



## Smog Cloud Silver Lining

Summer 2023 was a pretty scary one for the planet. Global temperatures in June and July reached record highs. And over in the North Atlantic Sea, the water temperature spiked to off-the-chart levels. Some people figured that meant we were about to go over the edge—doomsday. In the face of this, Hank Green took to social media to put things in context and to keep people focused on what we can do about climate change.



**0:00**

[RADIOLAB INTRO].

**LULU:** Okay, Latif. Hello.

**LATIF NASSER:** Hello!

**LULU:** Welcome.

**LATIF:** Thanks.

**LULU:** To Radiolab.

**LATIF:** Where am I? [laughs]

**LULU:** While you were on vacation, I got into some reporting hijinks.

**LATIF:** Okay.

**LULU:** Okay, well, where did you go on vacation?

**0:35**

**LATIF:** I went to Iceland.

**LULU:** Okay, so as you were, like, flying down over the island, your family's all beside you, I'm guessing, covered in snacks. Underneath you, in the ocean ...

**LATIF:** Mm-hmm?

**LULU:** ... there was a pretty stunning and kind of terrifying thing happening.

**LATIF:** Okay.

**LULU:** And you were gone and I was curious, so I decided to plunge in, so to speak.

**LATIF:** Okay!

**LULU:** There he is, with all his books! You look like such a mad librarian.

**HANK GREEN:** Yeah.

**SOREN WHEELER:** Anyway, hey Hank.

**LULU:** I also brought Soren, our editor, with me, and together we called up the guy who I first heard about all this from.

**1:19**

**HANK GREEN:** I'm Hank Green. I make internet content. [laughs]

**LULU:** Like?

**HANK GREEN:** I make a lot of science TikToks and tweets and YouTube videos.

**LULU:** Are you familiar with this gentleman?

**LATIF:** Yeah, of course!

**SOREN:** I feel like he's one of the smarter people out there doing science stuff online. Like, he's the host of the YouTube channel SciShow.

**LATIF:** Yeah.

**SOREN:** But he's also written novels and founded several media companies.

**HANK GREEN:** Yeah.

**1:40****SOREN:** Busy guy.**LULU:** Well, we are so—thank you. We know you didn't really want to do this.  
[laughs]**HANK GREEN:** [laughs] I just wanted to be very clear where I was coming from.**LULU:** This story is gonna get a little tricky, but it all started for Hank in the middle of summer 2023.**LATIF:** Okay.**LULU:** Which was a pretty depressing one on the climate change front—the hottest June on record followed by the hottest July on record. And for Hank in particular ...**HANK GREEN:** Mentally, I was in a weird spot. I mean, I was in the midst of being treated for cancer. And during chemo—and I'm through it now, during chemo, I had about a week of being completely useless when I would only consume content, and then, like, maybe four or five days when I felt good enough to, like, make stuff.**SOREN:** And Hank says he would spend a lot of his downtime, sort of just reading, researching, looking online.**2:38****HANK GREEN:** And I had been confronted by a lot of really sort of apocalyptic ...

[ARCHIVE CLIP: We are reaching the end.]

**HANK GREEN:** ... doomsday prepper kind of people on TikTok.

[ARCHIVE CLIP: Having a panic attack for the last hour.]

**HANK GREEN:** Who were looking at the temperature of the North Atlantic Ocean.

[ARCHIVE CLIP: Unprecedented warming.]

**HANK GREEN:** And it was hotter than it had ever been.

[ARCHIVE CLIP: Ever been in recorded history. And things are only getting worse.]

[ARCHIVE CLIP: It's not good.]

[ARCHIVE CLIP: ... the holocene extinction, the sixth extinction event, is probably starting now. I'm gonna explain this with a visual aid.]

**3:04****LULU:** And all of these TikTokers are pointing to this one chart.**SOREN:** And here, I can show it to you right here.**LATIF:** Oh, you just shared it to me? Okay.**SOREN:** Yeah.**LATIF:** Okay.**SOREN:** So it's basically a graph of the sea surface temperatures in the North Atlantic over the last couple decades.**LATIF:** It's kind of a pretty graph, yeah.



