



CAT 3A: Our Future Climate

Envisioning Our Collective Future Spring 2021

- Course website:** Canvas (<http://canvas.ucsd.edu>)
- Zoom password:** CAT3co2 (for all class meetings)
- Instructor:** Prof. Adam Burgasser
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- Required Texts:** They Say, I Say (CAT 4th Edition)
Introduction to Modern Climate Change (Dessler, 2016)
Parable of the Sower (Octavia Butler, 1993)
New York 2140 (Kim Stanley Robinson, 2017)
There Is No Planet B (Mike Berners-Lee, 2019)
All We Can Save (Johnson & Wilkinson, 2020)
- Additional Resources:** <https://bit.ly/3vNMfsi>
- Library Course Reserves:** <https://bit.ly/3dlcq1k>
- Primary Assignments:** Pre-lecture check-ins (5%)
Lecture reflections (10%)
Section participation (10%)
Midterm project (25%)
Final project (50%)
Extra Credit (up to 5%)

Class Meeting Schedule

Lectures: TuTh 2:00pm-3:20pm on Zoom (all lectures will be recorded)

Discussion Sections: TuTh on Zoom during the following times:

Section number	Section ID	Time (TuTh)	Instructor
A01	39096	6pm-6:50pm	KATIE HALE
A02	39097	7pm-7:50pm	HANDE SEVER
A03	39098	4pm-4:50pm	RYNE HESLIN
A04	39099	5pm-5:50pm	RYNE HESLIN
A05	39100	10am-10:50am	ALAN SKELTON
A06	39101	11am-11:50am	ALAN SKELTON
A07	39102	12pm-12:50pm	RYNE HESLIN
A08	39103	1pm-1:50pm	RYNE HESLIN
A09	39104	1pm-1:50pm	HANDE SEVER
A10	39105	4pm-4:50pm	BOBBY EDWARDS
A11	39106	1pm-1:50pm	DREW KERR
A12	39107	4pm-4:50pm	DAVID HUSSON
A13	39108	5pm-5:50pm	KATIE HALE
A14	39109	6pm-6:50pm	BOBBY EDWARDS
A15	39110	5pm-5:50pm	DAVID HUSSON
A16	39111	6pm-6:50pm	DREW KERR

Weekly Class and Assignment Schedule

Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
Class meetings			Lecture (2pm) Discussion Section (various)		Lecture (2pm) Discussion Section (various)	Optional Film Screening (8pm)
Assignment Deadlines	Project elements (11:59pm)		Lecture checkins (2pm) Lecture reflections (11:59pm)		Lecture checkins (2pm) Lecture reflections (11:59pm)	

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Course Description

Overview

Global climate change is a reality. This is the consensus of scientists, policy makers, and people who have experienced climate change through more extreme weather events, more frequent droughts and fires, rising seas, disappearing glaciers, and notable loss of biodiversity. Are we too late to change this? The positive consequence of humans being responsible for recent changes in the climate is that we can make changes to return the climate to its past state: a trend is not inevitability. We CAN collectively "bend the curve" to shape our future climate if we are willing to look deeply and make both small and large changes to how our society functions.

In this course, we will evaluate the evidence, causes, and conditions of global climate change. This exploration will be anchored in the scientific literature and consensus findings reported by the Intergovernmental Panel on Climate Change (IPCC); social scientific studies of cultures and communities experiencing climate crisis; the psychology, politics, and economics of climate change; art, literature, and popular media reflecting different views of our future climate; and how we convince ourselves and each other of hard truths. We will use this information to collectively imagine our future in a changing world in the context of different climate change scenarios.. How do we as individuals, communities, cultures, and as a species respond and react to our changing world?

We will explore these themes through various texts, including textbooks, primary scientific literature, policy reports, popular articles, poetry, and science fiction writing; audio podcasts; videos; visual and digital artwork; and films. Some of these will be required sources to assure we are all on the same page with regard to climate change and related issues; others are optional sources that will be useful for your synthesis projects. The course will culminate in a creative final project that engages you in imagining your future world through the lens of a changing climate and its repercussions.

Maintaining Psychological Safety in this Course

Discussion of climate change can difficult, both from a political perspective (disagreements in the cause, impact, and reality of a changing climate), and a psychological perspective (anxiety, fear, distress, or anger over changing climate conditions, also known as ecoanxiety¹). If at any time course material feels too intense, or if the rhetoric and narrative of the class strikes you in an unsettling way, please speak to me, your TA, or the course manager. In particular, if you feel discussion of these topics is causing excess anxiety, fear, or depression, please reach out to the instructors and/or UCSD's Counseling and Psychological Services (+1 858-534-3755, <http://caps.ucsd.edu>). We're in this all together to grow and learn.

¹ See <https://www.ecopsychology.info/ecoanxiety>

Learning Goals

This course aims to address the following learning goals:

Climate Change Science

- Understand the scientific evidence that our climate is changing, and that these changes are due in large part to the activities and processes of modern society
- Understand the implications of current and future climate change on environment, health, social and political structures, and the greater biosphere
- Critically evaluate adaptation and mitigation strategies for future climate change
- Critically evaluate the representation of our future climate in the popular media
- Identify and explore present-day actions we can take as individuals and communities to address climate change
- Synthesize information from diverse resources to imagine a logically-constructed view of the future under various assumptions of future climate evolution

Research

- Develop the ability to read and evaluate relevant sources, including primary articles in the scientific literature, policy statements, and popular literature or media
- Use sources effectively by drawing key examples from research to support arguments, creativity, and art-making.
- Understand and utilize the key components of research, including literature review and annotated bibliography, the proposal process, peer review, and revision.
- Cite texts and arguments fairly and effectively.

Writing and Argumentation

- Develop your ability to read, understand, and critique arguments and assumptions presented in diverse media forms
- Recognize and deconstruct arguments based on bias, opinion, under-/overstated uncertainty, and false claims, and distinguish these from verifiable facts and data
- Develop the ability to construct, organize, express, and support your own arguments effectively with useful evidence and clear analysis.
- Use the revision process consistently and effectively to develop and refine written work, as well as other multi-modal formats.

Collaboration & Art Making

- Develop effective ways to collaborate with groups of peers.
- Use digital methods to facilitate and document collaboration.
- User peer evaluation to refine ideas, methodologies, and creative products.
- Synthesize elements from multiple sources as a form of creative world-building, integrating environmental, social, political, economic, psychological, and spiritual lenses
- Explore both familiar and novel forms of art making.

Assignments

Your engagement and learning in the course will be assessed through a series of regular weekly assignments, and two major course projects. The breakdown of these assignments and course grade weighting is as follows:

Assignment	Grading Weight
Pre-lecture check-ins (20) Due before each lecture	5% 3 lowest assignments dropped
Lecture reflections (20) Due on the day after the lecture (WeFr)	10% 3 lowest assignments dropped
Section Participation Assigned weekly by TA	10%
Midterm Project: Envisioning 2021 (see below)	25% Includes draft paper & reflection, peer review, final paper & reflection
Final Project: Envisioning 2051 (see below)	50% Includes pitch , annotated bibliography, draft paper & reflection, peer review, final & reflection, and project materials
Extra credit assignments Three (3) written assignments due at the end of the quarter for a maximum of 3%, plus 2% for >85% section completion of CAPEs	Up to +5%

Weekly Assignments

Pre-lecture check-ins (5%): These are short (3-5 question) multiple-choice quizzes aimed at ensuring preparation for that day's lecture. You will have up to 5 attempts to complete these, so as long as you keep up with them this should be an easy 100%. Check-ins will be accessible through Canvas, and should be completed before the start of each lecture (2pm US Pacific time). There are twenty (20) pre-lecture check-ins assigned during the term; you are permitted to drop your three (3) lowest/missed check-ins. Extensions on these assignments are NOT permitted.

Lecture reflection prompts (10%): These are short (100-150 word) reflective writing pieces aimed at further reflection on one or more key topics raised in the lecture, drawing from the resources reviewed or referenced during the lecture. There will be specific prompts for each lecture that will be evaluated by the instructors on a simple 2-point scale:

- 0 = no response turned in
- 1 = incomplete or partial response reflecting minimal or shallow effort

- 2 = complete response

Reflection prompts should be submitted through the Canvas Discussion Board no later than 11:59pm US Pacific time on the day **after the lecture (Wednesday & Friday)**. There are twenty (20) lecture reflection prompts assigned during the term; you are permitted to drop your three (3) lowest/missed reflections. Extensions on these assignments are NOT permitted.

Discussion Section Participation (10%): Attendance and active participation at *all* section meetings are a *mandatory* component of this course. Attendance policies for lecture and discussion section are described below. Your TA will determine the rubric by which they will assign a weekly participation score.

