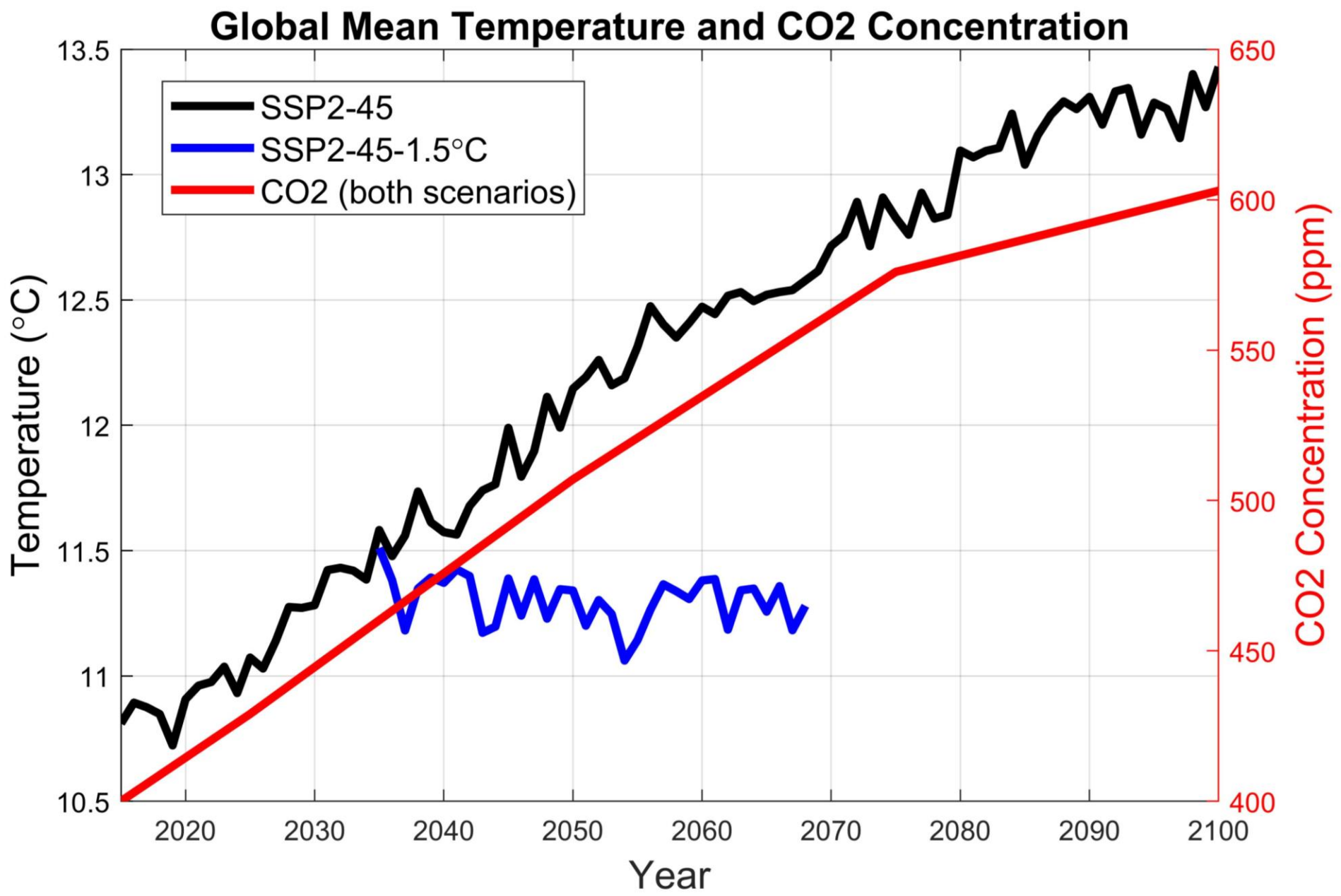
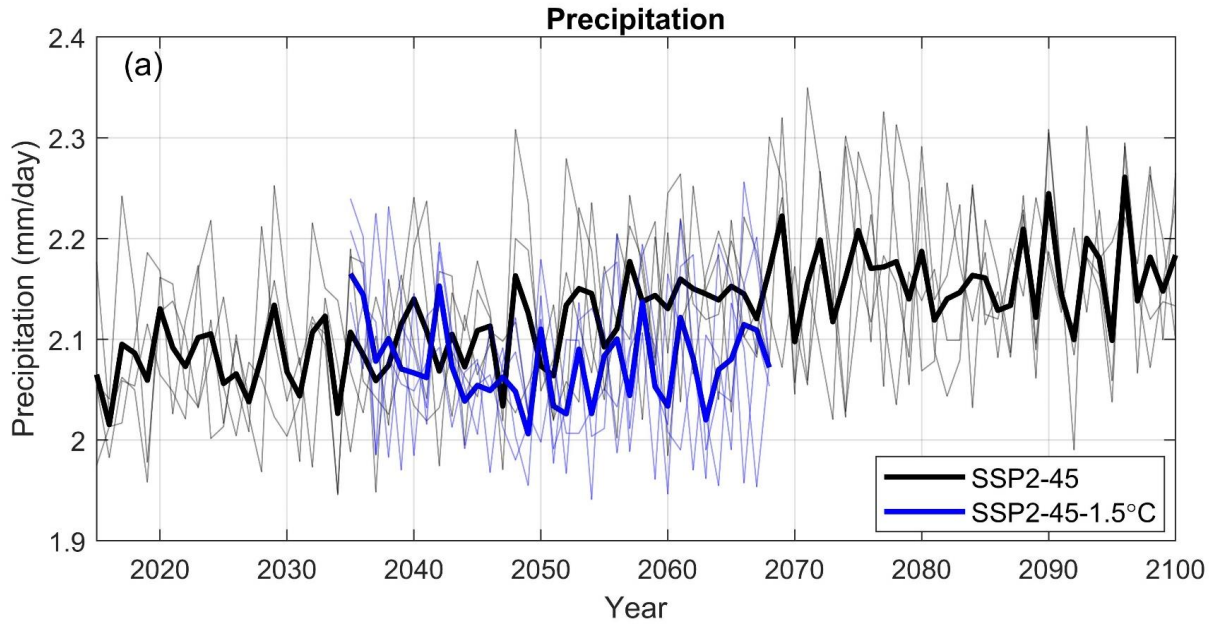
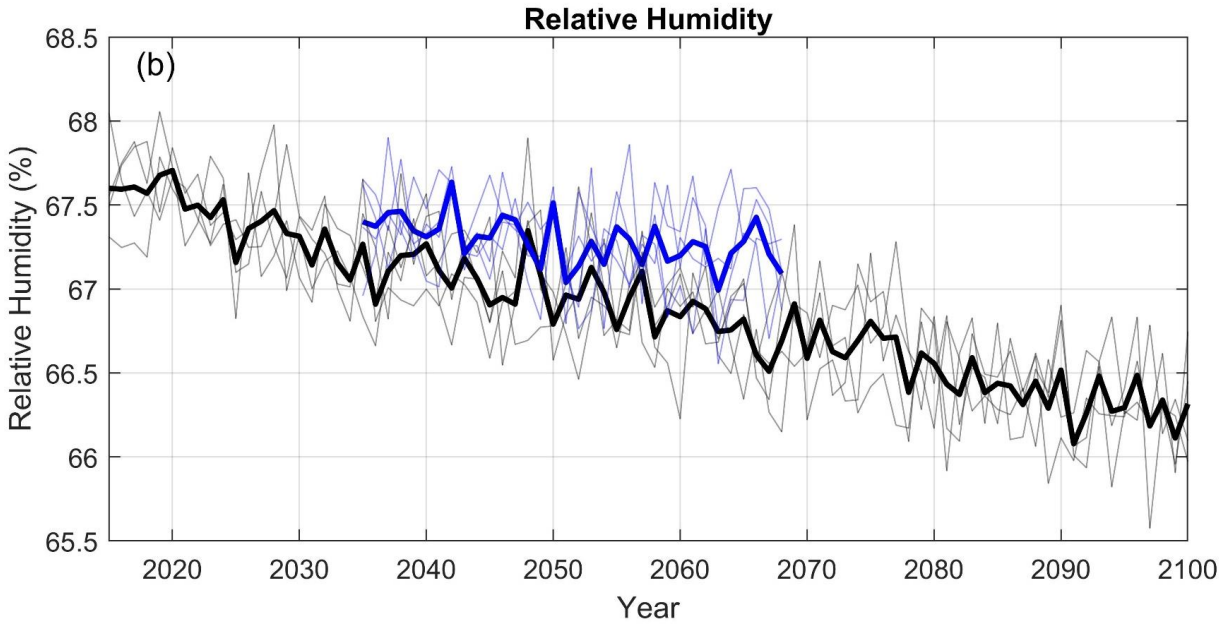
Impacts to Crop Production Under Stratospheric Aerosol Injection

