The Geoengineering Debate

Are you for or against geoengineering? Are some forms of geoengineering more acceptable than others? Are there conditions that would push you towards the opposite perspective? Use data and research to back up your stance.

With any good science there is debate amongst it. The many technologies that span the geoengineering space are enough to warrant our consideration, to some degree, for their ability to reduce our impact on the planet. As a technologist I have often been encouraged to embrace new technologies, and consider their potential cost savings in some aspect of my life. Tools for my personal life can offer a lot, but the worst case scenario for those results in some time stolen out of my day. The geoengineering debate is not centered around the trivial musings of productivity apps, rather, it stands to change entire ecosystems and shift global focus away from well vetted and existing solutions. Ultimately, I am against geoengineering; while it may offer distinct benefits in our fight against climate change, it does not guide the most important corrective measures we must implement.

This argument comes with a strong conservationist tone, and while I think it pertinent to dive into the important side of my argument, the opposite perspective is still very strong in my mind. Simply put, geoengineering is a set of largely theoretical applications, most if not all are demonstrations of scientific phenomena that have discernable impact on climate phenomena. Should we be so quick to condemn science in the format of public discourse? In *How to Argue about Solar Geoengineering,* a publication in the Journal of Applied Philosophy at Harvard University, author Britta Clark discusses the presence of this debate, "research into solar geoengineering looks more like an ideological tool designed to divert time and resources from less risky climate solutions".[1] Britta later goes on to discuss how many assumptions can be inaccurate or inconsistent, but the basis for this declaration has clear and valid assessments to geoengineering's deployment in global ecosystems. While I will argue against the overall implementation of geoengineering, I think that their place in climate solutions is reasonable. The alternative to this perspective is a set of concerns that have rigorous analysis, and a comparable pairing of uncertainty.

Foremost among these concerns in the debate is the altering of ecosystems and the risk that may pose to biodiversity and longevity. In an article published in Rutgers University's nature, ecology, and evolution journal, they mention that, "rapid geoengineering termination would significantly increase the threats to biodiversity from climate change".[2] These technologies could reduce temperature velocities… but sudden termination increases both ocean and land temperature velocities to unprecedented rates[2]. The language is clear, executing these technology deployments would rely significantly on well timed, and rehearsed processes that at best - delay some form of warming currently sustained, or at worst - fundamentally alter ecosystems across the world in irreversible ways.

Second, these technologies shift the attention of climate mitigation towards a notoriously problematic philosophy: technology will solve our issues. Barring this philosophical debate, we can leverage clear data that shows the most effective climate solutions are already within our grasp. The UN's *The Climate Crisis - A Race We Can Win* talks about the increasing odds that we are making in the fight to reverse climate change, and much of those solutions are already well into their deployment phase.[3]

These practices are already being actively fought for in local, state, and federal cases across the country. These socio-political arenas do not embrace science in the ways academic communities might, and having concise, effective, and low risk solutions may be an easier bargain to strive for in the near

future. Consider how geoengineering may be too risky for our ecosystems, and do not overlook any rising technologies' ability to distract from larger scientific goals and initiatives.

1. Clark, Britta. 2023. “How to Argue about Solar Geoengineering.” *Journal of Applied Philosophy* 40 (3). https://doi.org/10.1111/japp.12643.
2. Trisos, Christopher H., Giuseppe Amatulli, Jessica Gurevitch, Alan Robock, Lili Xia, and Brian Zambri. 2018. “Potentially Dangerous Consequences for Biodiversity of Solar Geoengineering Implementation and Termination.” *Nature Ecology & Evolution* 2 (3): 475–82. https://doi.org/10.1038/s41559-017-0431-0.
3. United Nations. 2019. “The Climate Crisis – a Race We Can Win.” United Nations. United Nations. 2019. https://www.un.org/en/un75/climate-crisis-race-we-can-win.