

SAI 101

NASEM

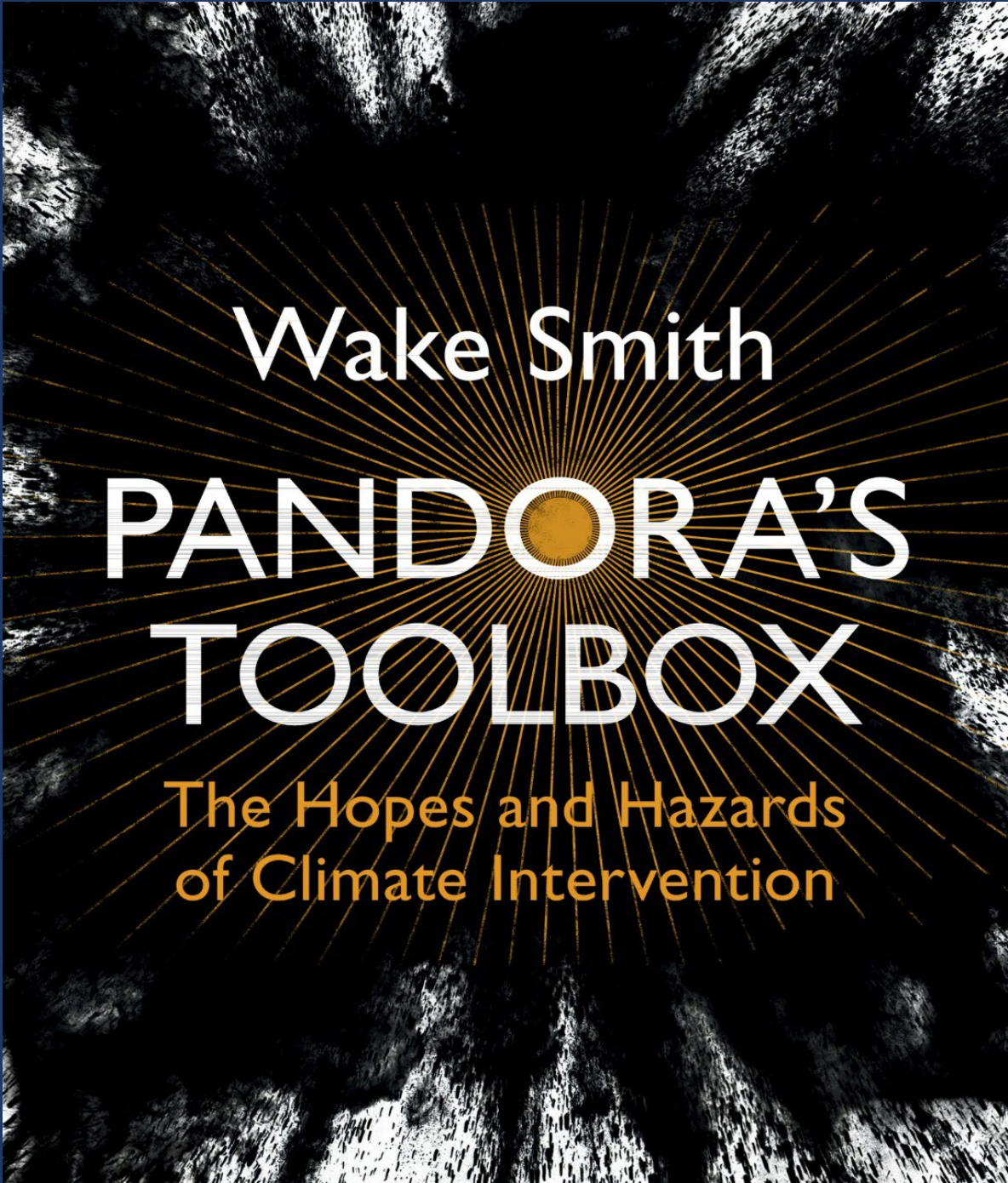
Solar Climate Intervention Symposium