- 3:17** **SOREN:** Yeah, it's a bunch of squiggly blue lines going up and down, and that's sort of the seasonal change. And then you can see the average is going up over time. But then ...
- HANK GREEN:** There's a red line, which is this year.
- LULU:** Mm-hmm.
- HANK GREEN:** And that line is creeping up, up, up. And then it has a spike.
- SOREN:** Sudden red, uh-oh!
- HANK GREEN:** Yeah, yeah.
- LULU:** And that line is, like, way above the average, even the seasonal ups and downs.
- LATIF:** It's not even close. Like, the high jumper has cleared the pole.
- LULU:** Yeah.
- HANK GREEN:** Yeah.
- 3:32** **SOREN:** And this spike is happening over the course of months or weeks, or ...?
- HANK GREEN:** I think it's days.
- SOREN:** Days? Oh!
- [ARCHIVE CLIP: An existential threat to everything we know.]
- SOREN:** So all the TikTokers are basically like ...
- HANK GREEN:** This is it. It's happening now.
- SOREN:** This is us falling over the cliff.
- HANK GREEN:** We're falling over the cliff.
- [ARCHIVE CLIP: Figure out your relationship with Jesus Christ.]
- LULU:** And are you watching this stuff literally, like, while you're getting chemo, or ...?
- 4:06** **HANK GREEN:** Yeah, I probably didn't see it, like, during the moment when the chemo was going into my body, but certainly during the ...
- SOREN:** That does tend to be when people doom scroll.
- LULU:** I'm just picturing you—yeah.
- HANK GREEN:** [laughs] Yeah, but anyway, so I'd seen this, and ...
- [ARCHIVE CLIP: Are we all about to die?]
- [ARCHIVE CLIP: You may have seen this graph. If you haven't, I'm sorry ...]
- LULU:** And Hank decides to hop on TikTok himself.
- HANK GREEN:** Like, I made a little series that was, like, trying to, like, contextualize it.

**4:34**

[ARCHIVE CLIP, **HANK GREEN:** We're not there yet. We're not anywhere close to there.]

**HANK GREEN:** At the time I was seeing it and I was like, I don't—like, it's probably just some kind of natural variation where it's like, cooler than average right now in some parts of the world, and it's hotter than average in other parts. And also, we're entering an El Niño. So an El Niño is just like a warmer climate time generally.

**SOREN:** And you take one little spot on the globe and blips happen.

**HANK GREEN:** You know, there's natural variation across the Earth.

**LATIF:** I don't know. That—that doesn't mean we shouldn't be worried. Like, now is not the time to say, "Hey, it's getting a lot warmer, but no big deal."

**LULU:** Totally. And to be clear, Hank takes this stuff very seriously.

**5:14**

**HANK GREEN:** As a person who's been worried about climate change for—my dad was the state director of The Nature Conservancy in Florida when I was growing up. So, like, we're a family of environmentalists. My mom's a sociologist who worked on sustainability. Like, and I'm—like, I have a degree in environmental studies. Like, I've been in this for a long time, and it's very scary. This is, like—like, this is the biggest problem humanity has ever faced but, you know, there's sort of a debate that's like, do we need to get people more scared about climate change, or do we need to get people more hopeful about climate change? Because they can go around a bend eventually, where it's like, there's nothing to be done and I will just be hopeless and sad. And I think a lot of people are there.

**LULU:** Right. If you're too scared, you, like, tip into nihilism, kind of?

**HANK GREEN:** Yeah. And this is like, it's gonna be like a bell curve of worry that we're all on somewhere, and in order to get, like, everybody to the appropriate amount of worry, we're always pushing some people to way too worried. And, like, there's like, not really too worried about climate change until and unless you give up on trying to solve the problem.

**LULU:** Mm-hmm.

**6:24**

**HANK GREEN:** So, like ...

**LULU:** So according to Hank, when it came to this temperature spike in the North Atlantic, his sense was that these people online were being way too alarmist.

