

TELLING STORIES TO SAVE THE WORLD



Judith Sebesta

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Telling Stories to Save the World

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TABLE OF CONTENTS

[Licensing](#)

[About the Auteur*](#)

[Accessibility Statement](#)

[Opening Credits](#)

[Introduction- Setting the Scene](#)

1: Chapters

- [1.1: Climate Change Science The Facts](#)
- [1.2: Why Narrative Film?](#)
- [1.3: Cli-Fi Films](#)
- [1.4: Humans \(bad\) vs. Aliens/Nature/Indigenous Populations \(good\)](#)
- [1.5: Post-Climapocalyptic Dystopias](#)
- [1.6: Heroes and Deus Ex Machina](#)
- [1.7: Psychological Thrillers](#)
- [1.8: Comedies](#)
- [1.9: Conclusion - The Future of Climate Fiction Films](#)
- [1.10: Appendix - The Films](#)

[Closing Credits](#)

[Index](#)

[Glossary](#)

[Detailed Licensing](#)

Licensing

A detailed breakdown of this resource's licensing can be found in [Back Matter/Detailed Licensing](#).

About the Auteur*

2

About the Auteur*

Judith Sebesta and Ph.D.



Judith Sebesta, Ph.D., is the founder and principal at Sebesta Education Consulting LLC, which assists higher education institutions, organizations, and agencies with innovation and transformation to support student success.

Judith has spent over 25 years in higher education as a faculty member, academic administrator, policymaker, analyst, researcher, and consultant. Judith also is proud to serve as the President-Emeritus of the Executive Council for the Community College Consortium for OER.

Prior to consulting she was Vice President, ISKME Labs/OER Commons and Executive Director of the Digital Higher Education Consortium of Texas. She also served in a variety of roles at the Texas Higher Education Coordinating Board, including as Project Director for Open Educational Resources, Director of Innovation, and Program Director for Distance Education, and was the founding Executive Director of the Institute for Competency-Based Education.

Before shifting her career focus to the broader landscape of policy and practice in open education, innovation, and digital education, Judith enjoyed a fifteen-year career as a professor of theatre studies and administrator. She holds certificates in Human Subjects Research from the CITI Program, Open Licensing for Educators from Creative Commons, and DACUM (Developing a Curriculum) from The Ohio State University. Her degrees include a Ph.D. from The University of Texas at Austin, an M.S. from Florida State University, and a B.A. in Communication Arts from Austin College. She lives in Austin, Texas.

The author can be contacted at judith@sebestaeducationconsulting.com. Please do not hesitate to reach out with any comments, questions, suggestions for revisions, or information about your own use and/or adaptation of *Telling Stories to Save the World: Climate Change in Narrative Film*.

*An “*auteur*” is filmmaking terminology for a director with such a distinctive approach so as to be the “author” of the film, which thus manifests the director’s unique style or thematic focus.

Accessibility Statement

4

Accessibility Statement

Judith Sebesta and Ph.D.

The author believes that education needs to be available to everyone, which means supporting the creation of free, open, and accessible educational resources. I am actively committed to increasing the accessibility and usability of this resource

Accessibility of This Resource

The web version of this resource has been designed to meet [Web Content Accessibility Guidelines 2.0](#), level AA. In addition, it follows the guidelines in [Appendix A: Checklist for Accessibility](#) of the [Accessibility Toolkit – 2nd Edition](#). It includes:

- **Easy navigation.** This resource has a linked table of contents and uses headings in each chapter to make navigation easy.
- **Accessible videos.** The videos in this resource have captions available via YouTube. Additionally, the introductory video includes a transcript available in YouTube. Lists of links to the videos are available at the end of each chapter so that you can link out to YouTube for captioned videos.
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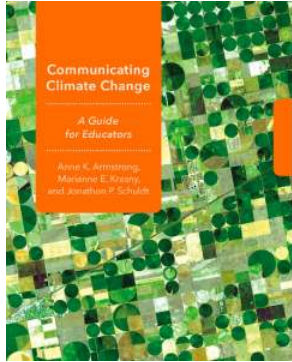
Opening Credits

3

Opening Credits

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Acknowledgement



Telling Stories to Save the World incorporates a chapter, “Climate Change Science: The Facts,” in its entirety, from the following original work:

Anne Armstrong, Marianne Krasny, and Jonathon Schuldt (2018). *Communicating Climate Change: A Guide for Educators*. Ithaca, NY: Cornell UP. Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License. Retrieved from <https://www.cornellpress.cornell.edu/book/9781501730818/communicating-climate-change/>.

Indigenous Land Acknowledgement

I live and work — and wrote this resource — in Austin, Texas, U.S.A., which sits on indigenous land. The Tonkawa lived in central Texas and the Comanche and Apache moved through this area. Today, various indigenous peoples from all over the globe visit Austin and/or call it home. I am grateful to live on this land. Here is a map that may help you in identifying the indigenous peoples of the land on which you live, work, and study: <https://native-land.ca/>

How to Adopt This Book

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For any questions about adopting this resource, please contact the author at judith@sebestaeducationconsulting.com. I am always interested in hearing about how you are using, adapting, and sharing this text, so if you are, please don't hesitate to reach out!

Audience for this book

Because of the mature subject matter of some of the films discussed, film clips, and suggested viewing, this book is recommended for mature audiences — primarily postsecondary learners or secondary learners ages 18+.



Cover Image

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Introduction- Setting the Scene

5

Introduction: Setting the Scene

Judith Sebesta and Ph.D.

“Why aren’t people terrified? What do we have to say? What do we have to do?!”

–Dr. Randall Mindy, *Don’t Look Up* (2021)



“Polar Bears protesting for humans affected by Climate Change” by Oxfam International is licensed under CC BY-NC-ND 2.0.

Learning Objectives

By the end of this text, learners should be able to:

- Describe the basic facts of climate science.
- Compare and contrast documentary and narrative film.
- Define a Climate Fiction Film, or Cli-Fi Film.
- Identify the foundations of Cli-Fi Films.
- Describe basic categories of Cli-Fi Films.
- Identify examples of Cli-Fi Films.
- Explain why Cli-Fi Films can contribute to solving the climate crisis.



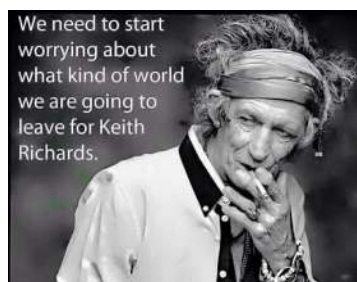
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I am writing this introduction in early July from my comfortably air-conditioned (at least for now) home office in Austin, Texas. Outside, it is well on its way to a high of 106 degrees. Contrary to popular belief among non-state residents, it is usually not yet this warm in the summer in central Texas (and it is not a dry heat). But the city broke heat records in both May and June this year, and forecasters predict the hottest summer on record in Austin.

Just sixteen months ago, Texas endured what I refer to as “Snowmageddon.” In February 2021, a historic winter storm brought extreme cold temperatures across the state that lasted for several days. One of, if not the, most costly weather disasters in Texas history, it caused widespread, multi-day road closures, power outages and loss of heat, broken pipes, and at least 246 deaths. Although extremely grateful that I and my family were not among the latter, I was without water, power, and heat for five days and had no hot water for nearly a month more. The disaster exposed serious weaknesses in the state’s power grid, prompting calls for investigations and causing ongoing anxieties and fear among Texans.

Taken alone, these are two extreme weather events. However, together they are data points providing additional and alarming evidence of climate change. Weather refers to atmospheric variations from minute to minute, hour to hour, day to day, month to month, and season to season. Climate change refers to long-term shifts in temperatures and weather patterns. As the [climate action site](#) of the United Nations explains, “[t]hese shifts may be natural, such as through variations in the solar cycle. But since the 1800s, human activities have been the main driver of climate change, primarily due to burning fossil fuels like coal, oil and gas.” But if climate change has been natural, and thus presumably been occurring throughout the history of Earth, why should we be concerned about human activities contributing to it?