by Wake Smith

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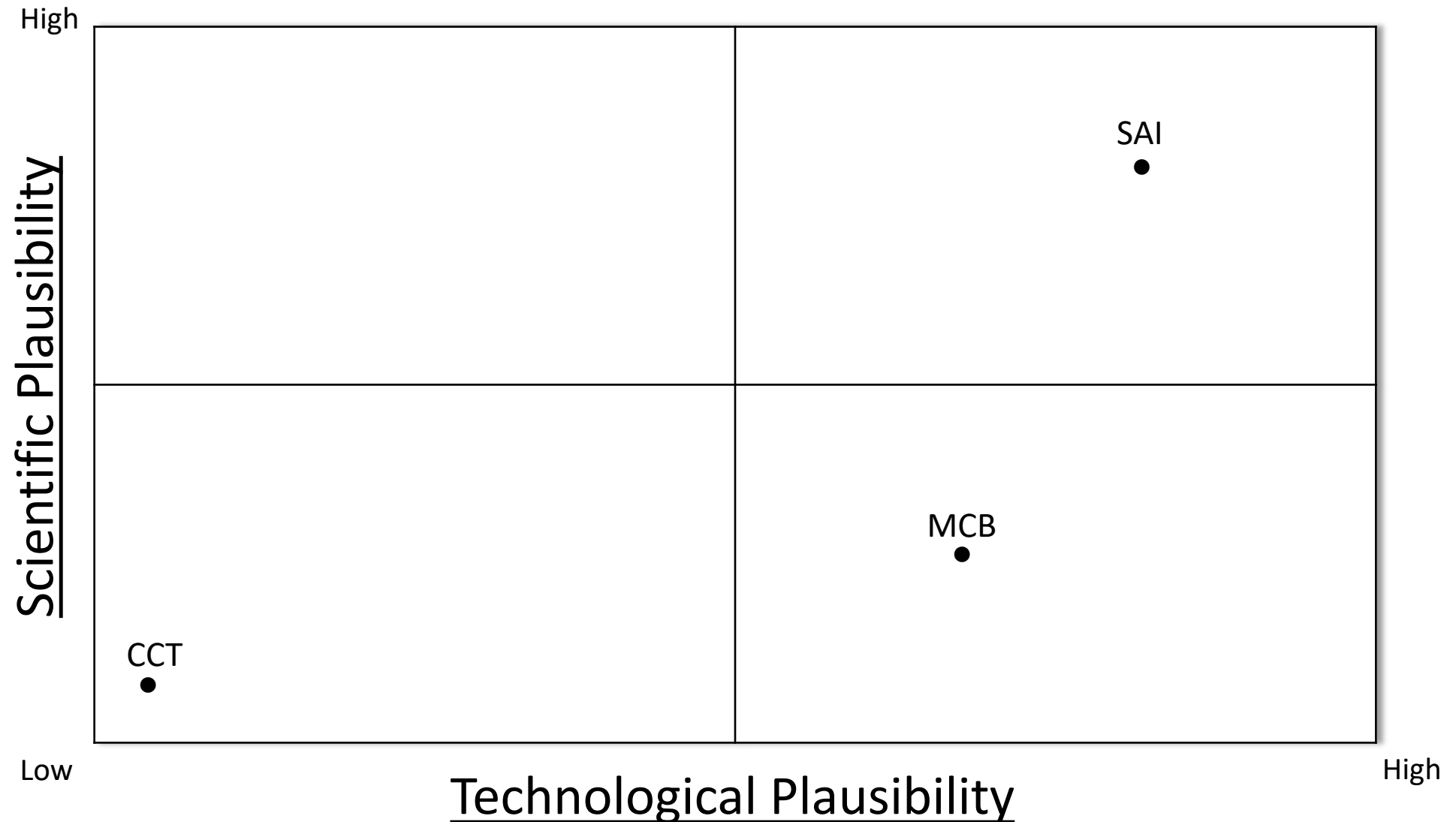


