

DOES SOLAR GEOENGINEERING DELAY AMAZON DIEBACK???

**SAI MAY REDUCE AMAZON WARMING, BUT REDUCED WARMING
DOES NOT NECESSARILY MEAN REDUCED ECOSYSTEM RISK!!!**

AUTHORS

Anupama K Xavier and Chris D Jones

AFFILIATIONS

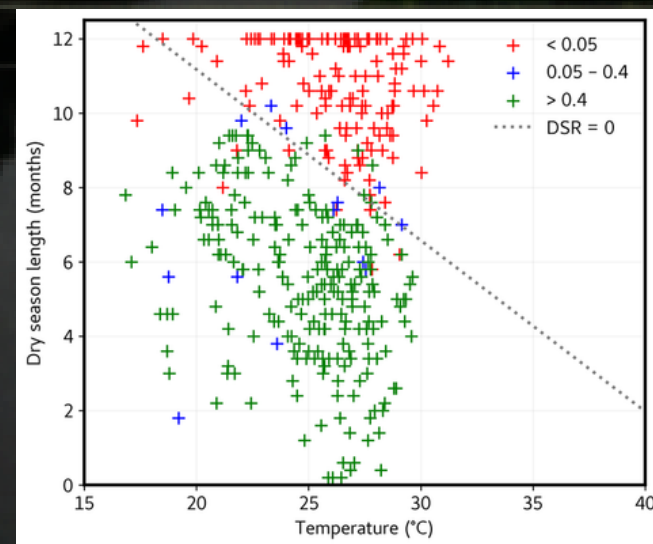
University of Bristol, Met Office Hadley Centre