Because these activities are accelerating the changes, particularly global warming, at an alarming rate. The consequences of climate change now include, among others, intense droughts, water scarcity, severe fires, rising sea levels, flooding, melting polar ice, declining biodiversity, and, as was my experience in 2021, catastrophic storms. We all should pay attention, and it is every human’s responsibility to take steps to mitigate these consequences. As Walter Shriner in [Resources for Teaching Climate Change Across the Curriculum](#) astutely argues, “It is not hyperbole to say that climate change is an existential threat to human civilization as we know it.”



Uncredited meme, source unknown.

As Shriner’s statement makes clear, climate change is a serious subject. But as with other serious subjects throughout history, some have attempted to address them through humor and satire, as in this meme, which plays on the ubiquitous joke that the Rolling Stone drummer – famous for his “hard living” – seems to be immortal (uncredited meme, source unknown).

The recent film *Don’t Look Up* (2021) boldly takes this approach. Directed by Adam McKay and starring a blockbuster cast led by Leonardo DiCaprio, Jennifer Lawrence, and Meryl Streep, the comedy was produced by Netflix, which [describes it thus](#): “Two astronomers go on a media tour to warn humankind of a planet-killing comet hurtling toward Earth. The response from a distracted world: Meh.” *Don’t Look Up* captures the current zeitgeist of climate change, hilariously but pointedly depicting the refusal of so many to accept and address it, in spite of overwhelming evidence of the threat it poses to our planet and its inhabitants (not only human but all life forms, of which we are stewards). Although reviews were mixed, it received four Academy Award nominations and set a new record for the most viewing hours in a single week on Netflix, going on to become the second most-watched movie on Netflix within 28 days of release.^[1]

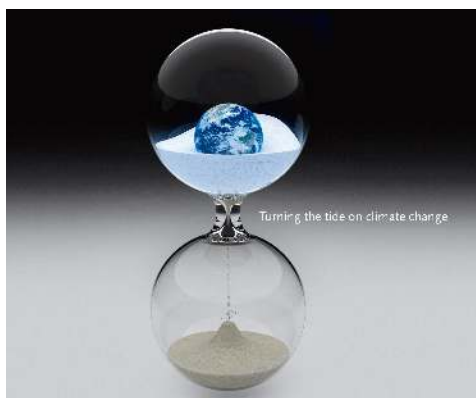


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Don't Look Up could easily be dismissed as mere entertainment, even as some critics called its dire messaging heavy-handed. And some of those watching may have enjoyed the film, likely laughed, and moved onto their next movie or series, giving little thought to the message behind the humor. But films like these, as the viewership reveals, can reach millions, and popular actors like DiCaprio and Lawrence have influence, regardless of whether the actors' opinions do or don't align with those of their characters. While socio-political, scientific, and cultural trends, events, and norms clearly impact and influence film, the converse can be true as well. This has become increasingly true as first television, then video, and then streaming have extended the reach of cinema beyond the theatre or movie house. At the most granular level, films can motivate individuals to change attitudes and behaviors and change their course of action.

"Just as movies reflect the anxieties, beliefs, and values of the cultures that produce them, they also help to shape and solidify a culture's beliefs. Sometimes the influence is trivial, as in the case of fashion trends or figures of speech. . . . However, sometimes the impact can be profound, leading to social or political reform, or the shaping of ideologies."^[2]

It is with a belief in the potentially profound impact of film that I have created this resource. And drawing on media theorist Marshall McLuhan's prescient, ubiquitous declaration in 1968 that "the medium is the message,"^[3] I am intentionally publishing this work with an open license (except where noted for images used with fair use as well as the entirety of Chapter 1, Climate Change Science: The Facts) in order to extend its reach, since climate change affects **everyone**. It simply wouldn't make sense to create barriers to accessing the information that I communicate here, so this volume joins the increasing number of open materials being developed to support climate change education in the hopes of ensuring that its potentially devastating effects on our world are not inevitable or irreversible.



"Turning the tide on climate change by Robert Kandel" by Philippe 2009 is licensed under CC BY 2.0.

With this spirit of optimism, I offer this roadmap to *Telling Stories to Save the World: Climate Change in Narrative Film*:

- First, I will offer an overview of climate change. For this, as a non-scientist and non-climate change expert, I will reproduce Chapter 1, "Climate Change Science: The Facts" from the excellent *Communicating Climate Change: A guide for educators* by Anne Armstrong, Marianne Krasny, and Jonathon Schuldt.

- Next, I will explain the text's focus on narrative film, a category of motion pictures that tells a fictional or fictionalized story, event, or narrative (as opposed to, for example, a documentary).
- Then, I will explore the nature of the "Cli-Fi Film," including a definition, background, and various ways to categorize them.
- The body of the text will give an overview of major narrative films focused on climate change, from *Soylent Green* (1973) to *Don't Look Up* (2021).
- I will conclude with a consideration of the future direction of Cli-Fi Films.

Most chapters include summative questions to test your knowledge and understanding.

I am pleased you are taking this virtual journey with me, either by choice or as a course requirement. As DiCaprio's character in *Don't Look Up* warns, "This will affect the entire planet." We all have a responsibility to address climate change. I hope the films explored here inspire you to take action!

Videos

Introduction to *Telling Stories to Save the World*: https://youtu.be/XzSs_bwIN6U

Don't Look Up Official Trailer: <https://youtu.be/RbIxYm3mKzI>

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1. Don't Look Up. [Wikipedia](#). Retrieved July 5, 2022. [08: Introduction- Setting the Scene#return-footnote-32-1](#)
 2. [Understanding Media and Culture: An Introduction to Mass Communication](#) (2010). University of Minnesota Libraries Publishing. Section 8.3. [08: Introduction- Setting the Scene#return-footnote-32-2](#)
 3. McLuhan, M. (1964). *Understanding Media: The Extensions of Man*. Canada: McGraw-Hill. [08: Introduction- Setting the Scene#return-footnote-32-3](#)

CHAPTER OVERVIEW

1: Chapters

- 1.1: Climate Change Science The Facts
- 1.2: Why Narrative Film?
- 1.3: Cli-Fi Films
- 1.4: Humans (bad) vs. Aliens/Nature/Indigenous Populations (good)
- 1.5: Post-Climapocalyptic Dystopias
- 1.6: Heroes and Deus Ex Machina
- 1.7: Psychological Thrillers
- 1.8: Comedies
- 1.9: Conclusion - The Future of Climate Fiction Films
- 1.10: Appendix - The Films

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1.1: Climate Change Science The Facts

Although there are numerous effective resources for teaching and learning the facts of climate change, I have decided to reproduce, without changes per the license below, “Chapter 1, Climate Change Science: The Facts” from [Communicating Climate Change: A guide for educators](#) by Anne Armstrong, Marianne Krasny, and Jonathon Schuldt (licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](#)).

Climate Change Science

The Facts

by Anne Armstrong, Marianne Krasny, and Jonathon Schuldt

In this chapter, we present a short summary of weather and climate as well as an overview of climate change causes, evidence, and impacts. We also introduce actions needed to reduce greenhouse gas emissions, thus mitigating climate change. Because environmental educators know their communities, they can play a key role in distilling scientific information and guiding discussion about complexities associated with weather, climate, and climate change. They can also lead their students and communities in taking meaningful action to reduce greenhouse gases.

Weather and Climate

Weather varies minute to minute, hour to hour, day to day, month to month, and season to season. Temperatures go up and down; some days are cloudy and rainy, while others are sunny; and sometimes the air is still, whereas other times we are refreshed by a gentle breeze or buffeted about by a strong wind. Occasionally, we get floods or droughts.

In contrast to the short-term atmospheric changes we call weather, climate refers to longer-term variations. We can think of climate as the *average* weather for a particular region and time period, usually over thirty years. For example, increases in average temperatures over decades provide evidence of a changing climate. Looking to the future, scientific climate models predict longer and more severe periods of dry weather in some regions, while other regions will likely experience an increase in annual precipitation, as well as more severe rain events. In 2017, warmer and wetter atmospheric conditions and warmer ocean temperatures intensified Hurricanes Harvey, Irma, and Maria in the eastern United States, while dry weather exacerbated California wildfires—all the result of a warming planet. The more extreme weather events that we are experiencing currently will likely only intensify as average global temperatures continue to rise.