**HANK GREEN:** There was a sort of a mathematics of gambling guy.

**LULU:** [laughs]

**HANK GREEN:** Which really isn't a climate scientist, as you might expect. Who was getting a lot of traction by tweeting about how this was a really big deal, and then he was, like, getting on the news ...

**LULU:** Huh!

**6:48**

**SOREN:** And so Hank thought maybe this is a moment to dampen rather than, you know, fan the flames, but also keep the conversation focused on things that we might be able to do.

[ARCHIVE CLIP, **HANK GREEN**: Over the next week or two on my TikTok, I'm gonna make some videos about the things that we are actually doing right now and will be doing in the future to help take care of this.]

**LULU**: So that is how Hank is spending this hot, hot summer: going through chemo, holding a candle for hope, battling climate nihilism. And then ...

**HANK GREEN**: I was scrolling science news in bed late at night, like, before going to sleep, like I do.

**LULU**: [laughs] Yeah.

**LULU**: ... he comes across a link to an article that made him sit straight up in bed.

**7:32**

**HANK GREEN**: Yeah. It's like 11:00 at night. I have to get up at 7:30 in the morning, and I'm like, "Oh, I'm gonna read a lot right now." [laughs]

**LULU**: [laughs]

**LULU**: Okay, so the thing he sees, it's this article in Science, it's a write-up of three recent studies, and what they found is that the spike in the North Atlantic sea temperatures, this, like, troublingly warming water ...

**LATIF**: This year's spike.

**SOREN**: That one we were talking about, right.

**LULU**: This year's recent spike ...

**LATIF**: Yeah.

**LULU**: ... may have been caused by this thing, which is that a few years ago, the UN put into place some regulations that forced cargo ships to start burning cleaner fuel to, you know, reduce the pollution that they make. And that, doing that good thing, these papers said, that caused the water to get warmer.

**8:21**

**HANK GREEN**: Yeah.

**LATIF**: Wait, so they're saying that getting rid of pollution, that you would think would make the problem better, is actually, in this one spot for a while at least, making the problem worse?

**SOREN**: Right.

**LATIF**: How?

**LULU**: All right, so let's go back to before this regulation, this change had happened. All these big, hulky cargo ships are criss-crossing the North Atlantic, chugging along with their big smokestacks, puffing out big plumes of smoggy smoke.

**8:50**

**HANK GREEN**: Cargo ships burn, like, the dirtiest oil. It's like the oil that's left at the bottom.

**LULU**: Like that mayonnaise-y black, black mayonnaise-y like ...

**HANK GREEN**: You have to, like, heat it up before it'll even flow kinda oil.

**LULU:** And so there's all this carbon dioxide going out into the air, of course, but there is also all this sulfur dioxide going out into the air.

**LATIF:** Okay.

**LULU:** And that's horrible.

**HANK GREEN:** Sulfur dioxide is bad for people. It's like it's bad to breathe, and then it is also bad for the environment because it turns into sulfuric acid when it mixes with water, and then it falls down to the Earth as acid rain. So that's where acid rain comes from.

**LATIF:** Hmm, right.

**SOREN:** Which is why the UN wanted to regulate it.

**9:27**

**LULU:** But it turns out that in addition to being horrible for human health and making acid rain, sulfur dioxide also does something else.

**HANK GREEN:** It actually can seed clouds. As the ship goes by and it pumps the sulfur dioxide up, you can see, just like kind of a contrail that a jet would leave behind, you can see—they're called ship tracks.

**SOREN:** Hank actually showed us a picture of this that was taken from space.

**LULU:** These tracks are like, so big. It just looks like giant zebra stripes over the ocean of just white.

**HANK GREEN:** When there's the right amount of heat and water in the air, you get all of these extra clouds that you normally wouldn't get.

**LULU:** Okay.

**10:07**

**HANK GREEN:** And the clouds reflect the energy of the sun into space. So instead of hitting the water and heating up the surface of the ocean, it hits a cloud. You know, you could think of it just like a very thin umbrella. And then there's a shadow on the ocean.