Extra credit (up to 5%): During the quarter, there will be opportunities for extra credit, which [will take the form of written reflections on Climate Change related events hosted by UCSD](#). You may complete up to three (3) of these assignments for a +3% bonus on your final grade. In addition, at the end of the term each section that has >85% CAPE completion (14/16 respondents) will receive an additional 2% extra credit. Extensions on extra credit assignments are NOT permitted. (updated May 4)

~~may take the form of assessment surveys, additional reflection prompts, participation and reflection on climate-change related events, etc. These will be posted on Canvas and will have various deadlines throughout the quarter. Each extra credit assignment will be worth 0.5% or 1%, and can be combined to add up to 5% onto your final course grade.~~

Midterm Project: Envisioning 2021

Description

The events described in the novel "Parable of the Sower" (1993) and the film "Soylent Green" (1973) were anticipated to take place in the 2020s - the decade we are now in. These works present dystopian views of our present day that are rooted in social, political, and environmental issues taking place during the time these works were created. There are many things these works get wrong, illustrating the challenges of imaging future worlds, nicely summed up in Charlie Stross's blog piece "World-Building 404: The unknown unknowns" (2012). However, these works serve as mirrors to what people 30 years ago (for "Parable of the Sower") and 50 years ago (for "Soylent Green") imagined our decade might be given the conditions of their time.

As part of the build up to your final course project, you will each individually conduct a critical analysis of one of these two works from the perspective of future forecasting of our social, political, and environmental climate through the lens of climate change, drawing on the resources of this course and additional sources to support your claims. Your ~~analysis should address the~~ [research thesis](#) should build upon the following four questions:

1. How did this work portray the future environmental climate in the time in which it is set? Consider conditions such as weather, pollution, availability of water, green spaces, and

- other physical environment aspects. How were peoples' relationship with the environment portrayed in the work? How do these compare to conditions today?
2. How did this work portray the social and political climate of the time in which it was set? Consider aspects such as wealth inequality, social institutions, government infrastructure, political environment, social equality, etc.
 3. How do the environmental and social conditions presented in the work reflect the conditions at the time when it was made? How did the author/director extrapolate from their contemporary situation, and what assumptions did they make?
 4. Are these conditions presented in the work made through an optimistic/hopeful (i.e., things will change for the better) or pessimistic lens (i.e., things will continue to be bad/get worse)?

Your response should be a cohesive argument supporting your answers to these questions that integrates evidence in the form of specific examples from the chosen work and ideas referenced from at least five (5) additional sources, including 1 primary (peer-reviewed) source. Your sources can include materials discussed in this course or relevant outside materials.

Project Components

Write-up

- You will submit your analysis as a written work in Draft and Final forms
- Length: 750-1000 words (3-4 pages, double spaced, 12-pt font)
- Required Sources: In addition to the work analyzed, at least five (5) additional sources, including 1 primary (peer-reviewed) source
- Include cited references using MLA citation format on a separate Bibliography page

Reflection

- Along with your writeup, you will submit a 1-2 paragraphs explaining *to your peers and TA* your choices and process
- For the Draft version:
 - What did you want to accomplish in the draft?
 - What do you believe you'd done well?
 - What do you believe needs work?
 - Are there any questions you have for your readers?
- For the Final version:
 - What did you change and why do those changes improve your argument?
 - What concerns do you still have about this final version?

Peer Review & Presentation

- During Sections in Week 4, you will provide feedback on other students' work

Project timeline

- Draft + Draft Reflection: Sunday April 18 (preceding Week 4) - [complete/incomplete](#)

- Note: Drafts that are 3 or more days late will result in $\frac{1}{3}$ grade deduction on Final Project grade
- Peer Review (5%): During Section of Week 4
- Final + Final Reflection (20%): Sunday May 2 (preceding Week 6)

Final Project: Envisioning 2051

Description

The final project is a multimedia project, where you will create a integrated set of digital products (webpages, blogs, artwork, audio, video, etc.) to convey what our future world will be as a result of future climate change.

Nearly 30 years ago, I was an undergraduate at UCSD, and climate change was growing in public awareness, as was climate change denial. At that time, evidence of human-induced changes in sea level, air temperature, and other metrics were present, but their significance uncertain. Today the evidence of human-induced climate change is overwhelming. Then, CO₂ was 350 ppm in the atmosphere; today it is over 400 ppm. Then, climate change impacts were thought to be long in the future; today, they are imminent, if not already present.

What will the next 30 years bring? In this project, you will envision your future world through a creative, personal narrative from the perspective of your future self. Specifically, you will imagine what your world 30 years in the future will be under one of four assigned Representation Concentration Pathways (RCPs) laid out in the IPCC 2014 AR5 Summary Report: RCP2.6, RCP4.5, RCP6.0, and RCP8.5. This pathway constrains the physical environment of your future world; your project is to delve into the social, political, and economic environment resulting from those conditions. How did we get onto one of these RCPs? What were the impacts of doing so? And what does the world of 2051 look like under this pathway?

This project is a collaborative group project of **3-4 students (4 RCPs per section)**. As a group, you will decide on the vision of your future world, and the multimedia representation of that world you will create. Potential multimedia components may include interviews, diaries, timeilnes, news articles, blog posts, websites, photographic compilations, classical art forms, a series of short (<3-10 min) or one long (10-30min) video or audio piece, animations, graphic novel, video game, etc., and possibly a mixture of these components.

The motivation, development, and justification of your project design will be described in a collaborative write-up of 1000-1500 words, with draft and final versions. In designing your project, you should make significant use of at least six (8) sources, including at least two (2) primary peer-reviewed sources. These minimum 8 sources will be detailed in a collaborative annotated bibliography. You will also submit reflections for your draft and final writeups the review your contributions, team efficacy, and process.

Project Components

Group Formation (during Week 5)

- In sections, you will form into four groups, each of whom will be assigned one of the RCP scenarios.
- You will also be required to detail your project roles, based on your skill set, interests, and the design of your project

Project Pitch (during Week 6)

- In sections, your group will "pitch" your project design and use peer feedback to revise your project

Annotated Bibliography (due end of Week 6)

- This is a summary of your eight (8) sources (see below).
- [Each member of the team should submit the same Annotated Bibliography to the appropriate Canvas assignment](#)

Collaborative Write-up (draft due end of Week 8, final due June 8)

- This is a collective document that describes the design choices for your project:
 - Describe the assumptions and motivations made in describing the physical, social, and political environment of your world, based on your assigned RCP scenario and anchored in your source material
 - Motivate your choice for presenting an "optimistic" vs "pessimistic" view of the present circumstances
 - Describe any other considerations that motivate the context and design of your project, as well as choice of media and any necessary production details
- All of these elements should be anchored in at least eight (8) *significant* resources, including at least two (2) primary (peer-reviewed) sources. [A significant resource means one that contains a clear grounding in research studies with citations included. Textbooks, online media news, and Wikipedia don't count.](#)
- Length: 1000-1500 words (4-6 pages, double spaced, 12-pt font)
- Include cited references using MLA citation format on a separate Bibliography page

Individual Reflection (submit with Write-up)

- Each group member will submit a short document focused on their specific design choices and contributions to the project, reflect on the following questions:
 - For the Draft version:
 - What your contribution to the project was
 - How and how well your team collaborated
 - What you wanted to accomplish in the draft
 - What you believe you'd done well
 - What you believe needs work, and
 - Any questions you have for your readers
 - For the Final version:

- What did you change and why do those changes improve your argument?
 - What concerns do you still have about this final version?
- Length: 250-500 words (1-2 pages, double spaced, 12-pt font)

Peer Review & Presentation (during Weeks 9 & 10)

- During Sections in Week 9, you will and undergo peer review on your project write-up
- During Sections in Week 10, you will present your media components to your section for peer and instructor feedback

Project materials (draft during Week 9; final June 8)

- Your multimedia digital products must be submitted to your section's Final Project Google Drive folder
- Be sure that all materials can be viewed without specialty software
 - video in MP4 or MOV formats, or posted on open web service (e.g., Youtube)
 - audio files in MP3 or posted to an open web service (e.g., Sound Cloud)
 - images in JPG, GIF, PNG
 - written documents in PDF, DOC, or DOCX
 - all webpages must be openly accessible
 - No executable files are permitted (for digital security reasons)
- These materials must be original in design and creation

Project timeline

- Group formation & RCP assignment: During Week 5 Section
- Pitch: During Week 6 Section
- Annotated Bibliography (10%): Due Sunday May 9 (preceding Week 7)
- Draft + Draft Reflection: Due Sunday May 23 (preceding Week 9) - [complete/incomplete](#)
 - Note: drafts that are 3 or more days late will result in $\frac{1}{3}$ grade deduction on Final Project grade
- Peer Review (5%): During Section of Week 9
- Final + Final Reflection ([35%](#)): Due Tuesday June 8 ("Final" for course)
- Final Project Materials: Due Tuesday June 8 ("Final" for course)

Details on Writing Elements

Annotated Bibliography

The Annotated Bibliography (see [They Say I Say](#) Chp 28) is a summary of your source research for your project, and provides the basis for your project design, perspective, motivation, etc. It is a standard method for research in all fields (this is often part of a "literature review" for Masters and PhD projects).