Greenhouse Gases and Climate Change

Humans, like all life on earth, depend on energy coming from the sun. But we also depend on the energy reflected from the earth’s surface back into the atmosphere. This balance between energy coming in and energy going out has been maintained for billions of years, allowing life on earth to survive and thrive.

But what happens if excess greenhouse gases in the earth’s atmosphere block more energy from leaving the atmosphere, upsetting that balance? What if, instead of leaving the atmosphere and going back into space, some of the excess energy is returned to the earth’s surface? Put simply, the surface of the earth—including its oceans, land, and air—heats up.

Greenhouse gases are essential to life on earth. For example, plants depend on carbon dioxide (CO₂), which is also an important greenhouse gas contributing to global warming. And greenhouse gases help to maintain the earth’s surface and oceans at temperatures that enable life to flourish on our planet. But as greenhouse gases accumulate beyond their historic levels, they prevent more and more of the energy reaching the earth from going back into space.

The earth absorbs sunlight energy and reemits it as heat, or what scientists call long-wave infrared radiation. Imagine this infrared radiation heading toward space. It bumps into gases in our atmosphere, like oxygen and nitrogen, and continues on its way. But if it bumps into a molecule of a greenhouse gas—say CO₂—that molecule absorbs the infrared radiation coming from the earth’s surface. The molecule of CO₂ then vibrates and releases heat. The heat from the molecule can go in any direction, including up toward space or back down toward the earth.

So far, no problem. Some heat radiates out to space, and some warms up the atmosphere, oceans, and land surface (figure 1.1). But when humans start changing the balance of gases in the atmosphere—specifically, by significantly increasing the concentration of

CO₂ and other greenhouse gases—more heat is emitted, including heat headed back toward the earth's surface. This leads to warming of the atmosphere, the oceans, and the land surfaces.

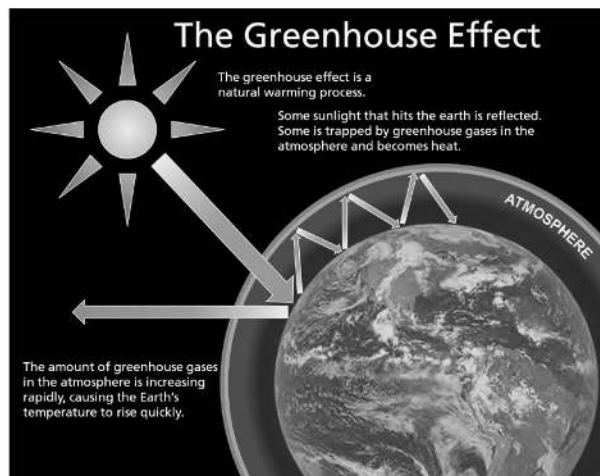


FIGURE 1.1 The greenhouse gas effect
Lindsay Modugno, Jeff Pace, and Dan Lidor, "The Effects of Climate Change and Sea Level Rise on the Coast," Sandy Hook Cooperative Research Programs, January 2015

To help people envision this process, scientists have used the analogy of a blanket surrounding the earth. On a cold night, you sleep under a blanket, and your body generates heat. The blanket traps that heat, allowing you to sleep through the night. But if your blanket is too thick, it may trap too much heat, and you start sweating and feel uncomfortable. So you can imagine the earth as being wrapped in a blanket of greenhouse gases that is trapping more heat.

So what are these greenhouse gases, and where do they come from? The most common greenhouse gas is carbon dioxide, or CO₂, which accounted for 82 percent of U.S. greenhouse gas emissions by weight in 2015 (figure 1.2). When we burn fossil fuels like coal, natural gas, and oil, which consist largely of carbon, the carbon combines with oxygen to form CO₂. Other sources of CO₂ include burning wood and decomposition of solid waste. Cement manufacturing is another significant source of greenhouse gases, accounting for 5 percent of global CO₂ emissions.^[1]

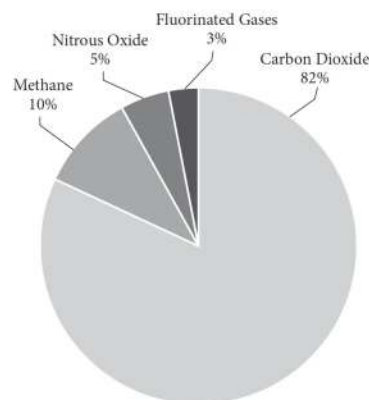


FIGURE 1.2 U.S. greenhouse gas emissions in 2015
U.S. Environmental Protection Agency, 2017

Other greenhouse gases are less common but more potent than CO₂—that is, they absorb and release more heat per pound emitted. Methane accounted for 10 percent of U.S. greenhouse gas emissions in 2015. Methane (CH₄) is emitted in the mining and transport of natural gas, by livestock, through rice cultivation and other farming practices, and when organic waste in landfills decomposes. Similarly, nitrous oxide (N₂O), 5 percent of emissions, is emitted by agricultural and industrial activities, burning fossil fuels, and solid waste decomposition. Finally, fluorinated gases are produced by some industries and have the highest global warming potentials. Whereas methane is about thirty times more potent as a greenhouse gas relative to CO₂, nitrous oxide is nearly three hundred times as potent, and fluorinated gases can be thousands or even tens of thousands of times more potent.^[2]

In fact, scientists have known about the heating effect of CO₂ since the 1850s, when the scientist John Tyndall conducted meticulous experiments on the ability of atmospheric gases to absorb and transmit radiant heat.^[3] He found that CO₂ absorbed heat more readily than other atmospheric gases, like oxygen and nitrogen, which have simpler molecular structures relative to CO₂. Tyndall also speculated that small changes in gasses that absorbed the sun's heat "would produce great effects on the terrestrial rays and produce corresponding changes of climate"^[4]—something that has since come to pass.

But even before Tyndall, Eunice Foote conducted an experiment in which she placed cylinders containing CO₂ and normal air in the sun and compared their temperatures. Just as Tyndall grasped the connection between CO₂ heating up faster than other gases, Foote wrote about CO₂: "An atmosphere of that gas would give to our earth a high temperature; and if as some suppose, at one period of its history the air had mixed with it a larger proportion than at present, an increased temperature from its own action as well as from increased weight must have necessarily resulted."^[5]

It appears that Foote was not allowed to present her work at a scientific conference, as female presenters were uncommon in that era. Instead, in 1856, Professor Joseph Henry presented Foote's work at the meetings of the American Association for the Advancement of Science in Albany, New York, where he prefaced his explanation by pointing out that science is "of no country and of no sex."^[6] More recently, researchers discovered that Foote herself published a short paper outlining her results recounting how the CO₂ container (known at the time as "carbonic acid gas")

became itself much heated—very sensibly more so than the other—and on being removed, it was many times as long in cooling. . . .

. . . On comparing the sun's heat in different gases, I found it to be in hydrogen gas, 104°; in common air, 106°; in oxygen gas, 108°; and in carbonic acid gas, 125°.^[7]

In short, thanks to the experiments of Foote and Tyndall, we have known for over a century and a half about the connection between CO₂ and heating of the atmosphere.

Evidence of Climate Change

So far, we have explored the mechanisms for how greenhouse gases trap heat. But what is the evidence that the earth's climate is heating up? And even if it is warming, how do we know that factors other than greenhouse gases are not responsible? The evidence comes from measurements of greenhouse gases in the atmosphere and of recent and historical changes in the earth's surface temperature.

Between 1970 and 2000, total greenhouse gas emissions from human activities like burning fossil fuels increased an average of 1.3 percent each year. Between 2000 and 2010, total emissions increased an average of 2.2 percent per year. While this may not seem like a lot, it is similar to compound interest rates—a little bit each year can mean big changes over multiple years.