Wake Smith

PANDORA'S TOOLBOX

The Hopes and Hazards
of Climate Intervention

Plausibility of SRM Alternatives

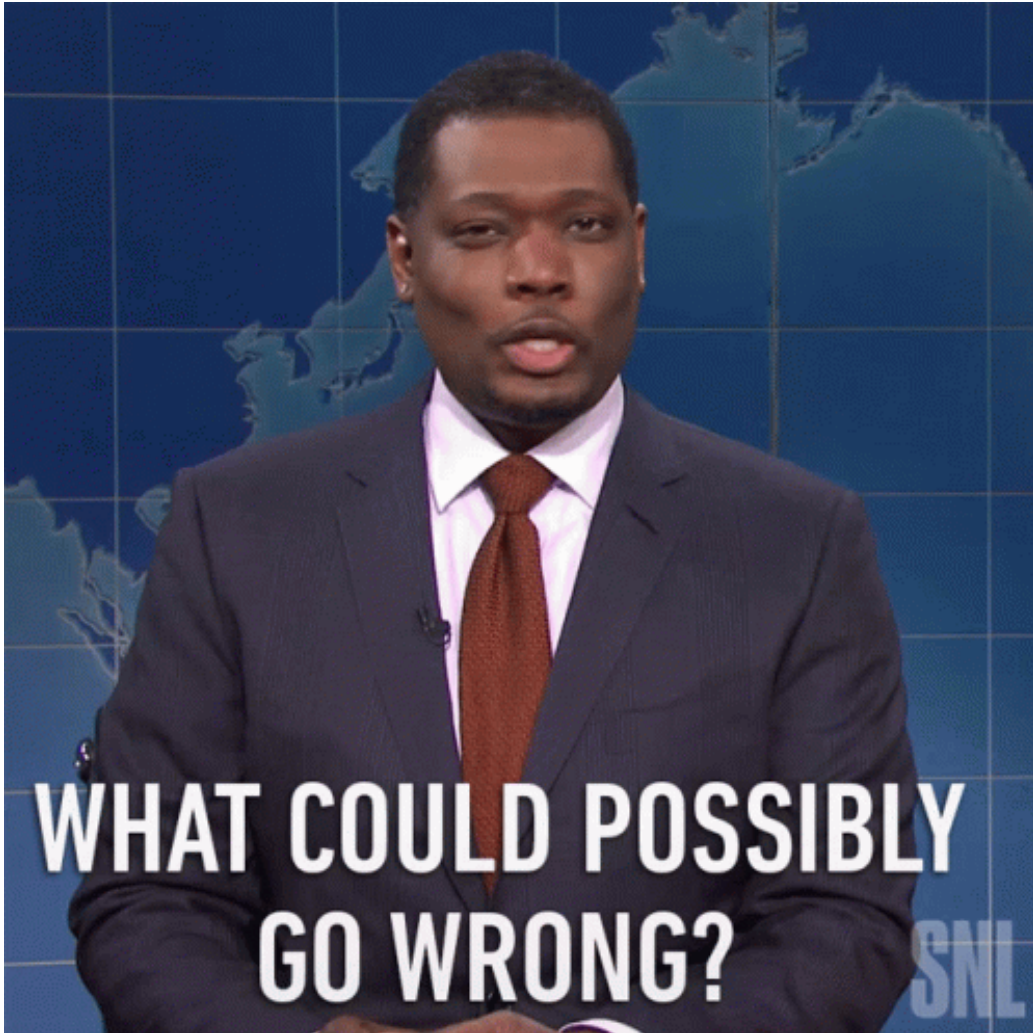


Stratospheric aerosol injection

- “Artificial volcanoes”
- Deflect 1-2% of incoming sunlight
- Continuously, for decades
- Likely commence with sulfates
 - Perhaps later shift to other materials
- Global effects, though likely heterogeneous