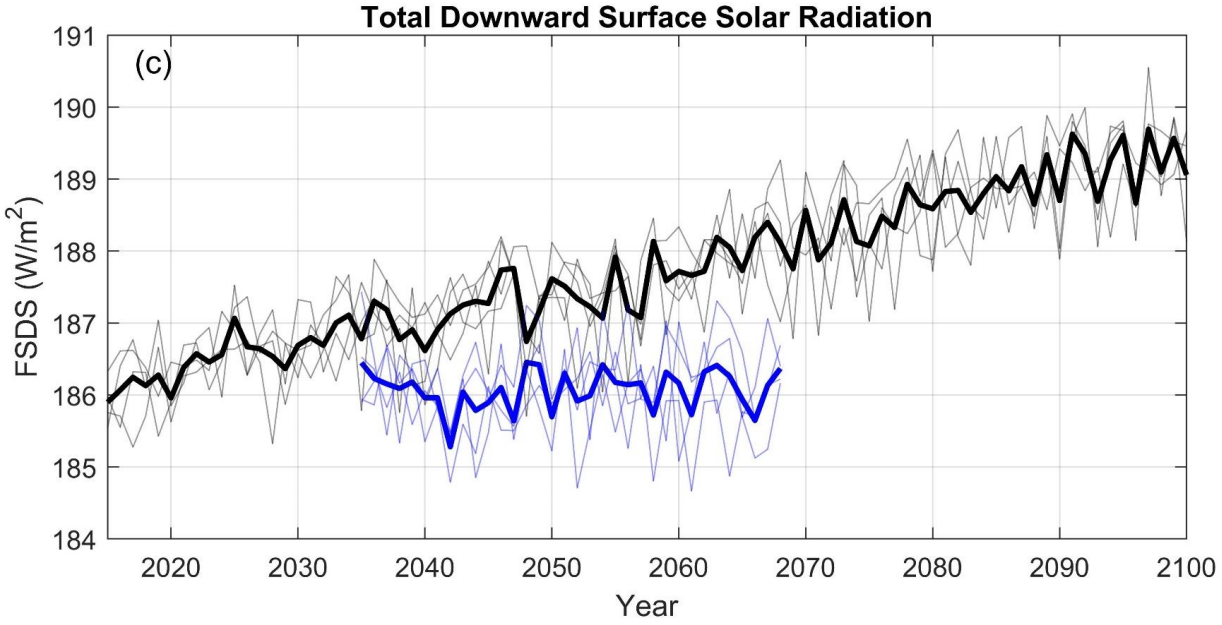
Depicting Information and Remembering Your Audience