INTRODUCTION

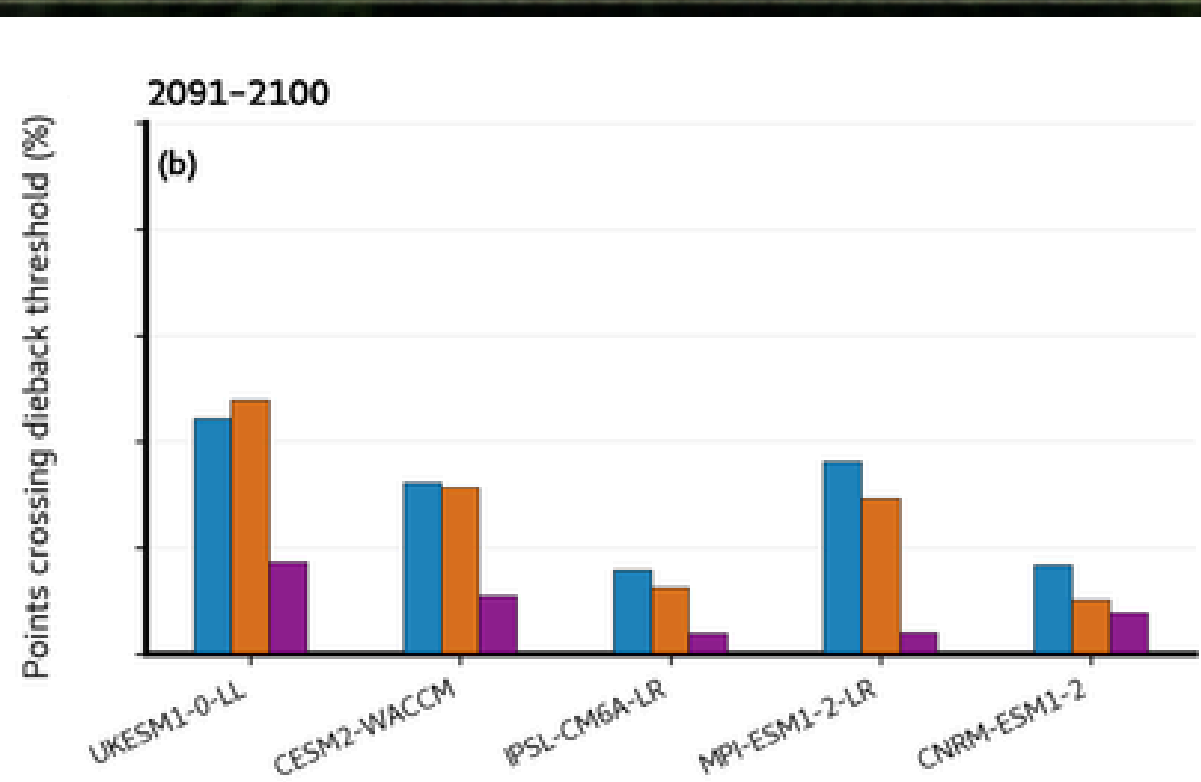
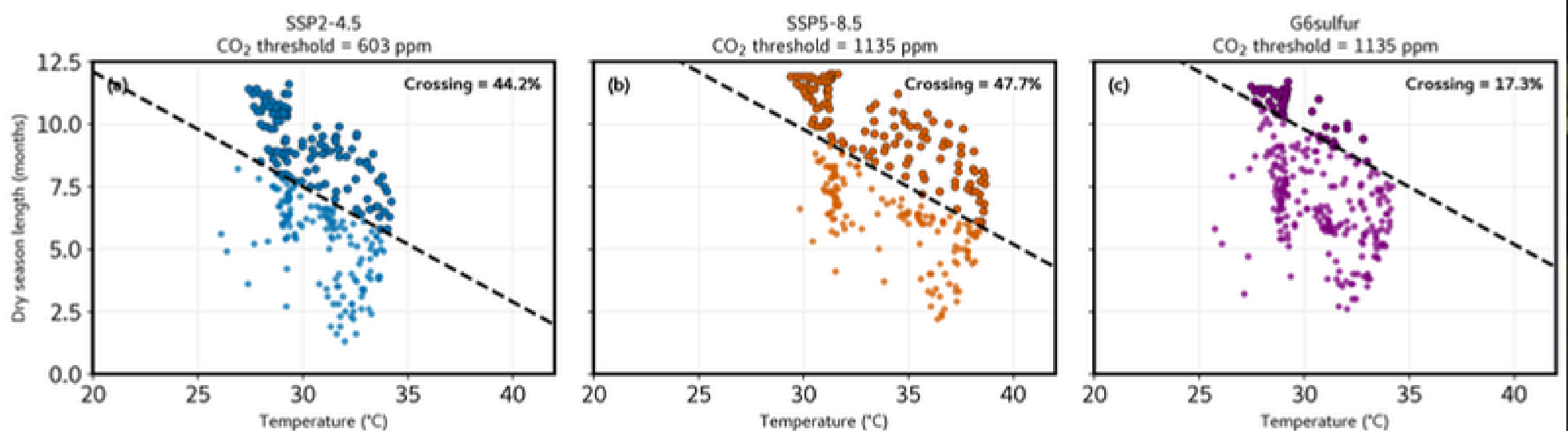
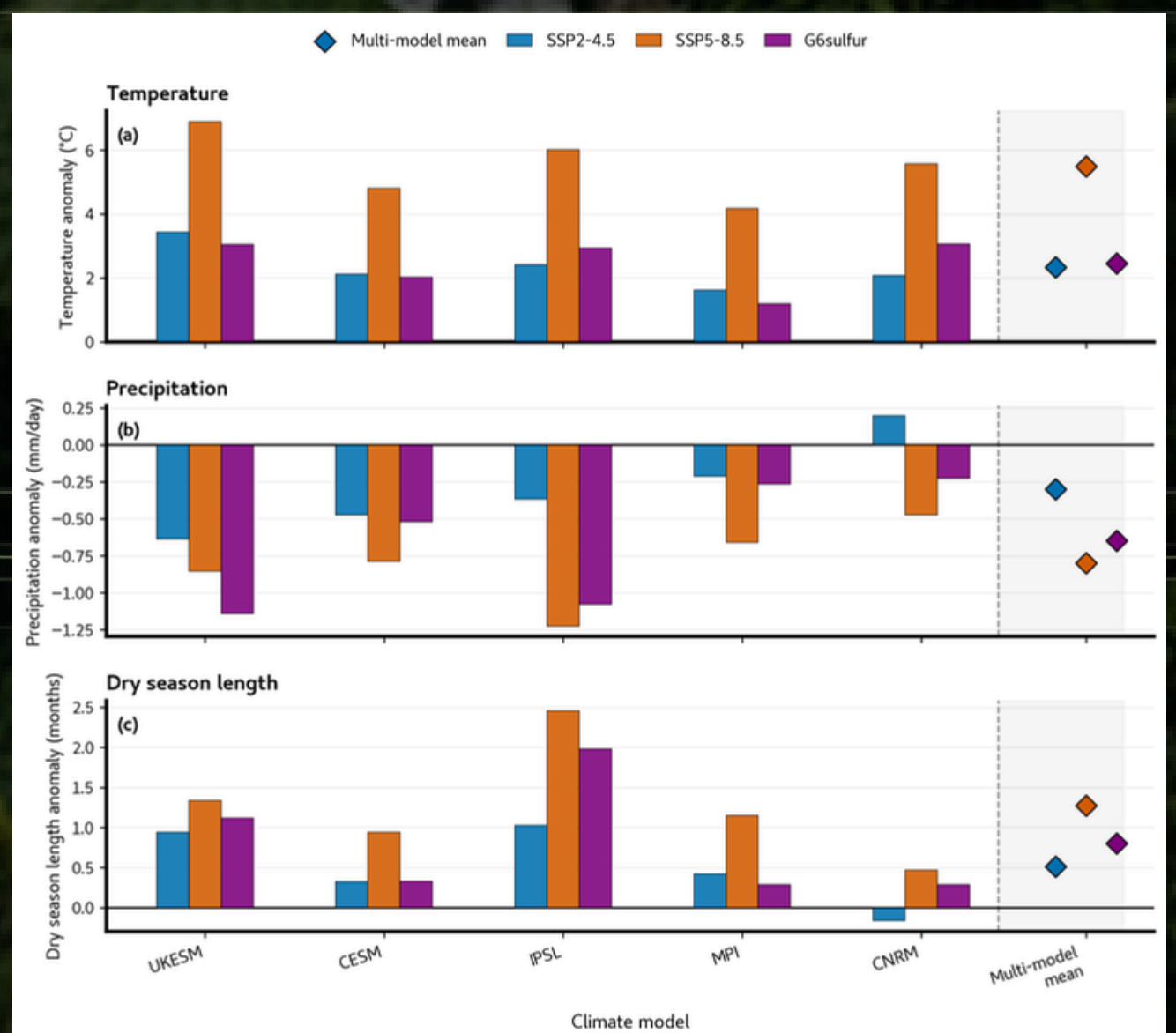
- The Amazon Rainforest stores ~100–120 GtC, hosts ~10% of Earth's species, and is a potential tipping element
- Stratospheric aerosol injection (SAI) may cool globally, but regional impacts are uncertain

METHODOLOGY

- Evaluate whether future climate states cross the Amazon dieback threshold
- Under UKESM SSP2-4.5, SSP5-8.5, and G6sulfur (SAI).



$$DSR = DSL + 0.46T - 0.0043CO_2 - 18.7$$



CONCLUSION

- High emissions pose the greatest climatic stress
- SAI cools the Amazon, but does not restore its hydroclimate
- CO₂ strongly changes the estimated dieback risk
- Cooling alone is not enough to assess Amazon resilience

While SAI reduces warming, persistent drying and longer dry seasons keep the Amazon near dieback thresholds, showing that risk is driven by combined hydroclimatic changes, not temperature alone.