- Cooler temperatures, but not status quo ante



Many reasons why this could be a bad idea



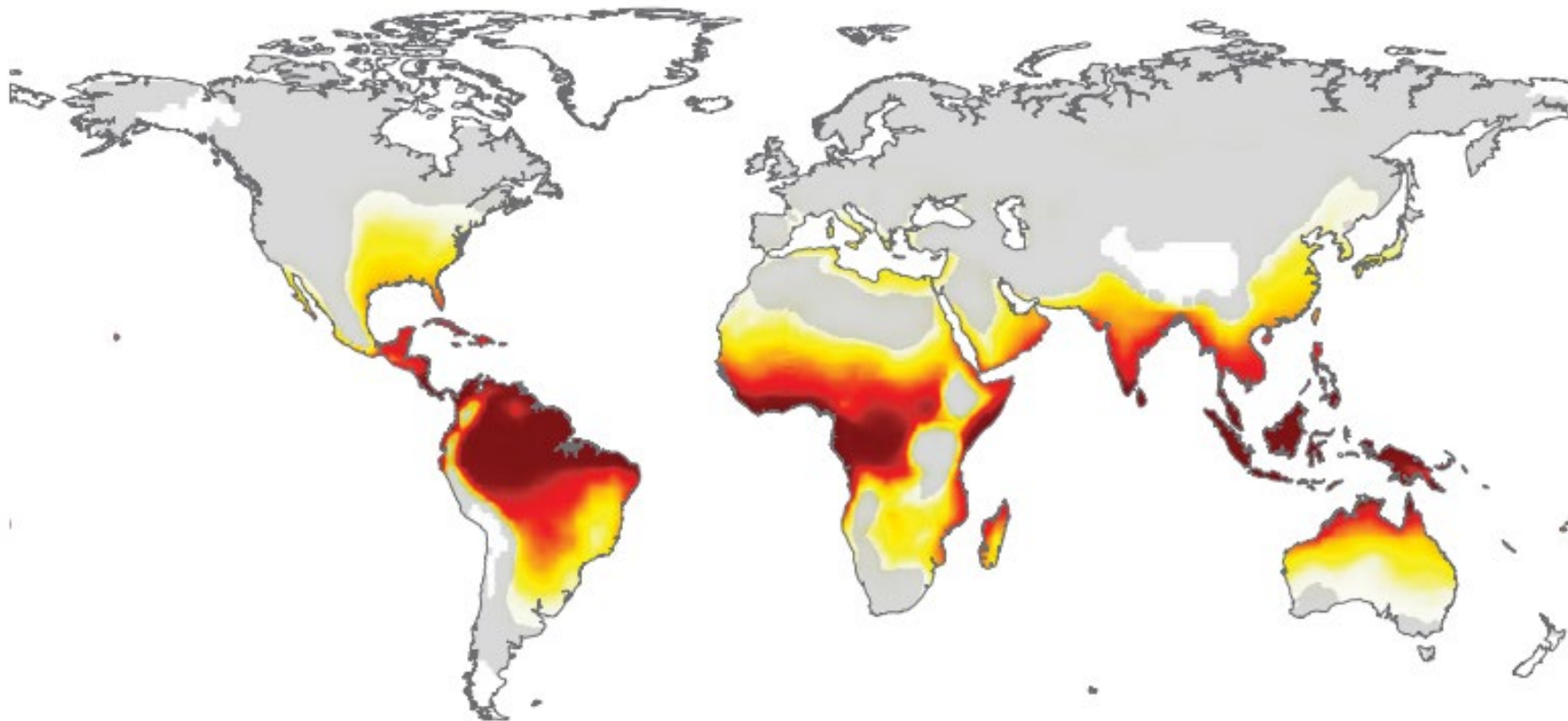
- Known bad physical consequences
 - Stratospheric heating
 - Acid rain
 - Slow/reverse ozone recovery
- Unknown unknowns
 - A risky experiment with the only atmosphere we have
- Political conflict
 - Divergent climate preferences
 - Questionable legitimacy
- Equity and justice issues