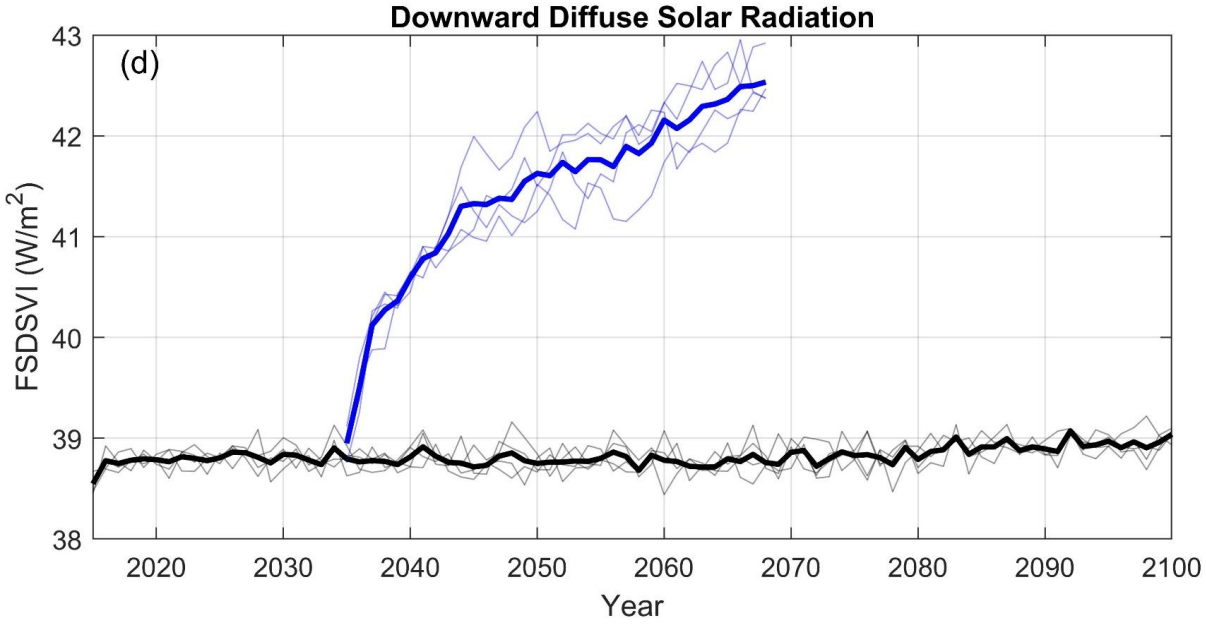
Brendan Clark


Global Mean Temperature and CO2 Concentration
SSP2-45
SSP2-45-1.5°C
CO2 (both scenarios)
Temperature (°C)
CO2 Concentration (ppm)
Year
13.5
13
12.5
12
11.5
11
10.5
650
600
550
500
450
400
2020
2030
2040
2050
2060
2070
2080
2090
2100