In the year 1970, humans emitted twenty-seven billion tons of greenhouse gases into the atmosphere, whereas by 2010, we emitted forty-nine billion tons of greenhouse gases per year.^[8] Focusing just on CO₂, in 1850, around the time Foote and Tyndall were conducting their experiments, the average CO₂ concentrations in the atmosphere were about 280 ppm (parts per million).^[9] As of 2016, the global average CO₂ level in atmosphere was 403 ppm and increasing by 2–3 ppm per year. The last time earth's atmospheric CO₂ concentration exceeded 400 ppm was three to five million years ago, a time when global temperatures were 2° to 3°C warmer and sea levels were ten to twenty meters higher than today.^[10]

Just since the late nineteenth century, the planet's average surface temperature has risen about 1.1°C (2.0°F). The current rate of warming is roughly ten times faster than the average rate of warming after ice ages of the past million years.^[11] And for each decade since 1950, the global average land and ocean surface temperatures have been warmer than those for the preceding decade.^[12] Temperatures are increasing faster over land and in the Northern Hemisphere than over the ocean and in the Southern Hemisphere. Temperatures are increasing fastest in the high northern latitudes such as Alaska, northern Canada, northern Russia, and across the Arctic.

Could these changes be the result of natural shifts in the earth's climate? A number of natural processes cause the earth's climate to change over time. Variations in the earth's tilt and orbit around the sun, called Milankovitch cycles, change the earth's climate over the course of tens or hundreds of thousands of years by impacting how much solar radiation reaches the earth.^[13] Additionally, the El Niño and La Niña ocean warming and cooling cycle impacts temperatures and rainfall in places around the world.^[14] These patterns still affect earth's climate today, but their influence over decades or even centuries is very small, much smaller than the rate

of change we are now measuring. In short, these natural patterns do not explain the rapid warming that the earth has experienced since the onset of the Industrial Revolution.^[15] Instead, we know from multiple sources of evidence—including longterm observations, experiments, modeling, and measurements showing that recent changes in weather patterns fit with the predictions of greenhouse gas climate change models—that increases in human-emitted greenhouse gases are responsible for climate change.

Interestingly, some natural processes also result in cooling of the earth's climate. In 1783, while he was serving as a diplomat in Paris, Benjamin Franklin observed that both Europe and the United States experienced unusually cold temperatures, as well as a constant fog. Although Franklin may not have discerned the cause, we now know that catastrophic volcanic eruptions in Iceland not only rained acid on the island itself, devastating livestock and causing wide- spread famine, but also caused cooling in Europe and North America. Volcanic eruptions spew tiny ash particles into the atmosphere, which decrease the amount of sunlight reaching the surface of the earth, thus lowering average global temperatures. Volcanoes that release large quantities of sulfur dioxide have an even greater effect on global temperatures; the sulfur dioxide combines with water to make a haze of tiny droplets of sulfuric acid that absorb incoming solar radiation and scatter it back out into space, thus cooling the earth's surface. Scientists today are reconstructing the history of earth's climate using tree rings and other data sources and have noted multiple periods of cooler temperatures following volcanic eruptions, which they refer to as "little ice ages."^[16] However, scientists do not expect such volcanic eruptions to counteract the effects of greenhouse gas emissions.

Climate Change Impacts

In addition to scientists, many people whose lives and livelihoods are affected by changes in our oceans and on land have observed the impacts of climate change. These include coastal residents, farmers, fishermen, and leaders in the armed services. In this section, we briefly review some of these impacts.

Ocean Waters Are Becoming More Acidic

About one-quarter of the CO₂ humans produce each year is absorbed by oceans. This CO₂ reacts with seawater to form carbonic acid, thereby increasing the ocean's acidity. Similar to how the rate of CO₂ accumulation in the atmosphere is many times faster than we have seen during other periods in earth's history, the current rate of increase in the acidity of ocean surface waters is roughly fifty times faster than known historical change.^[17]

What happens to sea life as the oceans acidify? The increase in carbonic acid makes calcium carbonate less available to marine organisms for building their shells. Corals, crabs, clams, oysters, lobsters, and other marine animals that form calcium carbonate shells are particularly vulnerable. Because these animals are often at the bottom of the food web, this impacts other animals, including humans.

Ocean Temperatures Are Rising

In addition to absorbing CO₂, oceans absorb heat caused by emissions from human activity. Over 90 percent of earth's warming over the past fifty years has occurred in the oceans, which have warmed 1.0°C (1.5°F) since the late nineteenth century. Rising ocean temperatures are disrupting fish populations and killing off coral reefs, in turn impacting ocean food webs, humanity's food supply, jobs, and tourism.^[18]

Ice Is Melting

Glaciers in countries around the world and sea ice at the poles are melting. On average, Arctic sea ice now starts melting eleven days earlier and refreezing twenty-six days later than it did in the late 1970s. In October 2017, the volume of Arctic sea ice was 65 percent below the maximum October ice volume in 1979. Although Antarctica had been gaining ice from the 1970s to 2016, this gain was more than offset by annual losses of Arctic sea ice. Then, in 2017, Antarctic sea ice decreased to record lows.^[19]

Ice loss impacts Arctic peoples who depend on traditional weather patterns for hunting and threatens animals that inhabit the Arctic. But most people don't live near glaciers and sea ice (one reason why using an image of a polar bear to inspire climate action has not been particularly effective). So why should people who do not live in icy places on the planet care about loss of glaciers and sea ice? Both melting glaciers and polar land ice cause sea level rise. Further, the loss of glaciers in the Himalayas and other mountain ranges results in changes in water flow into rivers such as the Ganges, which millions of people depend on for their water supply.

^[20]

Sea Level Is Rising

As glacial and polar ice melts from land, more water flows into the oceans. As water warms, it expands in volume. Both more water and warmer water are causing sea level rise. Between 1880 and 2014, sea level rose about 8 inches; by 2100, scientists are predicting an increase of 1–4 feet (0.3–1.2 meters) over the 2014 global average level, with potential for a rise of 8 feet (2.4 meters) or more if greenhouse gas emissions continue increasing. This sea level rise is not distributed evenly around the world. For example, because of ocean currents, land subsidence, and other factors, the rate of sea level rise for the East Coast of the United States is about 50 percent higher than the global average.^[21]

A July 2016 headline in the *Navy Times* reads: “Rising oceans threaten to submerge 128 military bases.” Norfolk, Virginia, home to the largest U.S. naval base, is already witnessing regular flooding, forcing residents to abandon their homes.^[22] Frequent coastal flooding is making it nearly impossible for Norfolk residents to insure—let alone sell—once-valuable oceanfront homes. And at the Naval Academy in Annapolis, Maryland, classrooms, dormitories, and athletic facilities were flooded in a 2003 hurricane, pointing not only to sea level rise but also to stronger storm events as threats to coastal cities.^[23] Residents in coastal Alaska and Louisiana, and on islands from the Pacific Ocean to the Chesapeake Bay, are abandoning villages and even whole islands where they have lived for centuries.^[24]

Storm surges can cause widespread coastal property damage and kill people during a hurricane. A storm surge is the rise in ocean water above the normal tide due to a storm and is a major cause of flooding in hurricanes. It is caused by water being pushed toward the shore by storm winds. Although many factors, including water depth near the shoreline, impact storm surges, larger storms produce higher surges.^[25]

Local and Regional Weather Is Changing

Recent droughts in the western United States are the most severe in over eight hundred years. At the same time, heavy rains associated with warming trends are contributing to more frequent and larger floods. Summer temperatures have exceeded those recorded since the United States began keeping reliable records in the late 1800s. And the length of the growing season between the latest spring frost and earliest fall frost has increased in each region of the United States, with increases of six days in the Southeast, nine to ten days in Northeast, Midwest, and the Plains states, and sixteen to nineteen days in the Northwest and Southwest.^[26] These changes have an impact on what farmers and gardeners can grow and on insect pests and diseases affecting not just agriculture but also forests, cities, and even humans.

Although a longer growing season might provide opportunities for growing crops that were previously limited by colder temperatures, such opportunities may be constrained by drought, flooding, or soils that are unsuitable for the new crops. Further, moving production zones comes at great expense to physical, economic, and social infrastructure, and can lead to conflicts as formerly productive populated areas become unproductive because of drought or heat stress.