For your Final project, you will develop an Annotated Bibliography for eight (8) [significant](#) resources, including two (2) primary peer-review research articles. [A significant resource means one that contains a clear grounding in research studies with citations included.](#) Textbooks,

online media news, and Wikipedia *don't count*. The format for the Annotated Bibliography is as follows:

- 1 summary/overview paragraph describing project topic/design (50-100 words)
- Summary of each source including:
 - full citation (MLA format)
 - descriptive paragraph (100-150 words each), introducing the work and its argument(s), the main points/examples, and the connection to your project including how this sources informs your project design and perspective

Templates for the Annotated Bibliography are provided in [They Say I Say](#) Chp 28.

Each project team should create one (1) Annotated Bibliography for the team, and each team member should upload that same file to the Annotated Bibliography assignment on Canvas by the end of Week 6 (Sunday May 9th at 11:59pm).

Project Papers

Your project papers should adhere to the following conventions

- Document formatting
 - Double-spaced
 - 12-pt font
 - Left justification
 - 1" margins on all sides
- Document heading
 - Left side:
 - Name of assignment
 - Date of submission
 - Right side
 - Last name(s)
 - Section number and TA last name
- First page should include at top (centered, 14- or 16-pt text):
 - Title
 - Name(s) of the author(s)
 - Section number and TA last name
- Word Count should be included at the end of the document
- Citations and Bibliography
 - Use MLA format for citations in document and bibliography
 - Include a separate page(s) titled Bibliography listing the full MLA citations

Late Assignment Policy

For the Midterm and Final project components, the following late submission policy will apply to all components, unless an allowable extension has been provided by your Section TA:

- Up to 1 day late: 25% reduction
- Up to 2 days late: 50% reduction
- More than 2 days late: no credit

Note that if no draft version of the primary written assignment or reflection is received by 2 days after the deadline, your final assignment grade will be reduced by $\frac{1}{3}$ of a letter grade (i.e., B \rightarrow B-).

Requests for extensions must be received and approved BEFORE the deadline, unless you have a documented medical emergency.

Course Schedule

This schedule is subject to change. In particular, I may rearrange the reading lists a week in advance to balance source material and expected effort. Please pay attention to weekly announcements by your instructor and TA. Any reading listed should be read before the start of the week, and will be the subject of your pre-lecture check-ins.

Summary

Week	Topic
1 (March 29-April 2)	The Reality of Climate Change
2 (April 5-9)	The Science of Climate Change
3 (April 12-16)	Welcome to the Anthropocene: The Causes and Impacts of Climate Change
4 (April 19-23)	Climate Justice
5 (April 26-30)	I Just Don't Believe It: Climate Change Denial
6 (May 3-7)	Waiting for the Apocalypse: The Art of Ecoanxiety
7 (May 10-14)	Climate Activism
8 (May 17-21)	Politics and Policy: How to Achieve Global Solutions
9 (May 24-28)	Desperate Measures
10 (May 31-June 4)	There is no Plan(et) B

Week 1: The Reality of Climate Change

In this introductory week, we evaluate the reality that our climate is changing, and that these changes are being driven by human industrial activity. We will define what the terms "climate" and "climate change" mean, review the evidence of climate change and its origins as outlined in the IPCC and scientific literature, and discuss how evidence of climate change manifests in different parts of California, the US, and the World. You'll learn a method to efficiently read both scientific literature and policy briefs through categorical reading and structured note-taking.

Reference for lecture:

- Review for reference: Course syllabus (this!)
- Review for reference: Introduction to Modern Climate Change, Chapters 1-2 (37 pp)
- Review for reference: IPCC AR5 Synthesis Report: Climate Change 2014 (Summary for Policymakers):
https://www.ipcc.ch/site/assets/uploads/2018/02/AR5_SYR_FINAL_SPM.pdf (30 pp)

Assigned readings:

- Read: "Begin" in *All We Can Save* (Johnson & Wilkinson) (9 pp)
- Read: The Scientific Consensus on Climate Change (Oreskes 2004, *Science*, 306, 5702) <https://science.sciencemag.org/content/306/5702/1686.full> (1 pp)
- Watch: "The Last Time the Globe Warmed" (PBS EONS, 4 December 2017)
<https://www.youtube.com/watch?v=IdLBoErAhz4> (11 min)
- Watch for fun: "Climate Change Debate: Last Week Tonight with John Oliver" (HBO, 11 May 2014) <https://www.youtube.com/watch?v=cjuGCJJUGsq> (4 min)

Fiction reading:

- Parable of the Sower (Chapters 1-5)

Additional recommended (optional) readings:

- "The Basics of Climate Change" webpage, The Royal Society,
<https://royalsociety.org/topics-policy/projects/climate-change-evidence-causes/basics-of-climate-change/>
 - Watch: "The Basics of Climate Change", The Royal Society:
<https://www.youtube.com/watch?v=n4e5UPu1co0> (1 min)
- "Scientists Have Uncovered a Disturbing Climate Change Precedent" (Peter Brannen, *The Atlantic*, 6 August 2018):
<https://www.theatlantic.com/science/archive/2018/08/earths-scorching-hot-history/566762/>
 - Primary source: "High temperatures in the terrestrial mid-latitudes during the early Palaeogene" Naafs et al. (2018, *Nature Geoscience* 11, 766):
<https://www.nature.com/articles/s41561-018-0199-0>

Weekly assignments:

- Academic Integrity Pledge
- Pre-lecture checkins (Tuesday & Thursday)
- Lecture reflections (Tuesday & Thursday)

Weekly events

- Friday movie night: An Inconvenient Truth (2006) 8pm-10pm

Week 2: The Science of Climate Change

This week we delve into the science behind climate change. Topics include core principles of thermodynamics and radiation, the greenhouse effect, carbon cycling, biological influence on Earth's climate, external inputs to the Earth's energy budget, feedback systems, acidification, and other topics. We'll see that Earth's climate has a long history of dramatic change, and it is the rapidity of change that is the most notable aspect of the current era. We'll explore a simple climate model to evaluate the impact of changes to the Earth's atmosphere, surface, and heating.

Reference for lecture:

- Review for reference: Introduction to Climate Change, Chapters 3-6 (74 pp)
- Review for reference: IPCC AR5 Climate Change 2013: The Physical Science Basis: (Summary for Policymakers):
https://www.ipcc.ch/site/assets/uploads/2018/02/WG1AR5_SPM_FINAL.pdf (27 pp)

Assigned readings:

- For discussion section: They Say I Say Chapter 20: Getting a Start on Research Part I & II
- Read: "Could Climate Change be Worse than we Think?" (Peter Brannen, The Atlantic, 3 February 2021):
<https://www.theatlantic.com/magazine/archive/2021/03/extreme-climate-change-history/617793/> (31 pp)

Fiction reading:

- Parable of the Sower (Chapters 6-10)

Weekly assignments:

- Pre-lecture checkins (Tuesday & Thursday)
- Lecture reflections (Tuesday & Thursday)

Weekly events

- Friday movie night: Soylent Green (1973) 8pm-10pm

Week 3: Welcome to the Anthropocene: The Impacts of Climate Change

The impacts of human activities and climate change, ranging from waste to rising and acidifying seas to mass extinctions, have motivated some scientists to call the current geological epoch the Anthropocene. What are the roots of this change? We'll evaluate how and why our activities have led to the current climate crises, including colonization and unfettered capitalism; what the impacts of these activities have been on social structures, health, and economies; and the real physical limits of continued growth in population, energy, and resource use. We'll also examine why fossil fuels are so prevalent (why are we addicted to oil?), and discuss practical but challenging solutions to bending the growth curve.