IPCC 2022 Extreme Heat Report

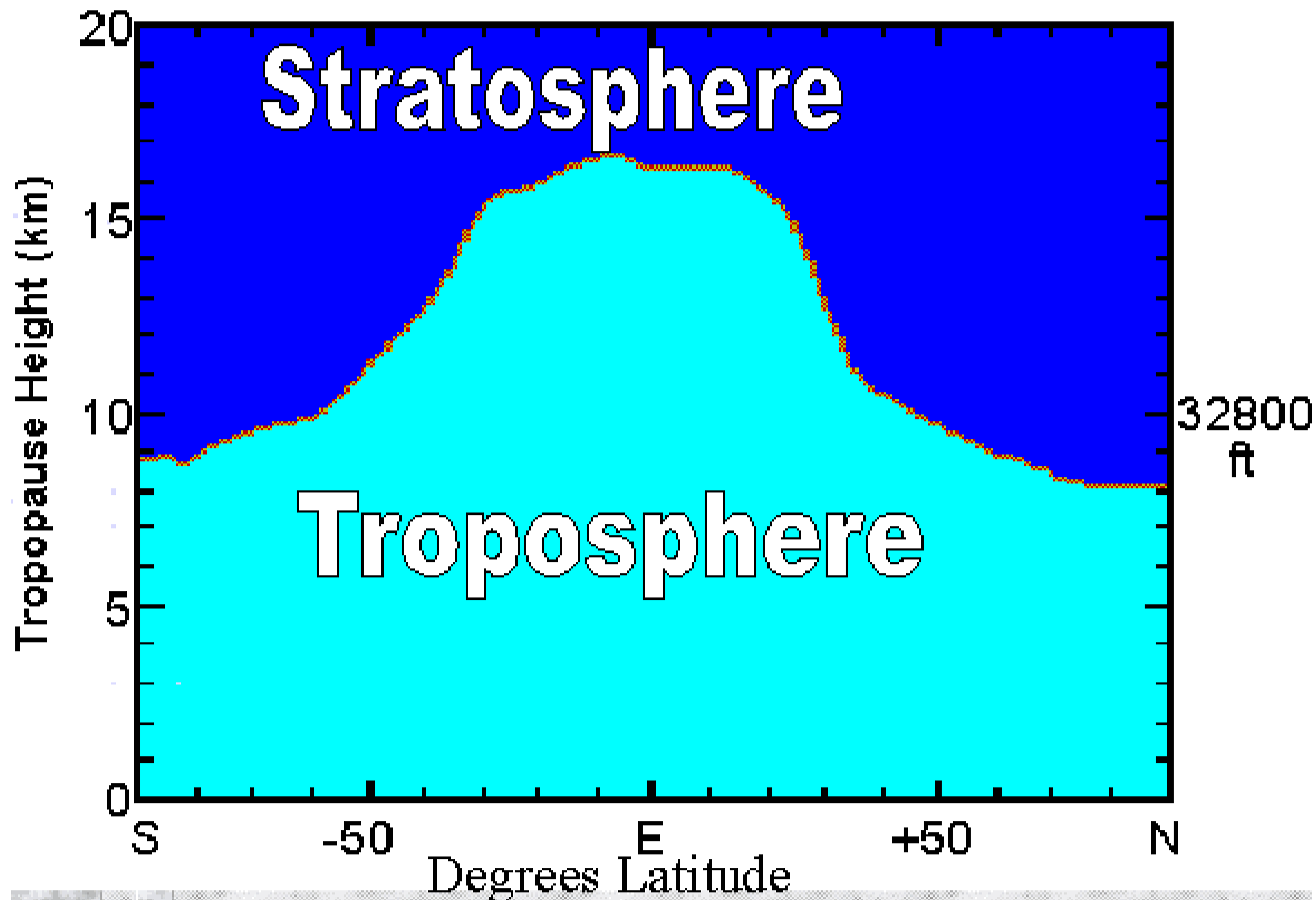
DEADLY HEAT LEVELS