Human Safety, Health, and Well-Being Are Threatened

Taken together, the changes brought about by climate change threaten human safety, health, and well-being. Floods pose a direct risk of drowning, and heat waves can kill vulnerable individuals like the elderly, especially those without a social support network.^[27] Wildfires and dust storms during droughts impact air quality, and populations of disease-carrying organisms like mosquitoes and ticks are up, leading to possible increases in malaria, dengue fever, and other diseases.^[28] Parents assessing these risks may direct their children to spend more time indoors, depriving children and families of the multiple health benefits of spending time in nature.^[29] And as many environmental educators are aware, the looming threats brought about by climate change can cause stress, sadness, and related mental health issues.^[30]

Addressing Climate Change

Addressing climate change involves both mitigation, principally by reducing the amount of greenhouse gases we emit into the atmosphere, and adaptation, or adjusting to the changes brought about by climate change. Consider a ski resort. It can install solar panels to power its lifts, thus helping to mitigate climate change. The resort can also adapt to warmer weather by making more snow. Whereas making more snow results in greater energy consumption and thus does not mitigate greenhouse gas emissions, some types of adaptation, most notably ecosystem-based adaption, integrate action to improve environmental quality.^[31] For example, planting trees and other plants that absorb CO₂ helps to mitigate climate change. Trees and bioswale gardens also retain water and soil that otherwise would run off into rivers, thus helping communities adapt to more frequent heavy storms. Two broad

strategies for mitigating climate change are (1) reducing greenhouse gas emissions (for example, by converting from coal to solar for electricity generation), and (2) increasing sequestration of CO₂ that has already been emitted (for example, by planting trees).

While adaptation is important to help ensure our short-term survival, mitigation is critical to the long-term continuation of human civilization as we know it beyond about 2050. Absent mitigation, it is estimated that prior to 2100, the earth's average global surface temperature could exceed 4°C (7.2°F) above the preindustrial average. A 2012 study conducted for the World Bank concluded that there is “no certainty that adaptation to a 4°C world is possible,” and that “4°C warming simply must not be allowed to occur.”^[32]

Reducing all sources of greenhouse gases is important. Below we start with what an individual can do in his or her own home or school; such individual behavior change has traditionally been the focus of environmental education. Next, we talk about what people can do working together in their communities. We cannot mitigate or adapt to climate change without collective action, and thus environmental educators need to expand their efforts to get students, families, and neighbors working together to address climate change.^[33] Further, environmental educators can help people influence business and government policies.

Individual and Household Behaviors

In deciding how to reduce greenhouse gases, it is important to consider the sectors—electricity production, transportation, industry, commercial and residential, and agriculture—that contribute the most emissions. Burning fossil fuels in electricity production accounts for 29 percent of U.S. greenhouse gas emissions (figure 1.3). Thirty-three percent of that electricity is consumed in homes and businesses.^[34] Thus, the first question one might ask is, “How can I reduce electricity use in my home and at work?” The U.S. Environmental Protection Agency (EPA) has a number of recommendations, including purchasing Energy Star appliances and paying attention to your heating and cooling system, which can use up to half of a home's energy consumption.^[35] In many counties and cities, a university extension or other program provides guidance on ways to avoid heat loss in your home and to install rooftop and community solar arrays, heat pumps, and smart meters that enable the consumer to monitor energy consumption and shift energy use to off-peak hours.^[36] Nonprofit organizations, government offices, and engineering firms also can advise about financing options, including government incentive programs.

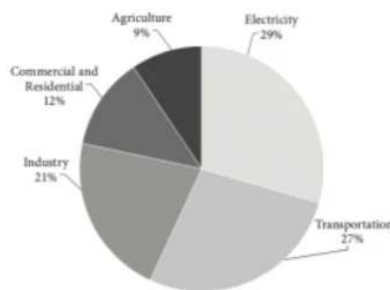


FIGURE 1.3 Sources of greenhouse gas emissions U.S. Environmental Protection Agency, 2017

After electricity production, transportation is the second-largest emitter of greenhouse gases in the United States, responsible for 27 percent of total greenhouse gas emissions.^[37] Although the solutions are obvious—walk, bike, take public transport, and reduce driving and flying—implementing them can be difficult to fit into one's life. But that doesn't mean we shouldn't try, and there can be side benefits to our health when we walk and bike. An environmental educator in Austin, Texas, worked with his son's school to develop a bike-to-school program, and U.S. cities are expanding bike-share programs based on China's model of “dockless” smart bikes.^[38]

Industry is the third-largest U.S. emitter (21 percent of total emissions).^[39] Considering climate change ramifications when making consumer choices can help to reduce this source of emissions. In China, the Ant Forest online game rewards consumers who purchase climate-friendly goods with points that are used to plant trees. This has the potential to reduce greenhouse gas emission by encouraging “green” choices and to sequester CO₂ through tree planting. Whereas Ant Forest uses external incentives,^[40] we also make choices based on social norms and individual values, both of which can shift as we observe more and more people making green choices.^[41] Educators can play a role in changing social norms by modeling and encouraging climate friendly behaviors in their programs.

Commercial and residential sectors accounted for 12 percent of total emissions in 2015. This percentage accounts for both direct and indirect emissions. *Direct* emissions result from a number of commercial and residential activities. Heating and cooling homes and businesses using fossil fuels releases CO₂. Refrigeration and air conditioning release fluorinated gases. Even waste at the landfill releases methane as it decomposes, and wastewater treatment emits methane and nitrous oxide. When we turn on the lights and use electricity produced by a power plant that burns fossil fuels to make that electricity, we are releasing greenhouse gases *indirectly*. In addition to recommending individual actions like reducing waste and turning off lights to save energy, some environmental education organizations have taken a different approach. Mass Audubon partnered with Massachusetts Energy Consumer Alliance for a “Make the Switch” campaign that promotes switching to renewable energy; their goal is for at least one thousand Mass Audubon members to switch to renewable electricity sources within a year of the campaign’s start. This type of partnership may increase the likelihood that consumers will switch their energy source because the information comes from a trusted conservation source like Mass Audubon. Finally, the EPA states that agriculture contributes 9 percent of U.S. greenhouse gas emissions, much of it from livestock production.^[42] Actual contributions of agriculture to greenhouse gases may be higher; some sources put livestock alone as contributing up to 18 percent of global greenhouse gases, with cows, sheep, and goats producing more emissions relative to pigs and chickens.^[43] Consumers can make choices to limit meat and dairy consumption to reduce this source of greenhouse gases.

Collective Action

We have seen how addressing greenhouse gas emissions at the individual level involves consumer and lifestyle choices. But environmental education programs also engage participants in collective action and even in influencing policies. One form of collective action is scaling up individual actions, as we saw in the Mass Audubon example—the more households that reduce their energy use or the more individuals who walk, ride their bike, or take the bus to work, the greater the impact. Other forms of collective action involve community members working together to address structural issues, such as the cost of rooftop solar installation, the lack of bike lanes, or policies that act against energy saving, which prevent people who would otherwise make green choices from doing so. In some states, citizens can work with a solar company to implement community solar, thus enabling more households to buy into renewable energy. Working with private companies to develop a car-sharing program will allow more individuals to reduce car use. Working with farmers to create community supported agriculture (CSA, or group purchasing of local produce) can reduce the need to buy packaged food; in cities where people walk or use public transport to pick up their produce, these practices also reduce gas emissions associated with transporting food.

At the local policy level, environmental education participants could advocate at town hall meetings for wind energy, bike trails, and sidewalks, and preserving forests and wetlands that absorb CO₂. They can also work with their churches, sports clubs, and other civil society organizations to implement organizational practices that reduce greenhouse emissions, such as banning single-use plastic water bottles. They may be able to help draft and implement town climate change mitigation and adaptation plans, such as New York State’s Climate Smart Communities,^[44] which in turn can serve as examples for other towns and spur action at the state or even national level. Environmental education participants also can call their political representatives and work for candidates who support legislation to address climate change.