Reference for lecture:

- Review for reference: Introduction to Climate Change, Chapters 8-9 (35 pp)
- Review for reference: IPCC AR5 Climate Change 2014: Impacts, Adaptation, and Vulnerability (Summary for Policymakers):
https://www.ipcc.ch/site/assets/uploads/2018/02/ar5_wgII_spm_en.pdf (31 pp)

Assigned readings:

- They Say I Say Chapters 21 (Finding Sources) and 22 (Evaluating Sources)
- Read: "When Did the Human Epoch Begin?" (Michelle Nijhuis, The New Yorker, 11 March 2015, 3 pp)
<https://www.newyorker.com/tech/annals-of-technology/holocene-anthropocene-human-epoch>
- Read: The Uninhabitable Earth (David Wallace-Wells, New York Magazine, 10 July 2017, 20 pp):
<https://nymag.com/intelligencer/2017/07/climate-change-earth-too-hot-for-humans.html>
- Watch: "What Will Our Planet Look Like in 100 Years?" (The Atlantic, 27 August 2015, 3 min): <https://www.youtube.com/watch?v=KFB-wTF9pSc> (3 min)
- Read: "Galactic Scale Energy" (Tom Murphy, Do the Math Blog, 12 July 2011, 10-12 min): <https://dothemath.ucsd.edu/2011/07/galactic-scale-energy/>

Fiction reading:

- Parable of the Sower (Chapters 11-15)

Additional recommended (optional) readings:

- Primary source: "Defining the Anthropocene" (Lewis & Maslin, Nature 519, 171, 2015)
<https://www.nature.com/articles/nature14258>

- The End of Ice (The New Yorker, Dexter Filkins, 2016)
<https://www.newyorker.com/magazine/2016/04/04/investigating-chhota-shigri-glacier>
- "How Climate Change Could Trigger the Next Global Financial Crisis" (Robinson Meyer, The Atlantic, 1 August 2019):
<https://www.theatlantic.com/science/archive/2019/08/how-fed-could-fight-climate-change-adam-tooze/595084/>
- "The Link Between the Zika Virus and Climate Change" (Greg Mercer, The Atlantic, 24 February 2016):
<https://www.theatlantic.com/health/archive/2016/02/zika-and-climate-change/470643/>
- Primary source: "Association of Air Pollution and Heat Exposure With Preterm Birth, Low Birth Weight, and Stillbirth in the US: A Systematic Review" (Bekkar et al. 2020, JAMA Network Open 3, e208243):
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2767260?utm_source=For_The_Media&utm_medium=referral&utm_campaign=ftm_links&utm_term=061820
- Video: "Losing Ground" (Lisa Hornak and Erin Stone, The Atlantic, 17 June 2019):
<https://www.theatlantic.com/video/index/591832/climate-refugees/>
- Video: "Scenes from a Dry City" (Simon Wood and Francois Verster, The Atlantic, 5 March 2019): <https://www.theatlantic.com/video/index/584179/dry-city/>
- Watch: Last Days at Paradise High (New Yorker documentary, Emily Thoms & Derek Knowles, 26 August 2020)
<https://www.newyorker.com/culture/the-new-yorker-documentary/the-ongoing-trauma-of-californias-wildfires-in-last-days-at-paradise-high> (23:17)

Weekly assignments:

- Pre-lecture checkins (Tuesday & Thursday)
- Lecture reflections (Tuesday & Thursday)
- CAT3 Library Tutorial
- Midterm project draft and reflection (due Sunday following this week)

Weekly events

- Friday movie night: Wall-E (2008) 8pm-10pm

Week 4: Climate Justice

For many of us, climate change is a "theoretical" concept as it has so far had minimal effect on many affluent people (including most Americans). However, the current impacts of the climate crisis have had a measurable and disproportionate impact on underdeveloped countries and marginalized communities around the globe. We'll interrogate the differential impact of climate change, collectively characterized as climate justice, with focus on frontline/fenceline communities in the US, at-risk populations across the world, and the legacy of colonialism now manifested as climate racism.

Assigned readings:

- All We Can Save: "At the Intersections", Jacqui Patterson, pp 193-201
- Read: "Earth's New Gilded Era: The world is getting hotter, and the divide between rich and poor is getting bigger." (Vann Newkirk II, The Atlantic, 15 October 2020, 21 pp): <https://www.theatlantic.com/health/archive/2020/10/heat-human-rights-issue-21st-century/616693/>
- Video: "The Link Between Climate Change, Health, & Poverty" (Cheryl Holder, TEDMED Talk, March 2020, 12 min): https://www.ted.com/talks/cheryl_holder_the_link_between_climate_change_health_and_poverty
- Read: "When Climate Change and Xenophobia Collide" (Cristina Baussan, Leticia Duarte, Ottavia Spaggiari, and Sarah Stillman, The New Yorker, 16 February 2021, 20 pp) <https://www.newyorker.com/news/dispatch/when-climate-change-and-xenophobia-collide>
- Read: "Louisiana's Disappearing Coast" (Elizabeth Kolbert, The New Yorker, 29 March 2019): <https://www.newyorker.com/magazine/2019/04/01/louisianas-disappearing-coast>

Fiction reading:

- Parable of the Sower (Chapters 16-20)

Additional recommended (optional) readings:

- Interactive article: This Is Inequity at the Boiling Point (Somini Sengupta, The New Yorker, 2020) <https://www.nytimes.com/interactive/2020/08/06/climate/climate-change-inequality-heat.html?referringSource=articleShare> (note: may be behind paywall)
 - Primary Source: "Half a degree and rapid socioeconomic development matter for heatwave risk" (Russo et al. 2019, Nature Communications 10, 136): <https://www.nature.com/articles/s41467-018-08070-4>
- "On climate change, archaeological paper digs into the effects of colonization and maltreatment" (Erin Blakemore, Washington Post, 25 April 2020): https://www.washingtonpost.com/science/on-climate-change-archaeological-paper-digs-into-the-effects-of-colonization-and-maltreatment/2020/04/24/644de4d6-84db-11ea-878a-86477a724bdb_story.html
 - Primary Source: "Archaeology, environmental justice, and climate change on islands of the Caribbean and southwestern Indian Ocean" (Douglass & Cooper, 2020, PNAS 117(15), 8254-8262) <https://www.pnas.org/content/117/15/8254>
- How Europe's wood pellet appetite worsens environmental racism in the South (Southerly, Danielle Purifoy, 5 October 2020) <https://southerlymag.org/2020/10/05/how-europes-wood-pellet-appetite-worsens-environmental-racism-in-the-south/>

- Watch: "Braddock, PA" (Rosie Haber, 31 August 2018, 7 min): <https://www.youtube.com/watch?v=OS7TPLrxzJ8&list=PLDamP-pfOskNg5WjzmcTVTzMzmk5ArGJd&index=9>

Weekly assignments:

- Pre-lecture checkins (Tuesday & Thursday)
- Lecture reflections (Tuesday & Thursday)
- Midterm project peer review (during Discussion Sections)

Weekly events

- Climate Intersections: Here and Now; Thursday April 22 1pm-2:30pm: <https://bit.ly/3txPrqB>
- University of California Center for Climate Justice Launch Event; April 22 9am-1:30pm & Friday April 23 9am-3:30pm (various sessions): <https://bit.ly/3mXKtRu>
- California Climate Action Summit; Thursday April 22 10am-4pm (various sessions): <https://bit.ly/3mZ5efw>
- Green Talks Presentations: Available starting this week at <https://bit.ly/3sw6b0a>
- Friday movie night: Elysium (2013) 8pm-10pm

Week 5: I Just Don't Believe It: Climate Change Denial

Despite overwhelming evidence and scientific consensus, climate change remains a controversial political issue. In this week, we'll examine the underpinnings of climate denialism, including the heuristics and cognitive biases that keep people skeptical, and the strategies of active campaigns - the tobacco industry playbook - that have halted progress on climate change and other social issues for over 70 years.

Reference for lecture:

- Review: Global Warming & Climate Change Myths, Skeptical Science, <https://skepticalscience.com/argument.php>
- Review: Climate Change in the American Mind: December 2020 (Leiserowitz et al. 2021, New Haven, CT: Yale Program on Climate Change Communication) <https://climatecommunication.yale.edu/publications/climate-change-in-the-american-mind-december-2020/> (23 pp main text, 1 pp executive summary)
- Review: Fossil Fueled Foolery: An Illustrated Primer on the Fossil Fuel Industry's Deceptive Tactics (2nd Edition), NAACP Environmental and Climate Justice Program (April 2021; 60 pp): https://naacp.org/wp-content/uploads/2021/04/Fossil-Fueled-Foolery-2.0-abridged-4_1_2021.pdf

Assigned readings:

- They Say I Say Chapter 28: Annotated Bibliographies

- Read: 5 Cognitive Biases in Climate Risk Management (Roop Singh and Rebeka Ryvola, Braced, June 2018)
<http://www.braced.org/contentAsset/raw-data/533c48ab-749c-49e9-971b-3d0a83293256/attachmentFile> (7 pp)
- Read: "Will the "Tobacco Strategy" Work Against Big Oil?" (Lincoln Caplan, The New Yorker, 17 November 2015):
<https://www.newyorker.com/news/news-desk/will-the-tobacco-strategy-work-against-big-oil> (5 pp)
- Listen: "The Birth of Climate Change Denial" (Only Human Podcast, 17 May 2017; 40 min):
<https://www.wnycstudios.org/podcasts/onlyhuman/episodes/birth-climate-change-denial>
- Watch: "13 Misconceptions About Global Warming" (Veritasium, 2014):
<https://www.youtube.com/watch?v=OWXoRSIxylU> (7 min)

Fiction reading:

- Parable of the Sower (Chapters 21-25)

Additional recommended readings:

- "The Perils of Ignoring History: Big Tobacco Played Dirty and Millions Died. How Similar Is Big Food?" (Brownell & Warner, 2009, *Milbank Q.* 87(1), 259–294)
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2879177/>
- "Institutionalizing delay: foundation funding and the creation of U.S. climate change counter-movement organizations" (Brulle, 2014, *Climatic Change* 122, 681)
<https://link.springer.com/article/10.1007/s10584-013-1018-7> (PDF available at <https://www.drexel.edu/~media/Files/now/pdfs/Institutionalizing%20Delay%20-%20Climatic%20Change.ashx>)
- "Heartland Launches Website of Contrarian Climate Science Amid Struggles With Funding and Controversy" (Nicholas Kusnetz, *Inside Climate News*, 13 March 2020)
<https://insideclimatenews.org/news/13032020/heartland-institute-climate-change-skeptic/>

Weekly assignments:

- Pre-lecture checkins (Tuesday & Thursday)
- Lecture reflections (Tuesday & Thursday)
- Group formation and RCP assignment for Final project (during Sections)
- Midterm project final paper and reflection (due Sunday following this week)

Weekly events

- Scripps Sustainability Symposium: Strategies on Energy Use and Waste Reduction for the Next Decade, Tuesday & Wednesday April 27 & 28 10am-12pm (various session):
<https://bit.ly/3szC87L>

- Sustainability Trivia with UCSD Recreation, Wednesday April 28, 5pm-7pm: <https://fb.me/e/1YUrYtW1D>
- UCSD Green Talks Live 2021, Thursday April 29, 4pm-6pm: <https://bit.ly/3sw6b0a>
- Getting Our Climate Act Together: Addressing Climate Change at All Levels, Thursday April 29, 5pm-6:30pm: <https://bit.ly/3sBFWFi>
- Friday movie night: The Day After Tomorrow (2004) 8pm-10pm

Week 6: Waiting for the Apocalypse: The Art of Ecoanxiety

There seems to be a lot to be depressed about when we consider the seemingly inevitable changes that will happen to our planet over the next several decades; this is clinically recognized as climate change distress or ecoanxiety. How do we deal with the psychological manifestations of climate change to move toward solutions? One solution is to look at our arts and media. How is climate change commonly represented in the media? How can we change that representation to drive a more positive and activist approach to addressing climate change issues?

Reference for lecture:

- Review: Coping with Climate Change Distress, Australian Psychological Society, https://www.psychology.org.au/getmedia/cf076d33-4470-415d-8acc-75f375adf2f3/coping_with_climate_change.pdf.pdf

Assigned readings:

- They Say I Say: Chapter 32
- All We Can Save: "Mothering in the Age of Extinction", Amy Westervelt, pp 248-253
- "Scylla and Charybdis: Beyond climate denial and despair" (Lawrence Weschler, The Atlantic, 15 October 2020): <https://www.theatlantic.com/science/archive/2020/10/lawrence-weschler-beyond-climate-denial-and-despair/616698/>
- "Climate grief: How we mourn a changing planet" (Panu Pihkala, BBC Futures, 2 April 2020): <https://www.bbc.com/future/article/20200402-climate-grief-mourning-loss-due-to-climate-change>
- "The Climate Change Paper So Depressing It's Sending People to Therapy" (Zing Tsjeng, Vice Magazine, 27 Feb 2019): <https://www.vice.com/en/article/vbwpdb/the-climate-change-paper-so-depressing-its-sending-people-to-therapy>
 - If you're up for it, read the paper!: Bendell "Deep Adaptation: A Map for Navigating Climate Tragedy" (2nd Edition) 2020, IFLAS Occasional Paper 2 (24 pp): <http://www.lifeworth.com/deepadaptation.pdf>
- "The Moms Who Are Battling Climate Change" (Lizzie Windicombe, The New Yorker, 12 April 2021, 5pp): <https://www.newyorker.com/news/news-desk/the-moms-who-are-battling-climate-change>

- The Search for New Words to Make Us Care About the Climate Crisis (The New Yorker, Hua Hsu, 21 February 2020)
<https://www.newyorker.com/culture/cultural-comment/the-search-for-new-words-to-make-us-care-about-the-climate-crisis>
- "Is it wrong to be hopeful about climate change?" (Diego Arguedas Ortiz, BBC Futures, 9 January 2020):
<https://www.bbc.com/future/article/20200109-is-it-wrong-to-be-hopeful-about-climate-change>

Fiction reading:

- New York 2140 (Parts 1 & 2)

Additional recommended readings:

- "World-Building 404: The unknown unknowns" Charlie Stross (21 January 2012):
<http://www.antipope.org/charlie/blog-static/2012/01/world-building-404-the-unknown.html>
- Majority of young American adults say climate change influences their decision to have children (SWNS digital, Marie Haaland, 20 April 2020)
<https://www.swnsdigital.com/2020/04/majority-of-young-american-adults-say-climate-change-influences-their-decision-to-have-children/>
 - youtube: <https://www.youtube.com/watch?v=rx9zHp53NUk>
- "Photography Has Gotten Climate Change Wrong From the Start" (Kim Beil, The Atlantic, 27 November 2020):
<https://www.theatlantic.com/ideas/archive/2020/11/photography-has-never-known-how-handle-climate-change/617224/>
- "What's So Funny About Climate Change?" (Hollywood, Heath & Society, 19 September 2014):
<https://hollywoodhealthandsociety.org/events/whats-so-funny-about-climate-change>
 - Event highlights video: https://www.youtube.com/watch?v=x-Cuxrc0a_Q (3 min)

Weekly assignments:

- Pre-lecture checkins (Tuesday & Thursday)
- Lecture reflections (Tuesday & Thursday)
- Final project pitch during Section
- Final project annotated bibliography (due Sunday following this week)

Weekly events

- UCSD Student Sustainability Collective Monday meetings 6pm-7pm:
<https://studentsustainability.ucsd.edu/>
- UC Davis Climate Justice Seminar featuring speaker Dr. Hilda Lloréns, Monday May 3 1-2pm: <https://marinescience.ucdavis.edu/events/cmsi-climate-justice-seminar-series>

- Sogorea Te' Land Trust Webinar, Thursday May 6, 1-2:30pm (note: overlaps with lecture): <https://bit.ly/2PutTvY>
- UCSD Green New Deal "First Friday" meetings 4pm-6pm: <https://ucsdgreennewdeal.net/index.php/first-fridays/>
- Friday movie night: Children of Men (2006) 8pm-10pm

Week 7: Climate Activism

Time to get active! Ecology movements of the 1960s, inspired by Rachel Carson's *Silent Spring*, made major strides to address environmental issues over the past 50 years, from pollution to pesticide. How do we harness the work of the past and the energy of the current generation to move toward activism? We'll discuss what we can do individually and collectively, the power of current youth-led movements, and strategies for talking climate change with skeptics.

Reference for Lecture

- The Climate Change Empowerment Handbook, Australian Psychological Society, <https://www.psychology.org.au/getmedia/88ee1716-2604-44ce-b87a-ca0408dfaa12/Climate-change-empowerment-handbook.pdf>
- Report on the UCSD Senate Task Force on the Climate Crisis, 11 August 2020: <https://senate.ucsd.edu/current-affairs/reports-recommendations/report-of-the-senate-task-force-on-the-climate-crisis/>
- Leiserowitz et al. "Climate Activism: A Six-Americas Analysis, December 2020", 2021, Yale Program on Climate Change Communication: <https://climatecommunication.yale.edu/publications/climate-activism-a-six-americas-analysis-december-2020/>

Assigned readings:

- *They Say I Say* Chapter 29 (pp 299-301)
- *All We Can Save*: "Collards Are Just as Good as Kale", Heather McTeer Toney (pp 74-82)
- *Silent Spring*—I (The New Yorker, Rachel Carson 1962) <https://www.newyorker.com/magazine/1962/06/16/silent-spring-part-1>
- Why young climate activists have captured the world's attention (Nature, Emma Marris, 18 September 2019) <https://www.nature.com/articles/d41586-019-02696-0>
- The Optimistic Activists for a Green New Deal: Inside the Youth-Led Singing Sunrise Movement (The New Yorker, Emily Witt, December 2018) <https://www.newyorker.com/news/news-desk/the-optimistic-activists-for-a-green-new-deal-inside-the-youth-led-singing-sunrise-movement>
- (Video) This is the Deal: Building a Green New Deal at UCSD (Green New Deal at UCSD, 16 October 2020, 20 min): <https://www.youtube.com/watch?v=s8f5Kjdnz1o>

Fiction reading:

- New York 2140 (Parts 3 & 4)

Additional recommended readings:

- "Green New Deal: Last Week Tonight with John Oliver" (HBO, 12 May 2019)
<https://www.youtube.com/watch?v=JDcro7dPqpA&t=2s>
- The Psychology of Climate Change Communication: A Guide for Scientists, Journalists, Educators, Political Aides, and the Interested Public (Center for Research on Environmental Decisions, June 2009):
http://guide.cred.columbia.edu/pdfs/CREDDguide_full-res.pdf New York 2140 (100-125 pages)
- Banking on Climate Chaos: Fossil Fuel Finance Report 2021, Rainforest Action Network:
<https://www.ran.org/bankingonclimatechaos2021>
- Let's Electrify UC Campaign: <https://electrifyuc.org/>
- Video: "The River Is Me" (David Fried, The Atlantic, 22 April 2019):
<https://www.youtube.com/watch?v=YQZxRSzxhLI&list=PLDamP-pfOskNg5WjzmcTVTzMzmk5ArGJd&index=7>

Weekly assignments:

- Pre-lecture checkins (Tuesday & Thursday)
- Lecture reflections (Tuesday & Thursday)

Weekly events

- UCSD Student Sustainability Collective Monday meetings 6pm-7pm:
<https://studentsustainability.ucsd.edu/>

Week 8: Politics and Policy: How to Achieve Global Solutions

How is climate change being addressed from the political and policy side? We'll discuss current infrastructures of establishing climate change policy, from the UN IPCC process and the status of agreements, to political actions in the US both nationally (EPA, the Green New Deal) and locally (California's Integrated Climate Adaptation and Resiliency Program). We'll also see how past policy was successful in addressing the ozone hole and acid rain in the 1990s, and how these strategies have emerged as potential policies for tackling climate change.