**SOREN:** Which keeps the water at least a little bit cooler.

**LULU:** So suddenly you take that away, you burn cleaner fuel, and then it's like taking away the beach umbrella. You're suddenly just—you're the ocean.

**LATIF:** Ohh!

**LULU:** And the ocean is getting blasted by the sun.

**LATIF:** Got it.

**10:42**

**HANK GREEN:** It's not unanticipated. This is actually something that climate scientists have known about for decades. But it is non-intuitive. And what this means is that overall, we have not seen the actual full effects of the carbon dioxide.

**SOREN:** It's like the—the warming from carbon dioxide has been worse than you thought up to now. It's just been sort of hidden by all the dirty clouds that we've had blocking light.

**LATIF:** Right.

**SOREN:** And if you get rid of that, you're gonna realize just how bad this really is.

**LATIF:** Right.

**HANK GREEN:** Yeah, and ...

**LULU:** That feels like, oh, things are—this is doom-y, like, I don't ...

**LULU:** This now seems like a doom on a doom to me, right?

**LATIF:** Yeah, I agree. I feel like it's a double-decker doom. Yeah.

**11:25**

**LULU:** ... just gonna burn. Like, I go more to nihilism.

**HANK GREEN:** I mean, I—I was—I found this very exciting and, like, fascinating.

**LULU:** But not to Hank Green. He reads this study and sees a silver lining, a literal silver lining in the smog cloud.

**SOREN:** A smog cloud that isn't there anymore.

**LULU:** Right.

**HANK GREEN:** The thing that excited me the most about it is we did it, and then we undid it in order to make life better for people who are now not breathing that sulfur dioxide into their lungs, but now we have a chance to study what that looks like.

**12:01**

**LULU:** He sees these papers, and he's like, we have just done a pretty monumental experiment.

**LATIF:** Yeah?

**LULU:** Because for decades we had been letting these ships put out these pollute-y, smoggy smoke trails, which just so happened to act like umbrellas and shade the ocean, and now that we've taken the umbrella away, we can measure how big or small that cooling effect was.

**HANK GREEN:** But then the broader—the broader question is can you then—if we were doing it before, and we know what the effect was, can you then find another, better way to do it intentionally without putting the acid rain stuff, smoggy stuff in the air?

**LATIF:** Huh. So, like—like, can we find a cleaner way to do the cloud umbrella, just on purpose this time?

**12:53**

**HANK GREEN:** Yeah.

**LULU:** So he reads a ton more, he gets really excited, he goes to bed and dreams of, like, data and hope and ships, and then he wakes up the next day, and fires out this, like, big Twitter thread kind of explaining what he sees.

**HANK GREEN:** And, oh boy. [laughs]

**LULU:** When we come back, we are headed straight into the hot water that Hank's hopes landed him in. Stick with us.



**LULU:** Lulu.

**LATIF:** Latif.

**LULU:** Radiolab.

**LATIF:** We're back, talking with Hank Green alongside our editor Soren Wheeler. And Hank has just hit 'publish' on a long Twitter thread explaining how we might be able to learn something about how to make clouds keep the ocean cool.

**13:56**

**SOREN:** Do you remember, you put out a thread, and then somebody writes back, "No no no no no, God no, God no, no no no Hank, no. No, Hank. Hank, stop. No, Hank. Bad Hank." Do you remember the first one you read and how it felt?

**HANK GREEN:** It might've been that one. Yeah.

**SOREN:** [laughs] That was, by the way, a quoted tweet. No, there was only like three "nos." I think it was "No no no," I think was the tweet.

**HANK GREEN:** I mean, certainly it triggered, like, please explain to me what I have stepped in here.

**LULU:** So what Hank had stepped in was a heated and sometimes vicious debate ...

[NEWS CLIP: Which effectively says that this whole line of research is unethical and a bad idea.]

**14:40**

**LULU:** ... among climate activists ...

[NEWS CLIP: It's a sign of desperation.]

**LULU:** ... and climate scientists ...

[NEWS CLIP: The cat's out of the bag. People know these—these options exist.]