Bottom Line for Educators

Like any field of science, climate science is never settled or beyond further modification. However, there is a point at which a scientific consensus is reached based on strong evidence from multiple lines of inquiry. The scientific conclusion that human greenhouse gas emissions and other activities have changed the earth’s atmosphere with measurable impacts on global climate has reached that level of certainty. Moreover, climate science allows us to estimate how actions we take now and in the near future can reduce the severity of climate change in the coming decades.

Evidence of warming comes not just from climate models but from actual observations of surface, air, and water temperatures; ocean chemistry; and melting Arctic and glacial ice. In fact, much of the climate “denying” that we see is more a function of people’s social and political leanings than of the facts (see chapter 5).

Disinformation campaigns by individuals and organizations who do not wish to see effective action taken to reduce climate change are an unfortunate reality. We cannot allow distortion, bias, and fabrication to prevent the evidence-based decisions and actions required at the individual and societal level to reduce climate change. The very survival of human civilization requires such action. The alternative goes beyond factual disagreement. To ignore clear evidence and fail to act, creating great peril for the near-and

long-term future, is beyond a scientific, technological, or political issue; it is a question of morality, ethics, sanity, and self-preservation. Fortunately, we already have many of the scientific and technological capabilities to reduce climate change risk. We need to develop the moral compass and social and political will to use them wisely.

Environmental education can influence participant behaviors and actions at levels ranging from individual choices to local collective action to advocacy for national or global policies, and across the consumer, transport, industry, and agricultural sectors. But first we need to understand the best ways to communicate climate change and inspire action. In the next chapter we turn to explanations for varying views on climate change.



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1.2: Why Narrative Film?

(And an Ode to Documentaries)



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Narrative film is a category of motion pictures (to use a somewhat old-fashioned term) that tells a fictional or fictionalized story, event, or narrative. A narrative film may also be known as a feature film and is usually contrasted to documentary filmmaking, which is a “non-fiction style of filmmaking that seeks to document some aspect of reality. . . . Documentaries deal exclusively with facts and real-life events. The main purpose of a documentary is to inform and educate.”^[1] Both narrative film and documentaries tell a story, but they differ in the methods used to tell that story. Some narrative filmmakers, like Martin Scorsese, employ a “documentary style” in their storytelling; here the renowned director discusses his blurring of the two styles:



Loss of the Titanic, Published in the Graphic Supplement of 27 April 1914,
Source: Wikimedia Commons, Public Domain.

Narrative film can be divided into a variety of sub-genres, such as western, action, biopic, musical, comedy, romantic comedy (rom-com), drama, horror, science fiction, film noir, etc. Feature films may be based on real events, but instead of actual footage of those events, provide dramatic re-creations with actors in roles – and may take considerable “creative license” in the re-telling. *Titanic*, for example, is set against the backdrop and actual historical event of the sinking of the R.M.S. Titanic in 1912, but the

main characters, Jack and Rose, are fictional. Narrative films usually begin with a written screenplay, which is then translated to the screen by the production team through acting, directing, design, photography, cinematography, editing, and other techniques.



Gore gives a keynote address on sustainability at SapphireNow 2010 in May 2010. By Tom Raftery – originally posted to Flickr as Al Gore at SapphireNow 2010, Source: Wikimedia Commons, CC BY-SA 2.0

Certainly, documentary filmmakers have taken up climate change as their subject, sometimes in extremely powerful and impactful ways. The first documentary to mention climate change was *The Unchained Goddess* in 1958, part of an educational film series overseen by popular feature film director Frank Capra (he helmed *It's a Wonderful Life*, for example). But it took nearly fifty years for climate change awareness to become a relatively common subject of documentaries, thanks in large part to *An Inconvenient Truth* (2006), written by former United States Vice President Al Gore and directed by Davis Guggenheim. The ground breaking film follows Gore on a lecture circuit, during which he presented a factual, and often alarming, analysis of climate change causes, effects, and potential solutions. *An Inconvenient Truth* became both a critical and commercial success, winning the Best Documentary Feature at the Academy Awards (and at practically every other awards) while also becoming one of the highest-grossing documentaries of all time.

Numerous documentaries focused on the environment and climate change followed. *Climate Change: The Facts* (2019) is an excellent, one-hour primer on the phenomenon, with David Attenborough, a popular narrator of nature documentaries, lending his authoritative voice. Before he starred in *Don't Look Up*, Leonardo DiCaprio spent three years traveling the world to explore the impact of climate change, capturing footage with co-creator/producer Fisher Stevens for *Before the Flood* (2016). The film's website describes it thus:

[DiCaprio] goes on expeditions with scientists uncovering the reality of climate change and meets with political leaders fighting against inaction. He also discovers a calculated disinformation campaign orchestrated by powerful special interests working to confuse the public about the urgency of the growing climate crisis. With unprecedented access to thought leaders around the world, DiCaprio searches for hope in a rising tide of catastrophic news.^[2]

Other notable documentaries include:

- *Climate Refugees* (2010)
- *Chasing Ice* (2012)
- *Earth: The Operator's Manual* (2012)
- *The Merchants of Doubt* (2014)
- *Chasing Coral* (2017)
- *Thank You for the Rain* (2017)
- *2040* (2019)
- *Cooked: Survival by Zip Code* (2019)

I Am Greta (2020) is one of the most recent entries in this documentary history. It captures a leading voice, Greta Thunberg, of a younger generation pleading for change to preserve the planet and this generation's (and those following) future. The film's chronicle of one passionate and committed teen activist's work to take action to address climate change – in the face of so many adults who fail to – is inspiring.

These documentaries are extremely important resources for communicating credible information about climate change and through that information hopefully raising awareness, shifting perspectives, and even spurring action to do something to address the problem. Some of these even offer science-based solutions. And as films like *An Inconvenient Truth* prove, documentaries can have significant reach to wide audiences. But taken as a whole, they simply don't have the potential for the kind of reach and impact that narrative/feature films can have. This is one reason for the focus of this text.



A small portion of my film collection. Can you tell I also love a certain recent streaming series?

The other is a personal one for me: I simply prefer to watch narrative films over documentaries. My dvd, blu-ray, and digital collection of hundreds of films includes just two documentaries. (I also tend to prefer reading fiction over non-fiction in my personal time.) Even if the films are based in real life, even if they lean toward “escapism” (such as musicals and rom-coms), I find the use of imagination to tell a story to be exciting, compelling, and inspiring. While truth may indeed be stranger than fiction, narrative film can creatively envision – and depict – a world without interventions into the problems caused by climate change and then can imagine – and depict – potential solutions not yet realized by science.

So with recognition of the importance and impact of documentaries to raise awareness of climate change – and spur action to mitigate or even prevent it – here I will explore the narrative films that attempt to do the same through different, imaginative and creative methods. Thank you for going on this journey with me!



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KNOWLEDGE CHECK

Video

Martin Scorsese: Documentary Vs. Narrative: <https://youtu.be/GJtBd0VdImw>

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1. MasterClass (September 24, 2021). [Learn About Documentary Filmmaking: How to Research a Documentary Film With Tips and Advice From Ken Burns](#). Retrieved July 16, 2022.
 2. Before the Flood: About the Film. Retrieved July 18, 2022.
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1.3: Cli-Fi Films

Narrative/Feature Films that, on some level, depict the effects of climate change on the Earth and its inhabitants – or “Cli-Fi Films,” for Climate Fiction, a play on Science Fiction – have their roots in classic movies set against backdrops of environmental catastrophes and natural disasters. For example, the film *Grapes of Wrath* (1940), an adaptation of John Steinbeck’s novel, depicts the escape to California of the fictional Joad family from the actual Depression-era Dust Bowl of Oklahoma. Severe drought combined with poor farming and tilling practices on the Great Plains of the Midwest led to dust storms that blotted out the sun. The natural disaster in the midst of an economic disaster of the Depression made “climate refugees” of millions like the Joads. *Krakatoa, East of Java* (1968) is loosely based on events surrounding the 1883 eruption of the volcano on the East Indies island of Krakatoa. Advances in special effects allowed for a then-eye-popping recreation of the eruption, garnering the film a nomination for the Academy Award for Best Special Visual Effects.