Reference for Lecture

- IPCC AR5 Climate Change 2014: Mitigation of Climate Change (Summary for Policymakers):

https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_summary-for-policy-makers.pdf

- Introduction to Climate Change, Chapters 11-13

Assigned readings:

- All We Can Save: The Politics of Policy, Maggie Thomas (pp 84-90)
- "Going Nowhere Fast on Climate, Year After Year" (New York Times Opinion, Paul Bledsoe, 29 December 2018)
<https://www.nytimes.com/2018/12/29/opinion/climate-change-global-warming-history.html>
- Richard Conniff "The Acid Rain Economy: How the Free Market Tackled an Environmental Challenge" 2016, National Academy of Sciences From Research to Reward series: <https://www.nap.edu/read/23671/>
- "The World Solved the Ozone Problem. It Can Solve Climate Change" (New York Times, 7 Dec 2019):
<https://www.nytimes.com/2019/12/07/opinion/sunday/ozone-climate-change.html>
- UCSD Climate Plan 2019:
<https://sustain.ucsd.edu/files/focus/UCSD-Climate-Action-Plan-2019-final.pdf>
- California's Integrated Climate Adaptation and Resiliency Program:
<http://opr.ca.gov/planning/icarp/>

Fiction reading:

- New York 2140 (Parts 5 & 6)

Additional recommended readings:

- Read: "Voters Really Care About Climate Change" (Robinson Meyer, The Atlantic, 21 February 2020):
<https://www.theatlantic.com/science/archive/2020/02/poll-us-voters-really-do-care-about-climate-change/606907/> (5 pp)
- Executive Order on Tackling the Climate Crisis at Home and Abroad (issued 27 January 2021)
<https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/>
- 1995 Nobel Prize in Chemistry Press Release/Summary
<https://www.nobelprize.org/prizes/chemistry/1995/press-release/>
 - Optional Primary Source: Stratospheric sink for chlorofluoromethanes: chlorine atom-catalysed destruction of ozone (Molina & Rowland 1974, Nature 249, 810)
<https://www.nature.com/articles/249810a0>
- Report on the UCSD Senate Task Force on the Climate Crisis, 11 August 2020:
<https://senate.ucsd.edu/current-affairs/reports-recommendations/report-of-the-senate-task-force-on-the-climate-crisis/>

- Executive Order on Tackling the Climate Crisis at Home and Abroad (27 January 2021)
<https://www.whitehouse.gov/briefing-room/presidential-actions/2021/01/27/executive-order-on-tackling-the-climate-crisis-at-home-and-abroad/>
- Green New Deal (Congressional Bill, 7 February 2019)
<https://www.congress.gov/116/bills/hres109/BILLS-116hres109ih.pdf>
- Video: "The River Is Me" (David Fried, The Atlantic, 22 April 2019):
<https://www.youtube.com/watch?v=YQZxRSzxhLI&list=PLDamP-pfOskNg5WjzmcTVTzMzmk5ArGJd&index=7>

Weekly assignments:

- Pre-lecture checkins (Tuesday & Thursday)
- Lecture reflections (Tuesday & Thursday)
- Final project draft and draft reflection (due Sunday following this week)

Weekly events

- UCSD Student Sustainability Collective Monday meetings 6pm-7pm:
<https://studentsustainability.ucsd.edu/>
- Friday movie night: Before the Flood (2016) 8pm-10pm

Week 9: Desperate Measures: Technological & Traditional Mitigation

The scale and immediacy of the climate crisis has inspired big technological ideas to try to mitigate change in climate. We'll examine the motivation, design, and feasibility of some of these "short-term" geoengineering solutions, and their potentially negative consequences. We'll compare these to traditional indigenous approaches to climate change mitigation, and also examine more potentially controversial long-term social and political solutions.

NOTE: READINGS HAVE NOT BEEN FINALIZED AND ARE SUBJECT TO CHANGE

Assigned readings:

- They Say I Say Chapter 35 Giving Presentations
- "Re-Engineering the Earth" (Graeme Wood, The Atlantic, July/August 2009):
<https://www.theatlantic.com/magazine/archive/2009/07/re-engineering-the-earth/307552/>
 - Primary source: "Albedo Enhancements by Stratospheric Sulfur Injections: A Contribution to Resolve a Policy Dilemma?" (Crutzen, 2006, Climatic Change 77, 211): <https://link.springer.com/content/pdf/10.1007/s10584-006-9101-y.pdf>
- "Will Our Grandchildren Say That We Changed the Earth Too Little?" (Ross Anderson, The Atlantic, 5 November 2015):
<https://www.theatlantic.com/science/archive/2015/11/its-time-to-start-talking-about-geoengineering/414283/>

- "What Happens If We Start Solar Geo-Engineering—and Then Suddenly Stop?" (Robinson Meyer, The Atlantic, 25 January 2018)
<https://www.theatlantic.com/science/archive/2018/01/what-happens-if-we-start-geo-engineering-and-then-suddenly-stop/551354/>
 - Primary source: "Potentially dangerous consequences for biodiversity of solar geoengineering implementation and termination" (Trisos et al. 2018, Nature Ecology & Evolution 2, 475): <https://www.nature.com/articles/s41559-017-0431-0>
- "The Climate-Change Solution No One Will Talk About" (Jason Plautz, The Atlantic, 1 November 2014):
<https://www.theatlantic.com/health/archive/2014/11/the-climate-change-solution-no-one-will-talk-about/382197/>
- Video: "A Message From The Future II: The Years Of Repair" (Molly Crabapple, The Intercept, 1 October 2020):
<https://theintercept.com/2020/10/01/naomi-klein-message-from-future-covid/>

Fiction reading:

- New York 2140 (Parts 7 & 8)

Additional recommended readings:

- Can Planet Earth Feed 10 Billion People? Humanity has 30 years to find out (The Atlantic, Charles Mann, 2018)
<https://www.theatlantic.com/magazine/archive/2018/03/charles-mann-can-planet-earth-feed-10-billion-people/550928/>

Weekly assignments:

- Pre-lecture checkins (Tuesday & Thursday)
- Lecture reflections (Tuesday & Thursday)
- Final project peer review during Section

Weekly events

- UCSD Student Sustainability Collective Monday meetings 6pm-7pm:
<https://studentsustainability.ucsd.edu/>
- Friday movie night: Blade Runner 2049 (2017) 8pm-10pm

Week 10: There is no Plan(et) B

If things get truly terrible, will we need to leave? This is the proposed solution of science fiction writers and billionaires, we see colonization of space as a solution. But how realistic is this approach? We'll examine the evidence of habitable worlds both in and beyond our solar system,

the prospects of colonization with current and near-term technologies, and the critically evaluate whether "escape" is a real solution.