**LULU:** ... about a little thing called geoengineering.

[NEWS CLIP: This would not be the first choice.]

[NEWS CLIP: No, or a third or fourth choice.]

**LULU:** So Geoengineering 101. What is it, first of all?

**HANK GREEN:** So yeah, geoengineering is just any way that you would change the planet intentionally. But in general, when it comes to climate change, we're talking about decreasing the amount of heat in the system of the planet.

**15:06**

**SOREN:** Like, just do whatever you can to cool things down.

**HANK GREEN:** Right. And the simplest way you could imagine is, like, putting a giant mirror in space, and reflecting some of the sun's light back and then there's like a shadow on the planet in that area. Like, that's not really what is being proposed, but ...

**LULU:** Okay, I will say that until very recently, I thought this work of geoengineering was kind of like futile hubris. Like, you read these stories of people in the 19th century shooting cannons into clouds to try to get rain to reduce drought or, like, I read about, like, the Moscow mayor Yury Luzhkov trying to spray a mist of cement on clouds to prevent snowfall.

**HANK GREEN:** Yeah.

**LATIF:** "A mist of cement" is never a phrase I thought I would ever hear.

**15:46**

**LULU:** So, like, to me I thought geoengineering was, like, not actually that realistic. But what I've learned in talking to Hank and digging into all this stuff is that no, the technology is there now, and there are some serious proposals from serious people being entertained seriously, including a proposal ...

**HANK GREEN:** To put sulfur dioxide in the stratosphere.

**LATIF:** Hmm.

**SOREN:** Now to be clear, I mean, like, Hank points out that this is very different than the ship clouds he got excited about because those are lower down, they're local and they disappear on the scale of days, whereas sulfur dioxide in the stratosphere ...

**HANK GREEN:** Would float around the whole planet, and be a very thin umbrella wherever it ends up, and also in the stratosphere would stay there for a long time.

**LULU:** How long?

**HANK GREEN:** Like, years.

**16:32**

**SOREN:** And there's a lot about this that we just don't know.

**HANK GREEN:** Like, we don't know exactly what's gonna get coolest, what's gonna get warmer. We don't know how diseases are gonna move around in that world.

**LULU:** So there are a lot of people who understandably when geoengineering comes up, are like, "No, no, no, no," because they're thinking about these unintended consequences, you know? And there's scientists who study this stuff. Like, if the tropics cool, they might dry out, and then you have less monsoon, and then you get crop shortage.

**LATIF:** Right.

**LULU:** And, like, then you actually might get more dust.

**LATIF:** Right, right, right.

**17:04**

**HANK GREEN:** There is—there's gonna be a chance that it's really bad for everyone, that you set off something that you didn't intend to set off. And then there's also the problem of there are gonna be people who did not decide to do this who are going to be negatively impacted.

**SOREN:** Right.

**HANK GREEN:** The hubris is—is like, we finally found the textbook definition, you know? Like, let's change the whole planet—the only one we have—and just hope?

**LULU:** So Hank is like yeah, global geoengineering, where you don't know what the effects are, that's bad.

**HANK GREEN:** Yeah, it's terrifying. But the opportunity to learn a bunch about this extra cloud formation over the last decades, here's an area of the planet that, like, we created clouds on and now we're not creating clouds on it anymore, and we get to see what the effect of that is.

17:53

**SOREN:** Hank's point is that we can take this smaller local thing that already happened, look at the data and find out did it have no effect or half the effect we thought, or only over here but it turned out in the long term it had a different effect, those are all questions that would be really useful to know the answers to.

**HANK GREEN:** The opportunity to study this is huge. And I don't—like, I don't know how else we'd get data like this.

**LATIF:** So he's not saying do it, he's just saying, like, research it.

**LULU:** But that brings us to the other flavor of anger Hank was seeing in response to his thread ...

**HANK GREEN:** There were people who were like, "Shh, don't tell people about this."

**LULU:** There are some people, including climate scientists, who say we shouldn't even talk about geoengineering, like, at all.