“Soylent Green – in stores now!” by id-10m is licensed under CC BY-NC 2.0.

The first wave of films to directly address climate change, if only sparingly or obliquely, began with the cult classic *Soylent Green* (1973), starring Charlton Heston. Set in a dystopian New York City in 2222 (the year I began writing this!), “the greenhouse effect” and “a heat wave all year round” have led to pollution, dying oceans, overpopulation, widespread euthanasia, and depleted resources. Only the small number of elite can afford apartments, clean water, and natural food, while the majority of the population live in dire poverty, forced to haul communal water and eat highly processed wafers: “Soylent Red,” “Soylent Yellow,” and the latest product, the far more flavorful and nutritious “Soylent Green.” Much of the plot revolves around a murder investigation, but the final moment and line of the film – with that inimitable, overly-dramatic delivery perfected by Heston – reveals the horrifying truth about the makeup of Soylent Green. (I’ll leave it to you to watch the movie and discover that for yourself).

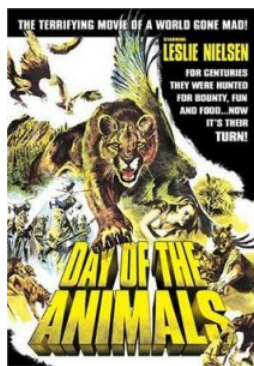


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Four years later came *Day of the Animals* (1977), directed by William Girdler and starring Leslie Nielsen (he of soon-to-be *Airplane!* fame). In it, the depletion of the ozone layer has caused animals living at higher altitudes to run amok, attacking humans, including a group of hikers who have to battle animals to survive. As the plot unwinds, the solar radiation causes psychosis and the hikers become more and more like the animals that hunt them. In spite of the serious themes, poor special effects and melodramatic dialogue now make much of the film almost laughable; at one climactic moment Nielsen, standing shirtless with arms outstretched and gaze upward, shouts, “...pray – if there’s a god left up there to believe in! My Father who art in heaven: you made a jackass outta me for years!” The over-the-top tone (see quote just mentioned) and scenes (see a crazed Nielsen try to bite a rampaging

grizzly's ear off!) made the film's dire depiction of the effects of climate change difficult to take seriously. Still, its depiction of the effects of climate change was prescient.

Since both *Soylent Green* and *Day of the Animals*, feature filmmakers have produced over seventy movies that could arguably be called "Cli-Fi Films" to some degree. Although there seemed to be a spate of these during the 1980s, the next decade saw the ramping up of a focus on climate change in narrative film, beginning with the animated *FernGully: The Last Rainforest* (1992).

Here in the body of this resource, I will provide both descriptions and analyses of what I would consider significant entries, since 1992, in the Cli-Fi Film oeuvre. This resource is meant to be more representative than comprehensive, and you may have viewed, or know of, other films that could be included in this overview; feel free to contact me with any suggestions for films to add, improvement to content, etc. Instead of an overall chronological order, I will divide the films discussed into six categories:

- Humans/"Civilization" (bad) vs. Aliens/Nature/Indigenous Populations (good)
- Post-Climapocalyptic Dystopias
- Heroes/Deus Ex Machina
- Psychological Thrillers
- Comedies
- Conclusion: The Future of Cli-Fi Films

There certainly is no single correct way to organize these films, so feel free to design your own categories based on your own viewings and insights into the movies!

Let's begin exploring the sometimes bleak, often horrifying, sometimes entertaining, often thought-provoking, even occasionally funny, and hopefully (eventually) planet-saving landscape of Cli-Fi Films...

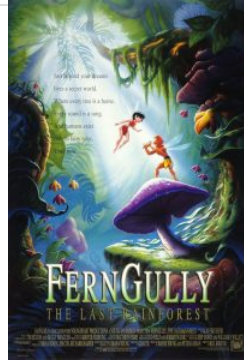


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1.4: Humans (bad) vs. Aliens/Nature/Indigenous Populations (good)



“Ferngully – The Last Rainforest” by Hutson H
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It seems fitting to begin this exploration of Cli-Fi films with *FernGully: The Last Rainforest* (1992). Suitable for nearly all ages, this animated feature can introduce environmental issues to young viewers through a story focused on fairies and appealing, often goofy and humorous creatures populating a vividly colorful Australian rainforest. There, Crysta (Samantha Mathis) and her fellow fairies, including her mentor Magi and friend Pips, have never seen a human before, and in fact believe that they are extinct. But when a logging company arrives to destroy the rainforest, she sees that they do exist, accidentally shrinking a young logger named Zak (Jonathan Ward) whom she encounters. As Crysta befriends him, and through their adventures in FernGully – including encounters with Batty Koda (Robin Williams, in a role created for him), a bat who claims to have been experimented on by humans – Zak sees the damage that humans can do and helps Crysta to stop not only the loggers, but also a dark spirit named Hexxus (Tim Curry), who feeds off pollution. Hope literally springs eternal as Crystal gives Zak a seed, begging him to remember everything that has transpired as she restores him to his human size. Zak promises to remember his adventure in FernGully and buries the seed in the soil before telling his fellow departing loggers that things need to change. The seed sprouts new growth as Crysta playfully chases her fairy friend Pips, with Batty following.



FernGully now seems a bit dated, and its animation – a combination of hand-drawn and computer-generated – may fail to hold up under scrutiny from the Pixar generation. Janet Maslin of *The New York Times* criticized the film’s “Saturday-morning cartoon aesthetics.”^[1] But it was in many ways a groundbreaking rated-G film at the time, with its focus on the environment. Producer Wayne Young said his passion for the subject was his motivation for making the film, saying the film was “blatantly environmental, although we have gone to a lot of trouble to avoid preaching. We also want it to be viewed as entertainment.”^[2] Young reportedly donated portions of the products to Greenpeace, the Rainforest Foundation Fund, and the Sierra Club.^[3] Although its box office receipts were far outmatched at the time by those for Disney films like *The Little Mermaid* (1989) and *Beauty and the Beast* (1991), it received generally favorable reviews, and audiences surveyed by CinemaScore gave the film a grade “A” on scale of A to F.^[4] And it is impossible to know how many aspiring ecologists, environmentalists, and climate change scientists and advocates may have been inspired by *FernGully: The Last Rainforest*. It also may have influenced future Cli-Fi Films, such as *Avatar*.



“Princess Mononoke” by river seal is licensed under CC BY-NC 2.0.

But it was certainly not the last animated film to highlight ecological issues and climate change. Five years later, *Princess Mononoke* (1997) harnessed anime, specifically, to address these, but this time set in a fantastical version of Medieval Japan. While perhaps not explicitly about climate change, the film depicts supernatural forces of destruction unleashed by humans greedily consuming natural resources. The themes, though, are more complicated than simple good (nature) vs. evil. *Princess Mononoke* follows the journey of the last Emishi prince, Ashitaka, and his attempts to make peace between the human settlement, Irontown, and the creatures living in the forest that surrounds it. It is a complicated plot, so instead of attempting to give an overview here, I recommend you read the [description in Wikipedia](https://en.Wikipedia.org/wiki/Princess_Mononoke) (https://en.Wikipedia.org/wiki/Princess_Mononoke) – or, better yet, watch the film. But its animator summed up the film’s message (and life in general, we can assume) thus: “There cannot be a happy ending to the fight between the raging gods and humans. However, even in the middle of hatred and killings, there are things worth living for. A wonderful meeting, or a beautiful thing can exist. We depict hatred, but it is to depict that there are more important things. We depict a curse, to depict the joy of liberation.”

Mostly hand-drawn, the film incorporates a small percentage of computer animation. Hailed as a landmark in animation, *Princess Mononoke* was the first animated feature film to win the Japan Academy Prize for Best Picture. With graphic and bloody violence, it is, unlike *FernGully*, hardly for children. A production of the now-famed Studio Ghibli, it is considered by many to be a masterpiece.

