

Climate Engineering Teaching Module

Links to Supplemental Information for Teachers

Indiana University [Educating for Environmental Change](#) Professional Development: [Summer Science Institute](#)

- 5-day Workshop Focused on Climate Change and Environmental Science

[Saturday Workshops](#)

- Dive deep into a Climate/Environmental/Earth science topic that teachers can bring to their classrooms.

[First Tuesdays](#)

- Learn about current research topics from IU scientists

Climate engineering:

[Solar Radiation Management](#) – A primer

Colleagues of ours from Cornell University

- A comprehensive overview of solar geoengineering, both the science and FAQs

[Climate Intervention – White Board Videos](#)

Colleagues from Colorado State University

- Short (~3 minutes), animated videos for a general audience discussing climate engineering, SAI, perception and detection, and other topics of research from their group.

[NYT Opinion - The Best Way to Find Out if We Can Cool the Planet](#)

Jeremy Freeman - executive director of CarbonPlan, a climate research nonprofit

- Opinion with a call for research, including field tests, and research transparency particularly with respect to funding

[Understanding Climate Engineering](#)

Deborah Gordon – Carnegie’s Energy and Climate Program

- Very good overview of climate engineering strategies and how they would work

[What’s the least bad way to cool the planet?](#)

- NY Times opinion by David Keith - Dr. Keith is a professor of applied physics and of public policy at Harvard (now at University of Chicago), where he led the development of the university’s solar engineering research program

Geoengineering: A Horrible Idea We Might Have To Do (9:09)

<https://www.youtube.com/watch?v=dSu5sXmsur4>

- Visuals are engaging and fun
- The information is also good, it outlines some forms of climate engineering
- Also talks about the potential benefits and dangers
- Emphasizes that climate engineering is not a long-term solution, but it can provide us a little more time

[Marine Cloud Brightening Test in the U.S.](#)

- Aerosol sprayer test off the coast of California
- Article provides a sound history of MCB, ideas and how it may work
- Highlights the role of private funders in climate intervention and development of technologies

[Climate Engineering and National Security Risks](#)

- Co-authored by Ben
- Overview of Climate engineering and potential national security risks/conflicts
- Bountiful links to other resources

Climate Change:

Climate science, risks, and solutions

- A primer hosted by MIT
 - <https://climateprimer.mit.edu/>

What is climate change? What does it look like, and why isn't it just called global warming?

- What is the greenhouse effect?
 - [How Global Warming Works in Under 3 Minutes](#)
 - <https://climate.nasa.gov/faq/19/what-is-the-greenhouse-effect/>
- What's the Difference Between Weather and Climate?
 - <https://www.ncei.noaa.gov/news/weather-vs-climate>
- Global Warming Vs. Climate Change
 - <https://climate.nasa.gov/resources/global-warming-vs-climate-change/>
 - Very quick and basic information
 - <https://climate.nasa.gov/faq/12/whats-the-difference-between-climate-change-and-global-warming/>
 - Visual of global warming
 - <https://www.climate.gov/news-features/climate-qa/whats-difference-between-global-warming-and-climate-change>
 - Slightly more informational, has some interesting figures
 - Summary of the above topics plus a focus on radiative balance and GHGs
 - <https://www.acs.org/content/acs/en/climatescience/getting-started.html>
 - <https://www.realclimate.org/index.php/archives/2022/07/the-cos2-problem-in-six-easy-steps-2022-update/>

How do we know the climate is changing?

- <https://climate.nasa.gov/evidence/>
 - Outlines some signs of climate change with short explanations

Are people the primary cause? How?

- Man-made climate change
 - https://ec.europa.eu/clima/change/causes_en#:~:text=Humans%20are%20increasingly%20influencing%20the,greenhouse%20effect%20and%20global%20warming.
 - Reviews greenhouse gases, causes for rising emissions, and global warming
 - Also has a short 4 minute video to explain too
 - Scientists think 100% of global warming is caused by humans
 - <https://www.carbonbrief.org/analysis-why-scientists-think-100-of-global-warming-is-due-to-humans>

Scientific consensus and public opinion

- How Americans see climate change and the environment
 - <https://www.pewresearch.org/fact-tank/2020/04/21/how-americans-see-climate-change-and-the-environment-in-7-charts/>
 - Has 7 charts to view, generally increased positivity for advocating for the environment. Mentions some divide in political parties though, so choosing certain charts would be best
- Yale Climate Opinion Maps
 - <https://climatecommunication.yale.edu/visualizations-data/ycom-us/>