18:40

**HANK GREEN:** Yeah. That—the main thing is you don't give the fossil fuel industry a way out that's not, don't burn fossil fuels anymore.

**LATIF:** Yeah, yeah, yeah. Because that's the—not to belittle that because, like, that's the trap. That is like a purposeful playbook pioneered by the tobacco industry. You know, cast doubt but also point in every direction at any possible shiny thing you can that will distract from the one thing, the one big thing that you are doing that we actually need to change for anything to get better.

**HANK GREEN:** Yeah. And I've seen it, and I saw it in response to that thread. I saw people say, "See? Environmentalists were wrong the whole time. We shouldn't be doing all of this extra work. We can keep burning fossil fuels. Let's just put sulfur dioxide into the atmosphere and solve the problem that way. Fossil fuels are fine." Like, I saw that.

19:36

**LATIF:** Even as you all are describing geoengineering, like, my back gets thrown up and I'm like, "Oh God, like, I'm nervous about that. I'm nervous about talking about this."

**LULU:** Yeah. No, I—I hear it, and I think it's a real question: whether it's dangerous to even talk about geoengineering in case people think, "Oh, okay. Let's—let's go ahead and do that." Or they think it means that they don't have to worry about reducing fossil fuel emissions.

**HANK GREEN:** But if we don't talk about it, they'll still find it and they will joyfully misinterpret it, and it will be the first time a lot of people hear about it."

**LULU:** Hmm, yeah.

**HANK GREEN:** And I'd rather have it the first time that people hear about it be from somebody who is perfectly aware that climate change is real. [laughs] And I especially think that, like, your first exposure to an idea should be a complex one.

20:24

**SOREN:** Hank's argument is basically because geoengineering is already in the room, we need to know how to talk about it.

**HANK GREEN:** We need to figure out whether and how we can do this. Like, if we should. We have to make the decision if we should.

**SOREN:** Because, Hank says, there might come a point where in addition to solving the global long-term problem, we might need to deal with some more local, more short-term problems.

**HANK GREEN:** One of the biggest problems with global warming is going to be heat. Like, there's going to be places where it is too hot for people to live without air conditioning, and in those places, if the power goes out, people will just die. Like, in ways that we've never seen. Like, heat kills people already but, like, we need to be confronting the reality that, like, heat is very deadly, and there are going to be people who are going to be thinking, like, are—is there a way to just make it less hot right here, right now?

12:31

**SOREN:** Yeah, but you don't want to go back to putting sulfur dioxide into the atmosphere. I mean ...

**HANK GREEN:** But, like, you could do it with other stuff. So you could also, potentially—though this has not been researched as much as it needs to be—just shoot seawater into the air, which is around. Like, there's a lot of seawater when you're on the ocean. You just pump it up, and mist it into the air, maybe even pump it to where the smokestack is, so that it gets hot and goes higher, and then the salt actually can seed the cloud, or the water droplet itself can seed the cloud. And seawater, universally known to be not so bad for the ocean.

**LULU:** And you'd get your umbrella made of, like, virginal seawater. That sounds so great!

**HANK GREEN:** They're doing it in Australia right now.

**LULU:** It's called, apparently, marine cloud brightening.

22:22

**HANK GREEN:** Yes. So in Australia, there is a small-scale experiment that's just trying to make the clouds over the Great Barrier Reef brighter to try and save the Great Barrier Reef.

**SOREN:** Try to put a little bit of a cool on that and slow things down?

**HANK GREEN:** Yeah. Mm-hmm.

**LULU:** Like, that sounds really, like, benevolent and okay.

23:35

**HANK GREEN:** Isn't that interesting, that it sounds benevolent and okay, because maybe it isn't? Like, even if it's local, even if it's temporary, we don't know all the impacts that it's gonna have. Like, you could end up in a world where you—you know, the climate changes in a way that makes it really bad for a certain crop, or that makes it really good for a certain disease, and, like, you wouldn't have thought of that one, and now you've heard it, but what are the ones you haven't thought of?