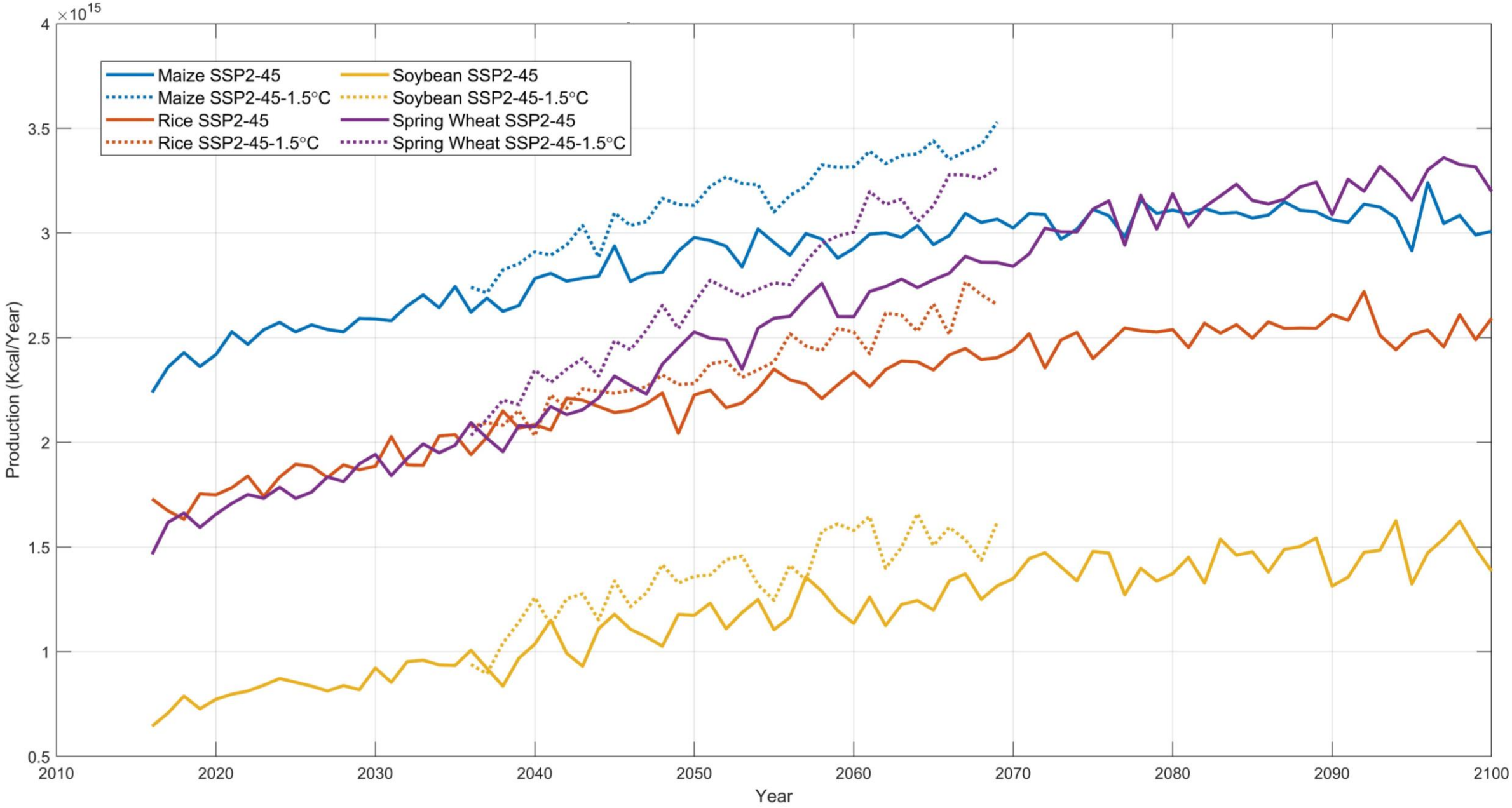

Precipitation
(a)
Precipitation (mm/day)
Year
SSP2-45
SSP2-45-1.5°C


Relative Humidity
(b)
Relative Humidity (%)
Year

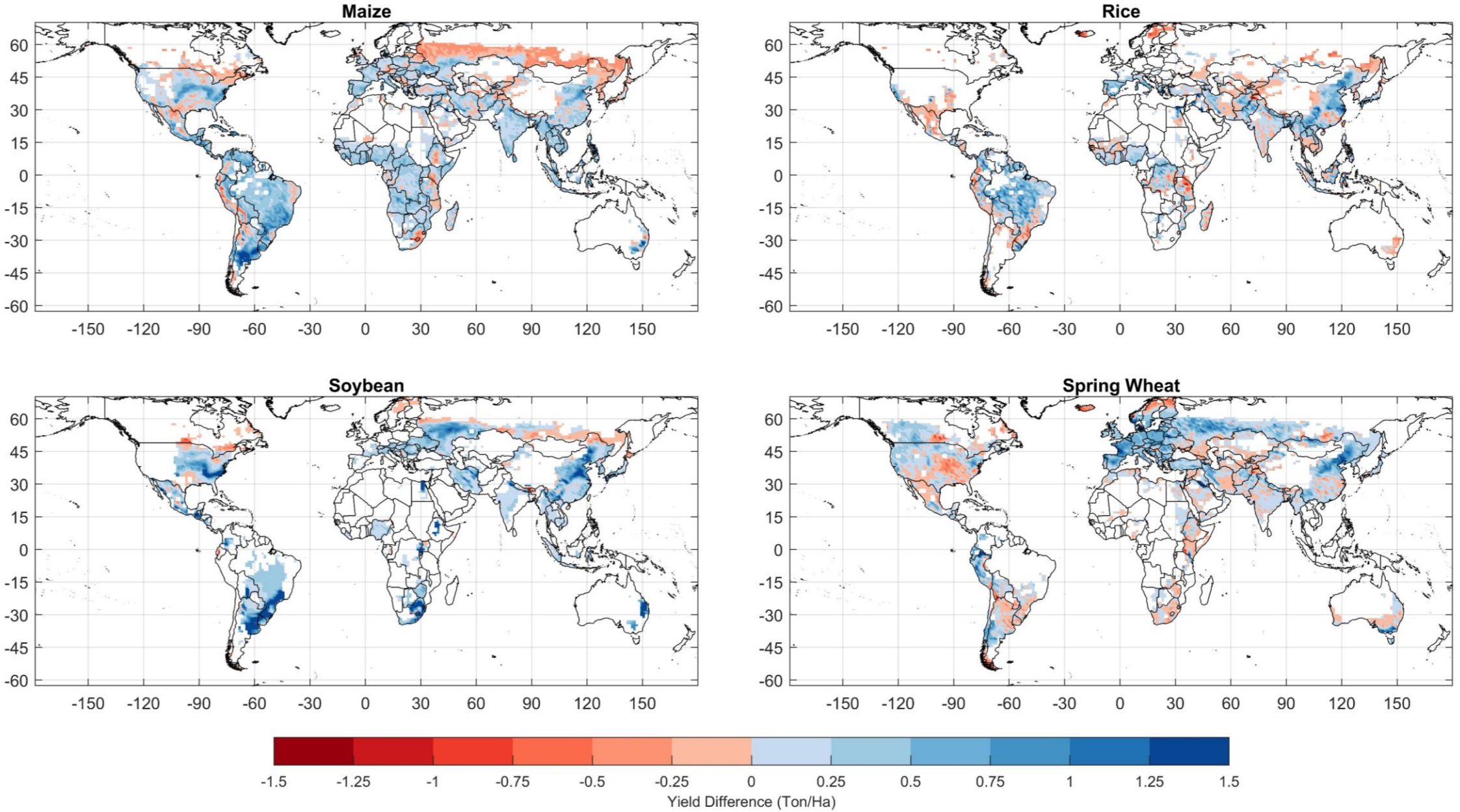