NOTE: READINGS HAVE NOT BEEN FINALIZED AND ARE SUBJECT TO CHANGE

Assigned readings:

- There Is No Planet B: A Handbook for the Make or Break Years (Chapters TBD)
- "'Ultracool' dwarf star hosts three potentially habitable Earth-sized planets just 40 light-years away" (Adam Burgasser, The Conversation, 2 May 2016)
<https://theconversation.com/ultracool-dwarf-star-hosts-three-potentially-habitable-earth-sized-planets-just-40-light-years-away-58695>
 - Primary Source: "Seven temperate terrestrial planets around the nearby ultracool dwarf star TRAPPIST-1" (Gillon et al. 2016, Nature 542, 456):
<https://ui.adsabs.harvard.edu/abs/2017Natur.542..456G/abstract>
- "Our Biosphere is in Danger— Why Fund Space Research?" (Jin Sia, Medium, 6 November 2019):
<https://medium.com/swlh/our-biosphere-is-in-danger-why-fund-space-research-5f39c8b00d0a>
- "The case against colonizing space to save humanity" (Kelsey Piper, Vox, 22 October 2018)
<https://www.vox.com/future-perfect/2018/10/22/17991736/jeff-bezos-elon-musk-colonizing-mars-moon-space-blue-origin-space-x>

Additional recommended readings:

- "Jeff Bezos Wants to Send You to Space, Too" (Brad Stone, Bloomberg Business Week, 26 July 2018)
<https://www.bloomberg.com/news/features/2018-07-26/amazon-s-jeff-bezos-wants-to-send-you-to-space-too>
- "Stephen Hawking Warns We Must Colonize Another Planet Soon - Here's Why He's Wrong" (Eric Mack, Forbes Magazine, 3 May 2017):
<https://www.forbes.com/sites/ericmack/2017/05/03/stephen-hawking-mars-colony-moon-space-elon-musk/?sh=276130036537>

Weekly assignments:

- Pre-lecture checkins (Tuesday & Thursday)
- Lecture reflections (Tuesday & Thursday)
- Final project materials, paper, and reflections (due Tuesday June 8 at 3pm US PDT)

Course Policies

Course Expectations

In order to have an effective and engaging course, the following expectations are established both for instructors and students. If you believe there should be additional expectations for either group, please let me or the TAs know promptly.

Expectation of instructors

- Instructors will be prepared for lecture and discussion sections, and invested in the course material.
- Instructors will be enthusiastic and animated during lecture and discussion sections.
- Instructors will assure that course materials and assignments are posted on the course website in a timely manner, and corrections to materials made promptly and in a transparent manner.
- Instructors will assure that assignments are graded in a timely manner, with no more than one (1) week delay in grades being posted.
- Instructors will respond to emails within 48 hours.
- Instructors will be as invested in your work as you are, and treat your work with honesty and compassion.
- Instructors will learn and call students by their names, and ask for corrections to pronunciation.
- Instructors will use correct pronouns and share their own pronouns.
- Instructors will be understanding of the continuing limitations and emergencies that can arise in the current pandemic/remote learning environment, and will work to accommodate related issues in a way that is transparent, fair, and equitable to all students in the course.
- Instructors will be a safe sounding board for ideas, whether related to your assignments or not.
- Instructors will take earnest and constructive feedback about the course seriously.

Expectation of students

- Students will read the syllabus and refer to it throughout the quarter.
- Students will (as able) attend lectures synchronously, arrive on time, and engage in these fully, actively, and with a positive attitude.
- Students will (as required) attend discussion sections synchronously, arrive on time, and engage in these fully, actively, and with a positive attitude.
- Students will participate in all class Zoom meetings with their video ON to the best of their ability, as the norm for engaged interaction. They will refrain from any offensive or derogatory displays in your actual or digital background.
- Students will treat your class peers and instructors with dignity; they will not engage in racist, sexist, classist, ablist, homophobic, transphobic, ethnocentric, fat-shaming,

faith-shaming, or any other hateful communication. There is a difference between disrespectful/hateful speech and reasonable disagreement.

- Students will take responsibility for their actions and feelings, especially as they manifest within the course and your interactions with peers and instructors.
- Students will own their part of class culture, recognizing the role they play in shaping the course experience
- Students will do the work assigned, both readings and writings, to the best of their ability.
- Students will do and submit their own work following protocols for Academic Integrity (see Academic Integrity policy below).
- Students will offer your fellow writers honest and engaged critique.
- Students will inform the instructors promptly and respectfully if there are any challenges or concerns with the assignments or teaching methods, or they notice errors or mistakes in the course materials, so we can correct mistakes or address any miscommunication.

Letter Grade Scales

The Culture, Art, and Technology Program of Sixth College makes use of a set grading schema, which means that certain letter grades correspond to specific numerical grades. This schema prevents grade inflation and point bargaining. All graded assignments, and the final course grade, will be assessed according to the following grading schema:

A+ = 97%	A = 95%	A- = 92%
B+ = 87%	B = 85%	B- = 82%
C+ = 77%	C = 75%	C- = 72%
D = 65%	(no D+ or D-)	F = 50%

Final grades will NOT be rounded up.

Class Meeting Attendance and Participation

In line with the COVID-19 restrictions, all course meetings (lectures, discussion sections, and other class meetings) will be held online using Zoom. Each class meetings can be accessed from the Canvas course page under the "LTI Zoom", or through the links below. Note that you must register before you can log in to the Zoom session. For all meetings, the Zoom password will be **CAT3climate**.

You create the majority of a class's success. Without the students, there is no class - only readings. Enrolling in a course means that you agree to be a part of a specific community for a specific term. I see attendance--including mine and the TAs--as a gesture of respect to our educational community. This attendance is even more important now that we have moved to an online platform. However, because of the current health crisis, attendance will look necessarily different.

The instructors appreciate your respect for the following policies that we see as integral to a successful online course:

Lecture

- Lecture attendance is NOT required, but strongly encouraged as this is where we will be exploring the content of climate change science, culture, art, and technology, and having useful discussions on key aspects.
- All lectures will be recorded and available on the CAT3 web page by the end of the day

Discussion Section

- Attendance and engaged participation in discussion section is *mandatory* for this course. Your work during sections is important for your development in crafting an analytical argument, addressing alternative points of view, and revising - not simply editing - your writing. Your section is your writing community, of which you are an indispensable part.
- Late arrivals and early departures are more significant to the functioning of sections. Students arriving later than 10 minutes to section (without TA approval) or leaving before the final 10 minutes of section (without TA approval) will be counted as absent.
- In the event of a planned or unexpected absence, please let your TA know as soon as possible, preferably before the absence. Knowing about absences facilitates our ability to support you, particularly when assignments are due.
- While absences will not result in automatic failure, any absence will result in the loss of participation points.

Zoom etiquette

- It is expected that all members of the course - instructors and students - will act with respect and civility. Online harassment, class interruptions, or improper activity during Zoom meetings will be treated as Academic Integrity violations and treated accordingly.
- To facilitate engagement and interaction, we expect you to have your video ON during lecture and discussion section. If you have a technical or other reason for keeping your video off, please let me or your TA know in advance of the class meeting.
- Please attend to your immediate environment to make it as least distracting to your peers as possible (visually and aurally).
- Please mute yourself whenever you are not speaking; this avoids the distraction of environmental noise
- For Q&A, please use the "Raise Hand" feature in Zoom, or enter your question in the chat window
- Be mindful of the chat function in Zoom - the default is that any comment you make will be made visible to the entire session, including the instructor; however, the chat function is a great place to ask for clarification, offer comments if you are shy, or pose questions.
- Do not attend live sessions if you are going to be actively engaged in another activity. Online education is NOT an excuse to multitask; multitasking is one of the main causes for poor performance in online courses. Students who are actively on their phones or are

clearly not engaged in the live session may be dismissed from the session by the host (instructor or TA).

- Recordings of lectures or sessions will be made available only to the specific course and only during the specific term.
- If you have technical difficulties, please keep your TA and instructor updated.

Disability Accommodation

The instructors and staff are understanding and supportive of accommodations for students with mental, psychological, and/or physical disabilities, and will make every effort to provide accommodations within our capacity and as appropriate. The UCSD Office for Students with Disabilities (OSD) is available to work with students to facilitate accommodations due to disabilities. These include adaptive software and technologies, captioning, interpreters, peer notetakers, and exam time/location modifications. Students requesting accommodations must obtain and submit an Authorization for Accommodation (AFA) letter to the CAT3 Course Manager or Prof. Burgasser no later than one (1) week prior to receiving accommodations. For more information, see the OSD website (<http://disabilities.ucsd.edu>).

Please note that the remote-learning/online format of this course presents unique, and in many cases unanticipated barriers to participation for students with disabilities. Please inform Prof. Burgasser as soon as possible if there are any issues related to course materials, resources, or assessments that prevent your full participation so that we can address these as quickly as possible.

Medical Accommodations

As per University policy, all medical excuses must be accompanied by a signed physician's note. Make-ups will be considered on a case-by-case basis, but due to staffing and technology limitations these are not guaranteed, and alternate accommodations (e.g., grade redistribution) may be necessary. If a serious illness or accident causes you to miss a significant portion of the course, you are strongly encouraged to consult with the Professor Burgasser, the CAT3 Course Manager or your College Dean to discuss options. Note that Incompletes will be granted only in exceptional cases, and only if a significant fraction of course assignments have already been completed.

Equity and Inclusion

UC San Diego considers the diversity of its students, faculty, and staff to be a strength, and critical to its educational mission. It expects every member of the University community to contribute to an inclusive and respectful culture for all in its classrooms, work environments, and campus events. Dimensions of diversity can include sex; race and ethnicity; sexual orientation; gender identity and expression; mental, psychological and physical ability; age; national origin;

income and socio-economic class; faith and non-faith perspectives; political ideology; past education; primary language; family status; military experience; learning and communication style; and others, as well as intersections of these dimensions. These identities, backgrounds, and characteristics are and must be valued in our community. **Discrimination or harassment based on any identity traits will not be tolerated in this course.** Furthermore, Title IX explicitly prohibits sex discrimination, including sexual misconduct, sexual violence, sexual harassment, and retaliation.