**LULU:** Yeah. Like, I will admit I had a conversion this whole journey, these past, like, three weeks of seeing a tweet, researching, getting ready to talk to you, which was that I was like, this is so cool, everyone needs to know about it. But, like, I feel really torn now, because on one hand, like a ship with some salt spraying feels fine and nice and lovely. But then it's like is that just a shiny distraction, like—and more than that, when it comes to nature, there are just—as you were saying, there's so many things we don't know, that we don't even know we don't know. And the stakes couldn't be higher.

**SOREN:** Yeah.

**LULU:** When I think about any chance that someone out there could take this wrong or hear this wrong or decide to jump in whole hog, I'm almost like, just put it back in the box.

**SOREN:** We can't, though. That's not ours. That's not for us to do.

**LULU:** I know, but, like, can't we just be like ...

**SOREN:** No. No.

24:01

**LULU:** But, like, human cloning. Like that. Like, what if we're just like, "Don't?"

**HANK GREEN:** Yeah, there's things we keep in boxes—for a little while at least.

**SOREN:** The three of us shushing is not gonna put anything in a box.

**LULU:** Where are you on that? So what would you say to me? Because part of me is like, you're leaving, I'm gonna press delete. Like—like, what would you say to me, who's, like, actually kind of tipping over into the—like, I see the terror of even talking about it?

**HANK GREEN:** You know, the reality is that we are doing geoengineering right now, just recklessly and thoughtlessly and ...

**SOREN:** For capitalist reasons.

**LULU:** But that's not, like, deliberate geoengineering, right? That's like ...

24:45

**HANK GREEN:** No, so it's not geo—you can't call it geoengineering. Like, it's just—it's like geo-screwing around.

**SOREN:** Geo-accidentaleering.

**HANK GREEN:** [laughs] Yeah.

**LULU:** Like, but we are changing the climate. So you're saying we already do it already.



**HANK GREEN:** Also, like, what we all know is that we should put less CO2 into the atmosphere, and also we should take CO2 out, so that's gonna probably be necessary. Like, it isn't just gonna be taking—it isn't just gonna be stopping producing it, it's gonna be taking it out. And taking CO2 out of the atmosphere is geoengineering.

**LULU:** Geoengineering. Yeah, like carbon capture stuff.

**25:10**

**HANK GREEN:** And it will have negative impacts on some people, as well as positive impacts on others. Like, we're okay with that. So, like, that's a geoengineering that we're okay with, and we have to figure out, like, where we're not okay. And I am not here to convince Lulu Miller that geoengineering is a good idea. Like, I would love for someone to convince me which way I should feel, because I don't know. I definitely think we should study it.

**SOREN:** And talk about it.

**LATIF:** Yeah. So long as we're talking about the real problem and real solutions at the same time.

**LULU:** Yeah.

**HANK GREEN:** Right. But, like, I don't think that we can make a decision by ignoring it.

**25:52**

**LULU:** That is like, literally, I was talking about that in therapy this morning.

**HANK GREEN:** [laughs]

**LULU:** Yeah, point taken. "Don't just ignore it." So I see your point, that it's like, the talking about it could help us to really shut it down.

**HANK GREEN:** Or at least to—at least to take the chance with this North Atlantic situation to understand it better. The difference between how bad it is now and how bad it could get is very big. And weirdly, that makes me hopeful, because it means that there's slack. And I don't know. I, like, really—I believe in humanity, and I think that we're remarkable problem-solving machines when we recognize problems and look for truth and work together. And, you know, that's what science is about.

**LATIF:** Thank you to Hank Green for coming on to talk to us about this.

**LULU:** Thanks also to Dr. Colin Carson at Georgetown who studies the potential chain effects of geoengineering. And to Avishai Artsy.

**27:19**

**LATIF:** This episode was reported by Lulu Miller, with help from Alyssa Jeong Perry.

**LULU:** It was also produced with help from Alyssa Jeong Perry, with music and mixing help from Jeremy Bloom.

**LATIF:** This is Radiolab. Thanks for listening.



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