Total Downward Surface Solar Radiation
(c)
FSDS (W/m2)
Year


Downward Diffuse Solar Radiation
(d)
FSDSVI (W/m2)
Year

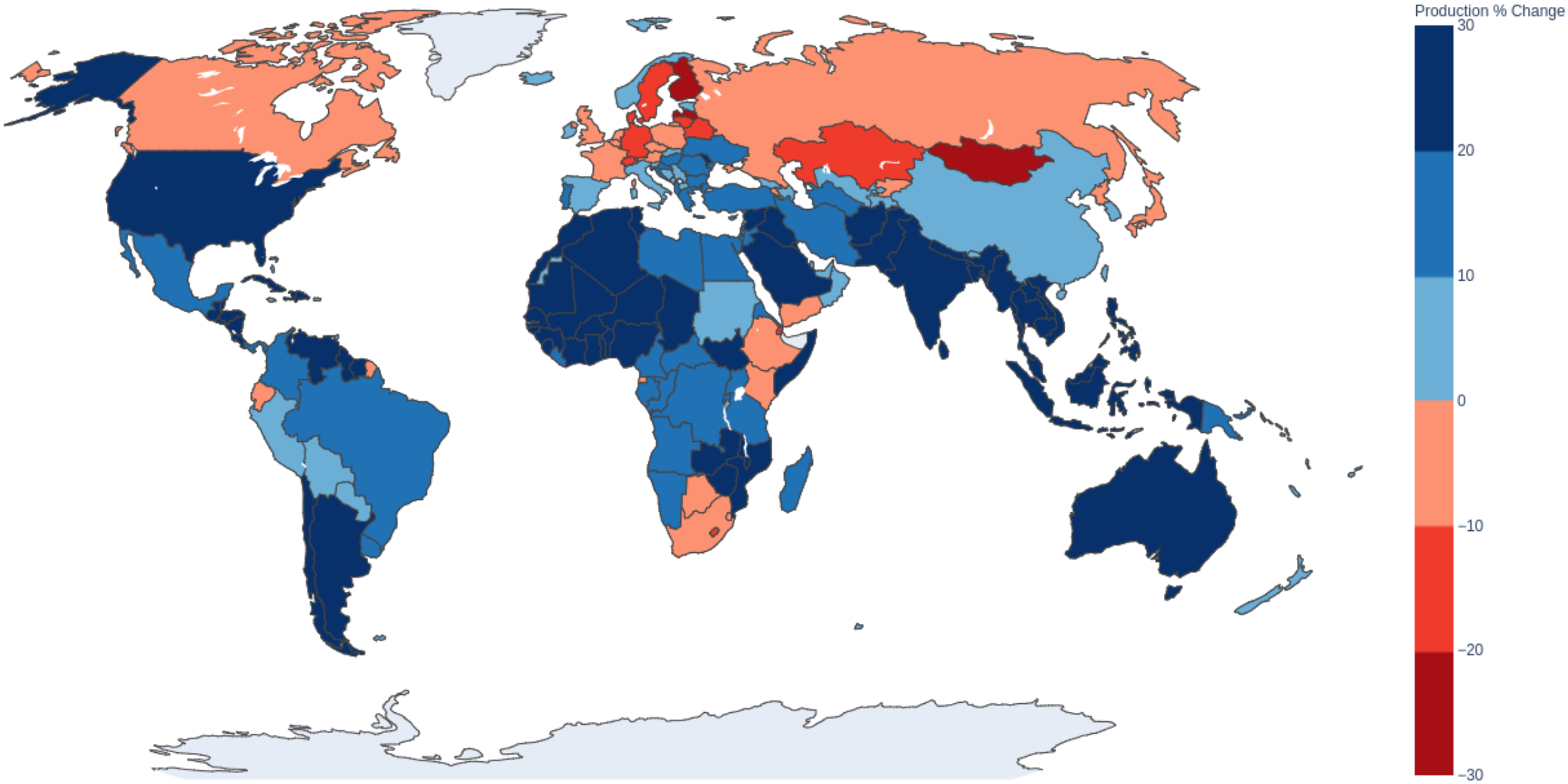
Average Annual Global Crop Production Under SSP2-4.5 and SSP2-4.5-1.5°C