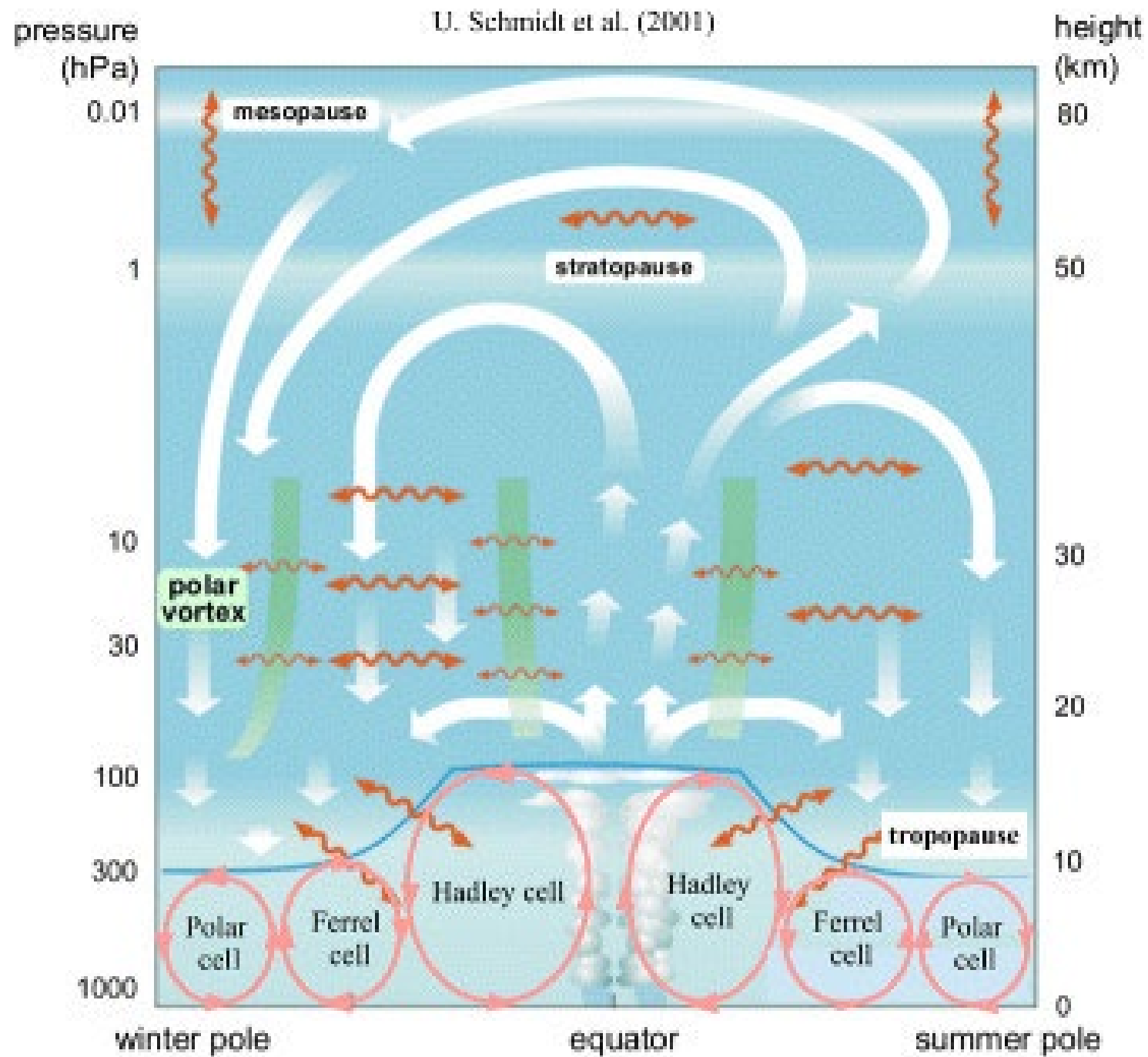
Number of days projected to exceed potentially deadly heat levels per year by 2100

