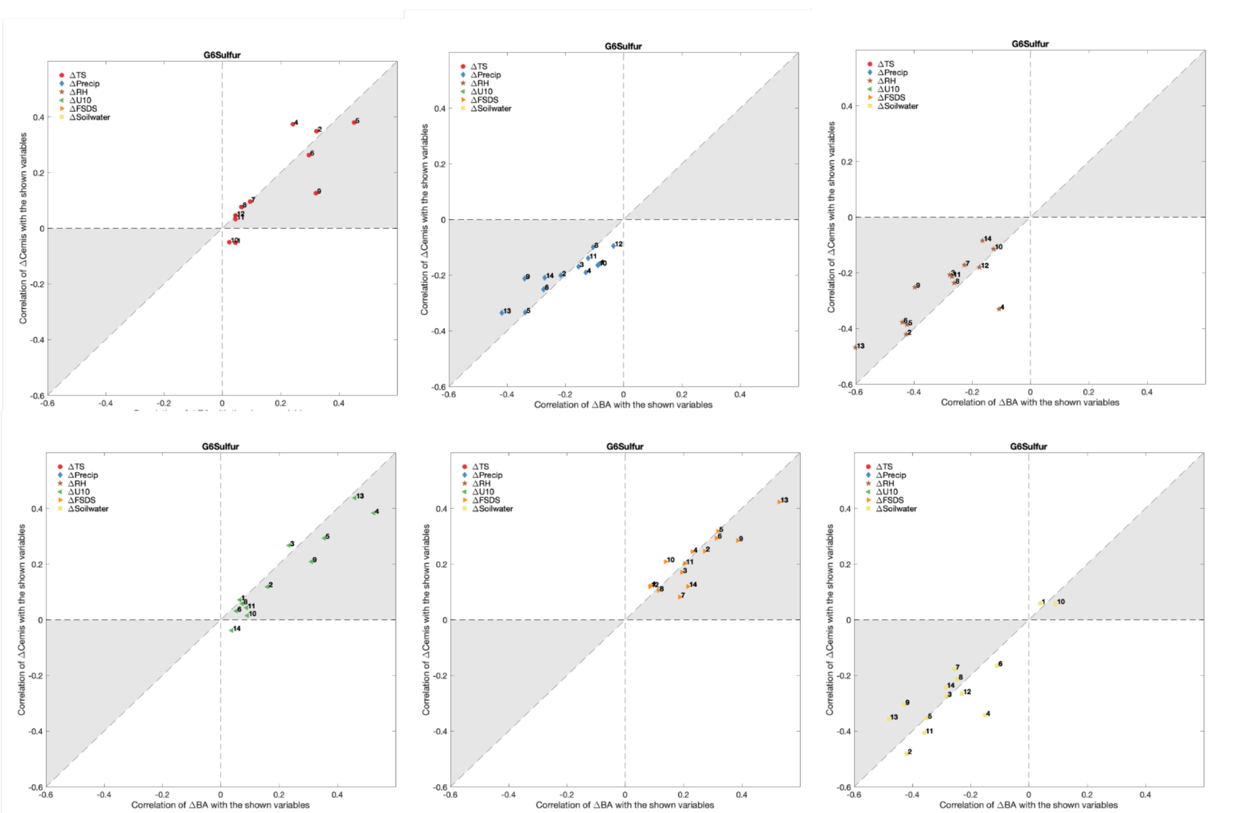
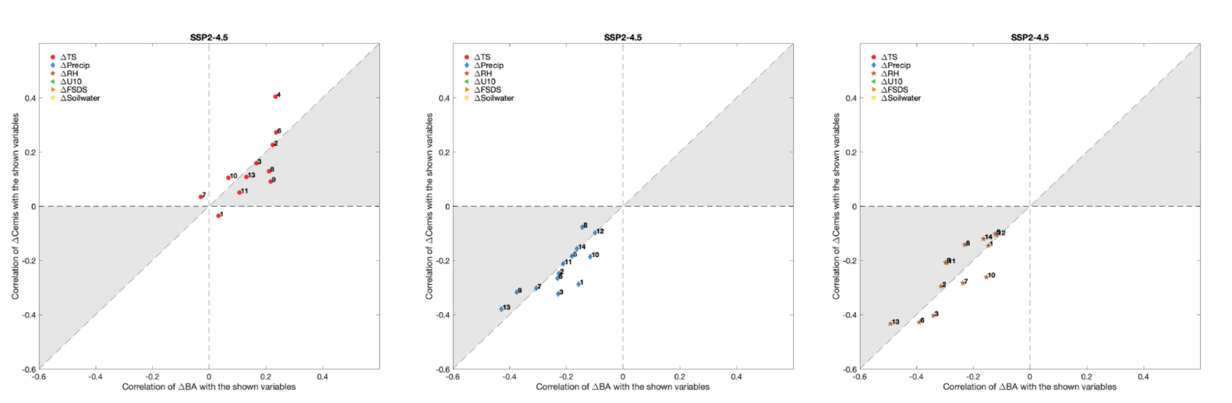


Figure S15. Same as Figure 9b but showing each variable separately.



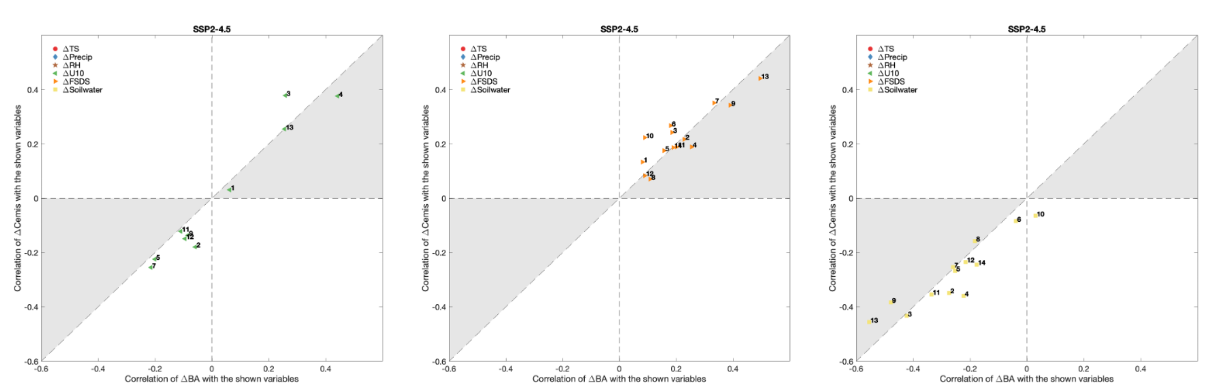


Figure S16. Same as Figure 9c but showing each variable separately.

Technical Corrections

33. Lines 183-196: This could probably all be one paragraph

Response: We merged them to one paragraph.

34. Lines 223-224: "the fire carbon emissions and burned area generally show trends consistent with burned area" I think there's a typo in here

Response: We changed "the fire carbon emissions and burned area generally show trends consistent with burned area" to "the fire carbon emissions generally show trends consistent with burned area".

35. Line 470: There is no Figure 4g; I assume you mean 4f?

Response: The sentence referring to 4g was deleted.

36. The "Conclusions" section is mistakenly numbered "4" instead of "5"

Response: We change "4. Conclusions" to "5. Conclusions".

37. Figure 8: I think there is a typo in the caption, line 994; I believe "G6Solar" should be "G6Sulfur

Response: Thank you. We corrected it.