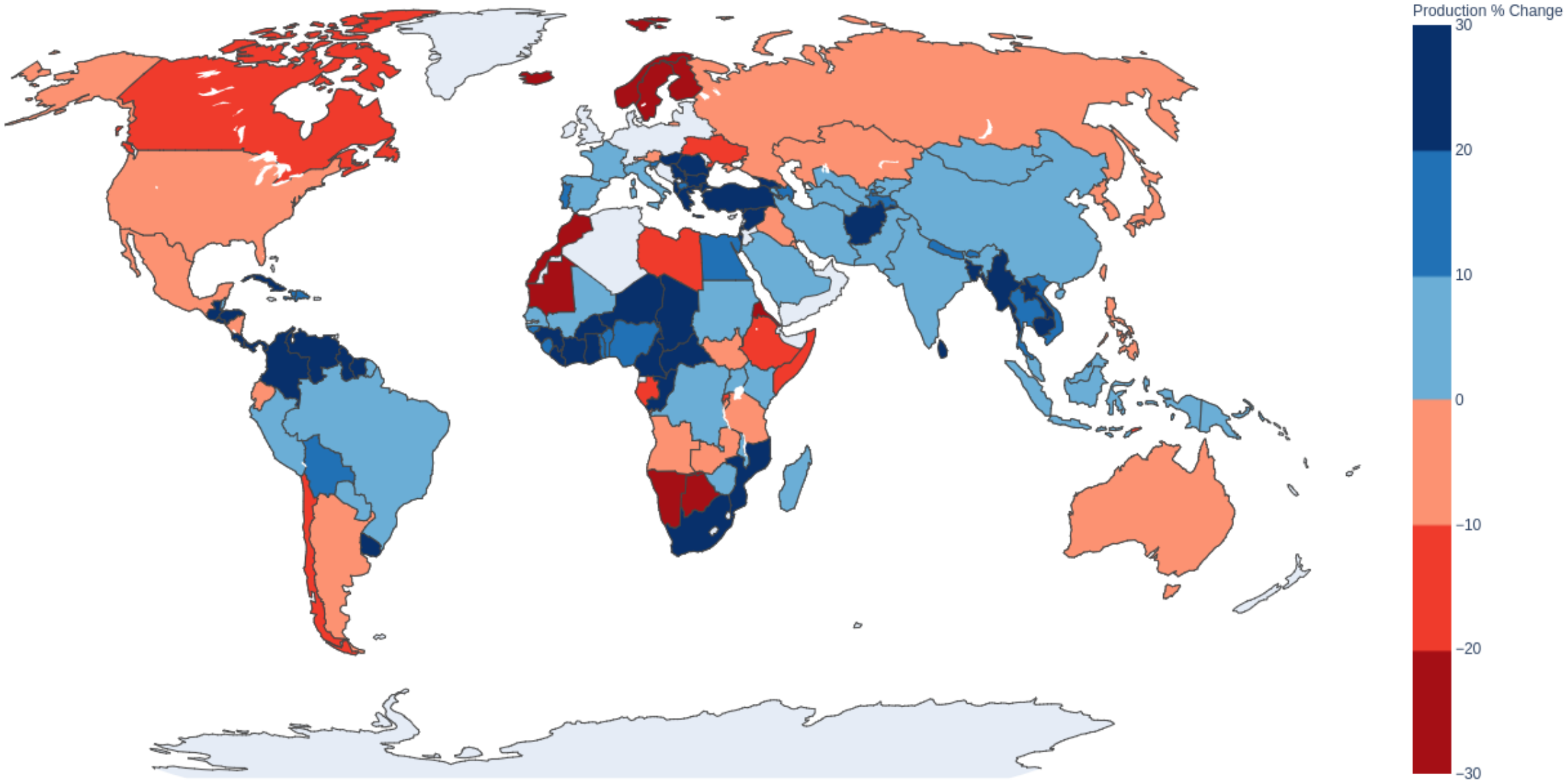
Average Annual Crop Yield Difference (2040-2060) SSP2-4.5-1.5°C minus SSP2-4.5