0 50 100 150 200 250 300 350



Source: Mora, C., Dousset, B., Caldwell, I. et al. Global risk of deadly heat. *Nature Clim Change* 7, 501–506 (2017).



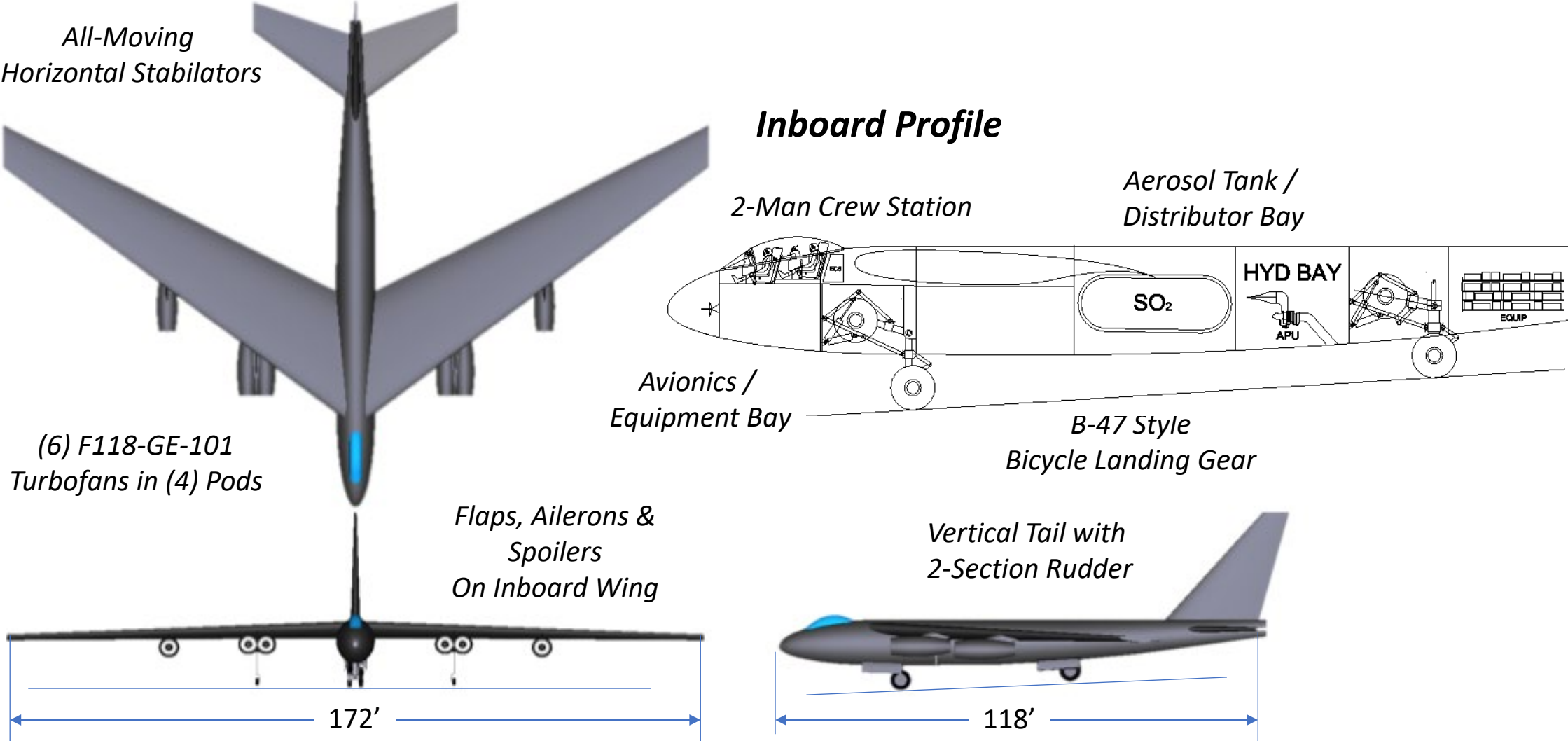




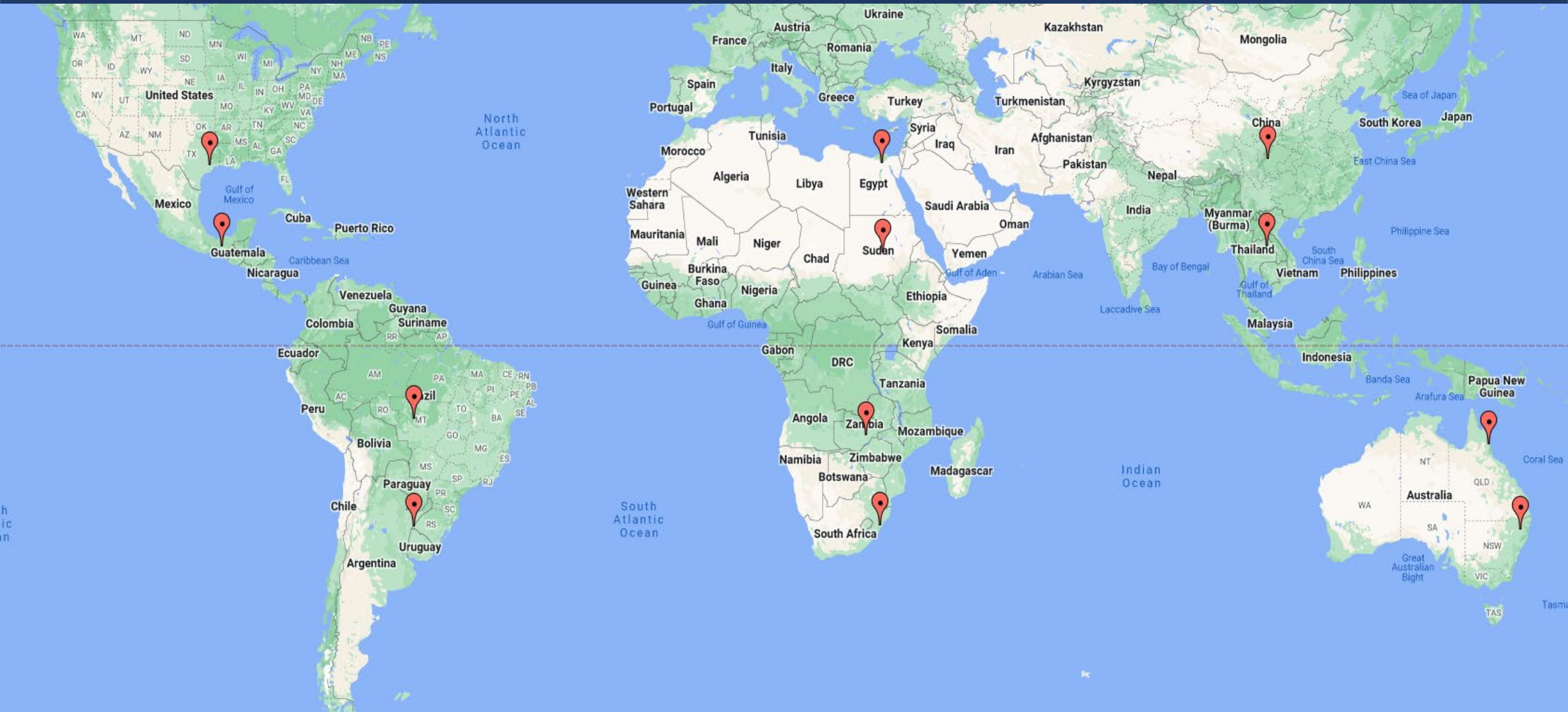
Alternative platforms not feasible/efficient