If you experience discrimination or harassment, or witness someone experiencing discrimination or harassment, you are encouraged to report this to the Office for the Prevention of Harassment & Discrimination (OPHD) at <http://ophd.ucsd.edu/report-bias/index.html>.

All instructors in this course are designated mandatory reporters, and as such are legally required to report cases of sexual violence. Confidential resources, advocacy, and information concerning reporting options for sexual misconduct, sexual violence, sexual harassment, and retaliation can be found at the Sexual Assault Resource Center (<https://students.ucsd.edu/sponsor/sarc>).

Online harassment and cyberbullying will not be tolerated, and any instances of online harassment will be dealt with promptly and the perpetrator(s) immediately reporting to the Academic Integrity Office.

If there are aspects of the design, instruction, and/or experiences within this course that create barriers to your inclusion, or accurate assessment of your understanding or achievement, please notify the instructor as soon as possible so that we may remedy these issues.

Mental Health

During the current pandemic, you may be experiencing a range of issues that can negatively impact your mental health and your learning. These may include physical illness, housing or food insecurity, strained relationships, loss of motivation, depression, anxiety, high levels of stress, alcohol and drug problems, feeling down, interpersonal or sexual violence, or grief. Such feelings can be enhanced when discussing global problems such as climate change.

These concerns or stressful events may lead to diminished academic performance and affect your ability to participate in day-to-day activities. **If there are issues related to coursework that are a source of particular stress or challenge, please speak with me, Prof. Burgasser, so that I am able to support you.** UC San Diego provides a number of resources to all enrolled students, including:

- Counseling and Psychological Services (858-534-3755 | <http://caps.ucsd.edu>)
- Student Health Services (858-534-3300 | <http://studenthealth.ucsd.edu>)
- CARE at the Sexual Assault Resource Center (858-534-5793 | <http://care.ucsd.edu>)
- The Hub Basic Needs Center (858-246-2632 | <http://basicneeds.ucsd.edu>)

We care about you at UC San Diego, and there is always help available.

Remote learning resources

CAT3 will be conducted entirely online due to the current COVID pandemic. As many of you are by now aware, the remote learning environment presents numerous challenges and barriers to learning, including online/computer access, appropriate learning/study environments, loss of peer interactions, etc. We will strive to address these barriers as best as we can.

We also recommend students make use of advice and resources put together by the Teaching and Learning Commons:²

- **Identify a good physical space:** A quiet, distraction free space will make it easier for you to focus on your coursework. Try and separate your work space from your sleeping or relaxing space, and choose an area away from high traffic (like the kitchen or living room) spaces. You might also let others know when you will be working or attending class. Have the tools you need close by - notebooks, pencils and pens, adapters, etc; but separate yourself from distractions, such as your cell phone.
- **Make sure your digital environment is secure:** keep you computer system fully updated, including third party software, internet browsers, extensions, etc. Protect yourself from phishing scams by keeping your UCSD credentials private and not responding to advertising pertaining to the COVID-19 pandemic.
- **Know your course:** review the syllabus, and keep track of assignment deadlines and exam dates, and what formats assignments are in. Read the course announcements and emails completely, and look at Piazza to see if your question has already been answered. Make sure you can access course materials. If there are any barriers to access or anything is unclear, reach out to your professor or TA immediately.
- **Manage your time:** Proper time management is critical for success in remote learning, particularly in the compact schedule of Summer Session. Start your assignments early; keep a physical or digital calendar of class meetings, deadlines, and exam dates; make sure you schedule time for other obligations, and to take a break; and be aware of timezone differences if you are taking the class from outside the US.
- **Establish a routine:** The structure of a daily routine can keep you on track in the absence of the usual cues when on campus. Spend some time on a daily "todo" list. Eat breakfast, lunch and dinner. Make time to talk to friends, roommates, and family.
- **Reach out to your instructors and classmates:** While the large class size makes it challenging to interact with instructors one-on-one, you would be surprised how few students attend events like office hours. Similarly, the biggest issue we have heard from students is the lack of peer interaction. Reach out to instructors and peers early - start a study group, attend office hours/discussion section, and get on Piazza. And be courteous and kind in your interactions; there are actual people behind the screens, treat them as you would want to be treated.

² <https://digitallearning.ucsd.edu/learners/learning-remotely/strategies.html>

- **Be flexible and introspective:** Actively monitor your motivation and be honest with yourself - is the way that you're approaching your studies still working for you? Are there resources you are not taking advantage of? What's worked in traditional face to face classes may not work in this situation. Give yourself the time and patience to experiment with what works for you.

If you lack technical resources, please have a look at some of the programs set up to support remote learners at UCSD:

- Campus Computer Lab Lookup: <https://lablookup.ucsd.edu/>
- UCSD Laptop Loaner Program: <https://eforms.ucsd.edu/view.php?id=490887>
- Free/Discounted software & internet access: <https://aps.ucsd.edu/facdev/covid-19/index.html#Access-to-Free-or-Discounted-So>

Academic Integrity

Defining Academic Integrity and Misconduct

The current remote learning environment has elevated concerns about academic integrity among instructors and students. In the Spring 2020 quarter alone, over 1000 students were reported for academic integrity violations, many of whom are facing failed grades and even expulsion from campus.

UCSD has a detailed policy on what constitutes academic integrity and misconduct. Academic misconduct includes, but is not limited to:

- Blatant cheating (e.g., communicating with someone besides the instructors during an exam; reproducing solutions from other students/course materials/external resources; copying or posting questions from online sites such as Google, Chegg, CourseHero, etc.);
- Assisting in others' cheating (e.g., sharing exams or worksheet solutions, doing someone else's assignment for them, etc.);
- Purposely disrupting others' learning (e.g., disrupting lecture or workshop sections, harassing or bullying other students, etc.);
- Misrepresenting yourself or others in order to gain an unfair advantage (e.g., having someone else do your assignment, turning in others' work as your own, falsely claiming illness or internet connection issues); and
- Failing to report instances of cheating that you are aware of (e.g., "everyone does this" will be treated as academic misconduct).

The Policy on Integrity of Scholarship (<http://academicintegrity.ucsd.edu>) lists some of the standards by which you are expected to complete your academic work, but your good ethical judgment (and if doubt, asking the instructor for advice) is also expected.

Guidelines

Here are some tips the Academic Integrity Office provides for *Excelling with Integrity* in these challenging times and even when no one is watching (see <https://academicintegrity.ucsd.edu/take-action/covid-19-students.html>):

- **Read and follow instructions:** Pay close attention to assignment/exam instructions and follow them exactly. If an action isn't explicitly allowed, assume that by engaging in that action, you would be violating academic integrity.
- **Take the pledge:** Complete and sign the course Academic Integrity Pledge; research has shown that reminding ourselves of our own values/integrity can help reduce temptations.
- **Run your action through these 3 tests:** Before engaging in any action on an assignment or exam, ask yourself:
 - Is what I'm about to do honest, fair, respectful, responsible and trustworthy?
 - Is what I'm about to do allowed by this specific exam instructions or UC San Diego's academic integrity policy?
 - If the professor or my TA were standing right here watching me, would I still do this?

If the answer is NO to any of these questions, don't do it!

- **Don't rationalize cheating:** Be aware of human tendencies to "rationalize" behaviors by saying things like "well, everyone else is probably doing it" or "it's okay given the current situation" or "it's not that big of a deal". Those are things we tell ourselves to convince us that it is "okay" to cheat "just this one time".

Remember that, in the long-run, one grade on one assignment or exam is not worth violating your own integrity and risking your academic future. If you are struggling, don't cheat - ask for help!

Actions taken in cases of Academic Misconduct

Any students caught or suspected of academic misconduct will be required to:

- (1) Meet individually with the instructor to explain their actions.
- (2) If you refuse to or cannot meet with the instructor, or the misconduct is especially egregious, your case may be referred directly to the Academic Integrity Office for investigation.
- (3) Depending on the severity of the violation, or evidence of past violations, administrative sanctions may be imposed by the instructor (e.g., loss of points for assignment, loss of credit for all assignments in a given category, or a failing grade) and your college Dean of Student Affairs (including withheld grades or dismissal). Note that failing grades due to academic integrity violations can NOT be removed, and the violation will be noted on your transcript.

Students who assist in, or are complicit with academic misconduct - including failure to report instances of academic misconduct - are also in violation of the Policy and may be subject to the same procedures. You should report cases of cheating directly to the instructor (this can be done anonymously through Piazza) or to the Office of Academic Integrity:
<https://academicintegrity.ucsd.edu/take-action/report-cheating>.