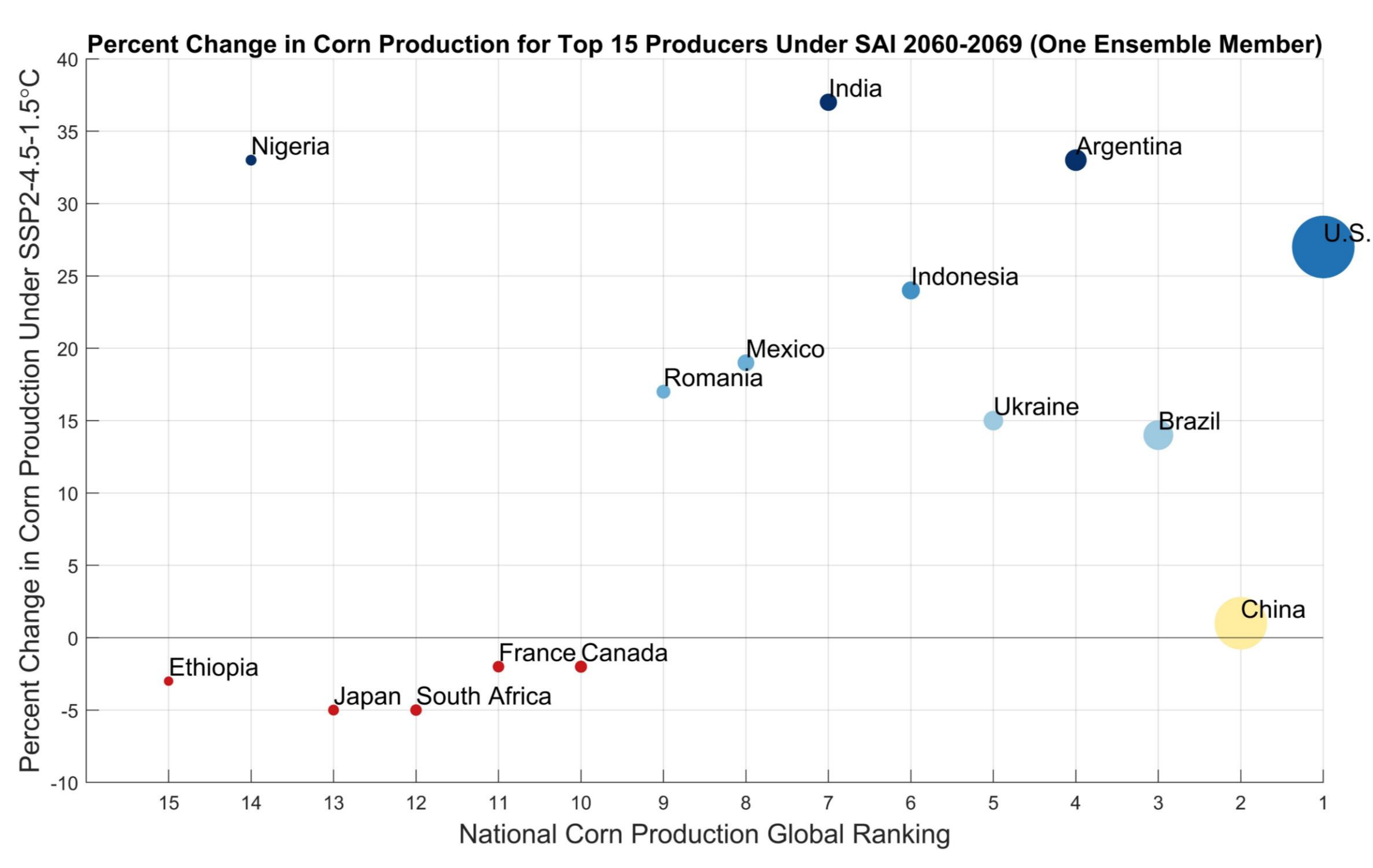


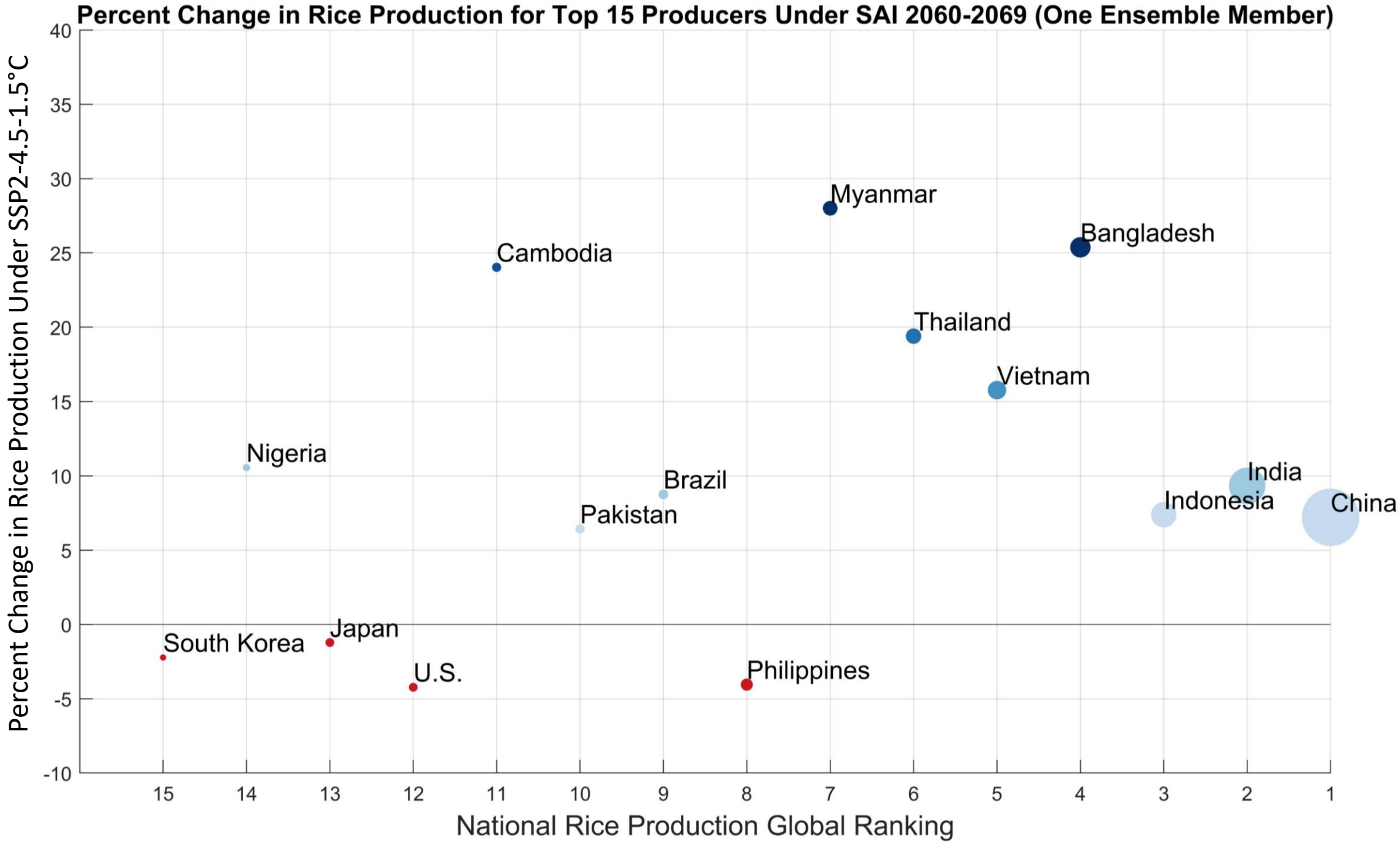
Corn Production Change Under SSP2-4.5-1.5°C by Country (2060-2069)



Rice Production Change Under SSP2-4.5-1.5°C by Country (2060-2069)




Percent Change in Corn Production for Top 15 Producers Under SAI 2060-2069 (One Ensemble Member)
Percent Change in Corn Proudction Under SSP2-4.5-1.5°C
National Corn Production Global Ranking
India
Nigeria
Argentina
U.S.
Indonesia
Mexico
Romania
Ukraine
Brazil
China
France
Canada
Ethiopia
Japan
South Africa
40
35
30
25
20
15
10
5
0
-5
-10
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1


Percent Change in Rice Production for Top 15 Producers Under SAI 2060-2069 (One Ensemble Member)
Percent Change in Rice Production Under SSP2-4.5-1.5°C
National Rice Production Global Ranking
40
35
30
25
20
15
10
5
0
-5
-10
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
Myanmar
Bangladesh
Cambodia
Thailand
Vietnam
Nigeria
India
Brazil
Indonesia
China
Pakistan
Japan
South Korea
U.S.
Philippines

Conclusions

- These plots all have value
- How you choose to depict your data can tell different stories, especially to non-scientists
- Focusing on impacts to countries is more valuable for policymakers
- This applies to all impact studies, especially those for climate intervention