SAIL-01 Configuration Design



Latitudinal arrays of bases north and south

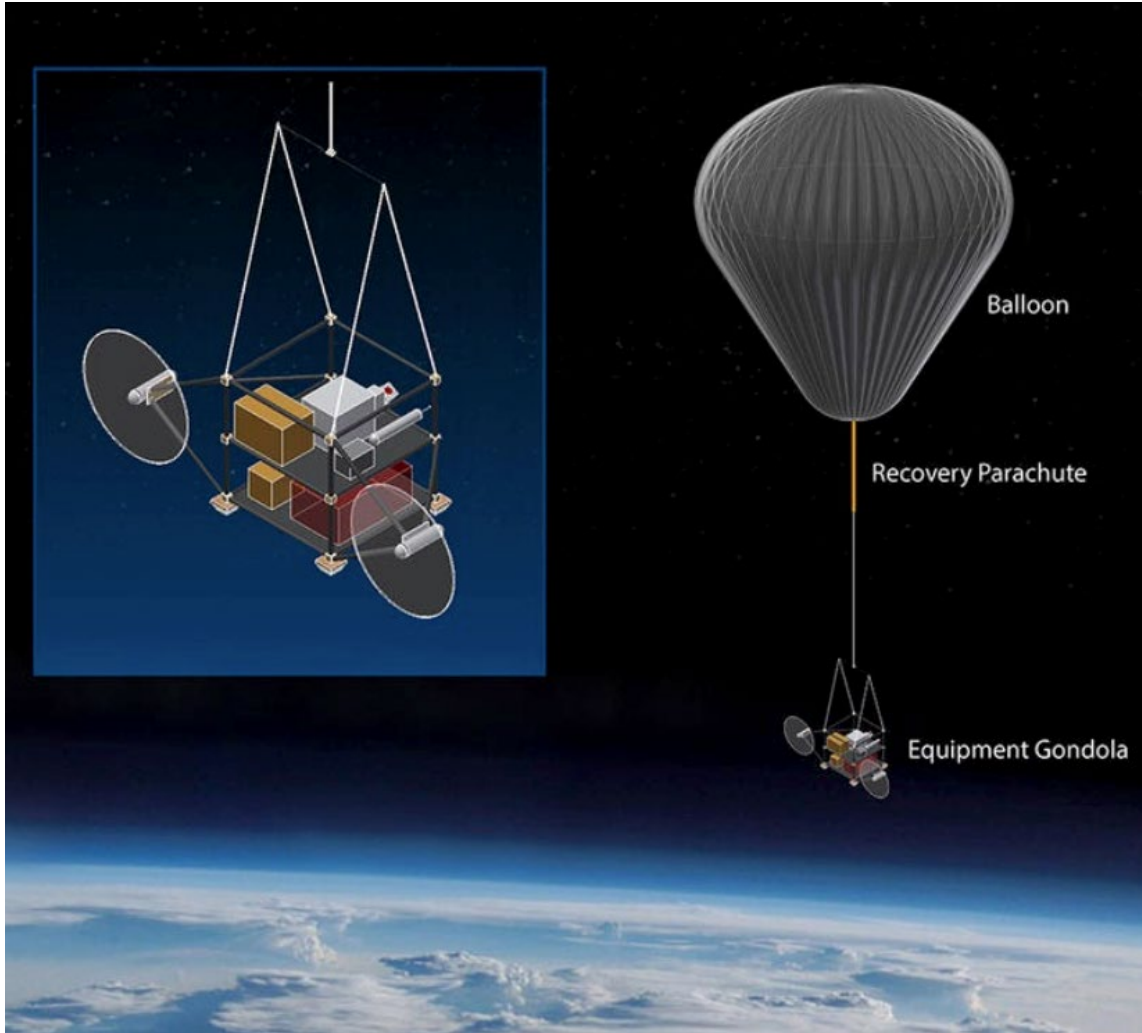


Not quite “break glass in case of emergency”

- Tipping points will only be seen in retrospect
- Roughly 20 year ramp up
 - ~Decade to certify new aircraft
 - ~Another decade to build fleet
- Rapid climate impact
 - But not rapid start



Governance of solar geoengineering



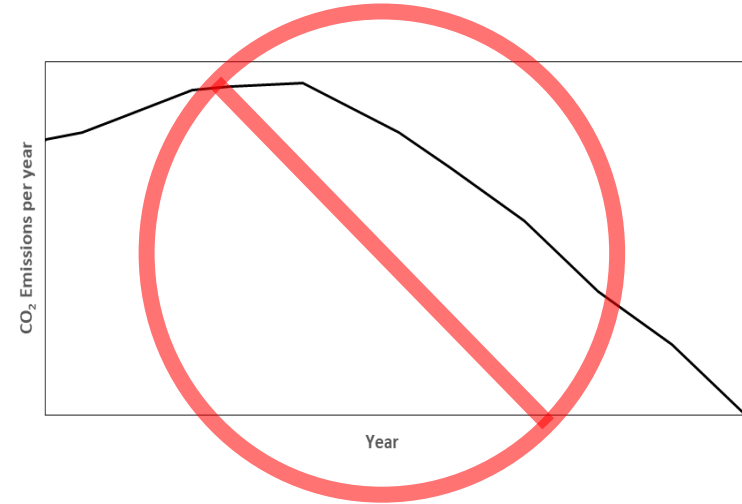
VS



Solar geo not substitute for mitigation

Not “Plan B” for “Problem A”
Not alternative path to Net Zero

Its “Plan A”, for “Problem B”
How next century survives the climate
damages we are exporting



Thank you!

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