Fast forward to December 12, 2008... “the day the earth stood still.” That was the tagline for a loose remake of a 1951 film about an alien who lands in Washington, D.C. and warns the people of Earth that they must live peacefully and end the nuclear arms race or be destroyed as a danger to other planets. The remake, set in and around New York City, changed the human-caused threat to the environment and starred Neo – I mean Keanu Reeves – as the alien Klaatu. *The Day the Earth Stood Still* (2008) begins with what appears to be a standard, panic-inducing alien invasion, with the government and military mustering their defenses and terrified citizens running for their lives.

But in a twist on the usual alien film, the government and scientists discover that Klaatu is there on a mission to “save the earth.” Government officials remain suspicious but one scientist, Helen Benson (Jennifer Connelly), befriends Klaatu, who eventually clarifies for Helen that he means to save the Earth from humans, since they can’t seem to change their destructive ways. But similar to *FernGully*, his interactions with a few humans (namely Helen and her young stepson, Jacob, played by Jaden Smith, as well as Nobel Prize-winner Professor Barnhardt (John Cleese), who argues that humanity is staring over the precipice of its destruction but hasn’t yet tipped off the edge) leads him to help save humanity – for now. (The aliens end all electrical activity on Earth, causing a worldwide blackout, per Klaatu’s warning that there will be “a price to the [human] way of life.”)

The Day the Earth Stood Still was critically panned, accused of being too heavy on special effects at the expense of character and plot; in fact, at the 2009 Razzie Awards, the film was nominated for Worst Prequel, Remake, Rip-off or Sequel, losing to *Indiana Jones and the Kingdom of the Crystal Skull*. But the film’s suggestion that the Earth is an integral part of a larger ecosystem in the universe is thought-provoking and profound, and somewhat unusual in Cli-Fi Films. And it is striking that this remake, fifty-seven years later, makes it clear that humans still haven’t learned the hard lessons of the original.

Thankfully, there seem to always be scientists and advocates working for change, both in film and real life, redeeming the human race – at least somewhat. This is also the case in the all-time highest grossing Cli-Fi Film, *Avatar* (2009).



Set in 2154, *Avatar* depicts an Earth where the natural resources have been depleted. In yet another twist on the alien invasion film, this time humans invade the “aliens,” the Na’vi of Pandora, a lush, brilliantly colored moon in the Alpha Centauri star system. The humans are hunting for a mineral that could solve the ecological crisis on Earth. The military sends Jake Sully (Sam Worthington), a disabled, ex-marine, onto the planet piloting an Avatar – a remote control alien body that will allow Jake to breathe the air on Pandora – to gain the Na’vi’s trust and get them to relocate. As Jake, made physically whole again through his avatar, discovers the world of the Na’vi, he meets a beautiful woman named Neytiri (Zoe Saldana). As Jake starts to see the world through her eyes, he realizes how much it matters to the Na’vi and to him and fights to protect his people and way of life, saving both. At the end he is permanently transferred into his avatar with the aid of the sacred Tree of Souls.

Directed, written, co-produced, and co-edited by James Cameron, *Avatar* is a hybrid of live action and computer-generation characters and environments (echoing the contrast in the classic film *Wizard of Oz* [1938] between the black and white world of Kansas and the brilliantly colored Oz. If you haven’t seen it, stop reading now, find it, and view it). According to Cameron, work on the film had been delayed since the 1990s to allow the techniques to reach the necessary degree of advancement to adequately portray his vision of the film.^[5]



“James Cameron at a ceremony to receive a star on the Hollywood Walk of Fame” by Angela George is licensed under CC By-SA 3.0.

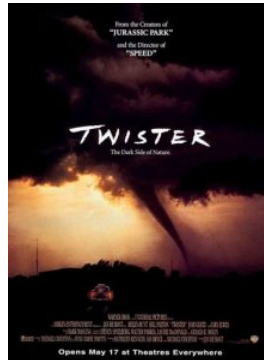
Cameron has acknowledged that *Avatar* shares themes with *Princess Mononoke*, with its clashes between cultures and civilizations (and with *Dances with Wolves*, in which a post-Civil War soldier, dispatched to the west to fight “Indians,” finds himself drawn to the culture against which he was initially fighting). He also cited *Princess Mononoke* as an influence on the ecosystem of Pandora.^[6] In discussing the themes of the film at ComicCon 2009, Cameron said that he wanted to make “something that has this spoonful of sugar of all the action and the adventure and all that” but also have a conscience “that maybe in the enjoying of it makes you think a little bit about the way you interact with nature and your fellow man.” He added that the Na’vi represent who we could be – our aspirational selves – if we were to work in harmony with nature, instead of forever against it.^[7]

While critical reviews were positive overall, with Roger Ebert of the *Chicago Sun-Times* calling *Avatar* “extraordinary,”^[8] some critics weren’t sold on its ecological themes. For example, Miranda Devine of *The Sydney Morning Herald* thought that “[i]t [was] impossible to watch *Avatar* without being banged over the head with the director’s ideological hammer.”^[9] Regardless, the film is, as of this writing, the highest grossing film of all time.^[10] As such, one can’t overestimate the potential impact of this film and its

themes to raise awareness about the environment and humans' detrimental effects on it. There is no telling how many future scientists, environmentalists, climate advocates, and the like that the film has influenced (and likely will continue to, with a sequel just released as I write this). There is perhaps no clearer example of the potential for Cli-Fi Films to inspire change than *Avatar*.

In this module, we have explored films that either explicitly or implicitly depict flourishing worlds inhabited by beings in harmony with them, from FernGully, to the forest of Princess Mononoke, to Pandora (although obviously set on our self-destructive plane, *The Day the Earth Stood Still* suggests that Klaatu's world – and others in the universe – have learned to thrive). The next module focuses on much bleaker films set in worlds that already have become “Post-Climapocalypse Dystopias,” and how their inhabitants struggle to survive within them.

Coda



“Twister” by rustybrick is licensed under CC BY-NC 2.0.

It is worth mentioning one film that is, in a sense, the opposite of films discussed in this module: *Twister* (1996). It doesn't fit neatly into any of the categories in *Telling Stories to Save the World* – some might call it a fairly basic summer blockbuster disaster film^[11] – but it was a predecessor to films discussed in this text in that “global warming” (before the broader “climate change” became more ubiquitous) is the underlying cause of the disaster, namely the titular tornadoes. But in *Twister*, there is no implicit understanding that humans have caused the disasters; nature, in the form of the tornadoes, is (somewhat simplistically) the primary villain. The film understood that nature can turn into a monster. But it also presciently understood that scientists can help vanquish that monster –or more accurately, understand it in order to better predict its actions and thus its disastrous effects on humans. *Twister* was ahead of its time in its recognition that science is essential to humanity's survival of whatever threat might face it. Interestingly, a sequel to the film, titled *Twisters*, is in development from Universal Pictures and Amblin Entertainment, with plans for a Summer 2024 release.^[12] It will be interesting to see if it incorporates climate change explicitly.



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KNOWLEDGE CHECK

Videos

- *Ferngully: The Last Rainforest* (1992) Official Trailer: <https://youtu.be/Dzqyc95zcxo>
- *Avatar*: Official Trailer: <https://youtu.be/5PSNL1qE6VY>

1. Maslin, Janet (April 10, 1992). "Ferngully: the Last Rainforest (1992)." *The New York Times*. Archived from the original on March 7, 2016. Retrieved January 10, 2023.
2. Tattoli, Chantel (April 25, 2017). "FernGully at 25: How an Upstart Disney Rival Created a Millennial Silent Spring." *Vanity Fair*.
3. Brownstein, Bill (April 16, 1992). "It's hip, it's animated, and it's eco-friendly; Cartoon adventure FernGully began with an idea 15 years ago." *The Gazette*. p. F1. ISSN 0384-1294.

4. "Ferngully: The Last Rainforest (1992) A". *CinemaScore*. Archived from the original on December 20, 2018. Retrieved January 11, 2023.
5. Duncan, Jody; Fitzpatrick, Lisa (2010). *The Making of Avatar*. United States: Abrams Books. p. 52. ISBN 978-0-8109-9706-6.
6. Avatar (2009 film). Wikipedia. Retrieved January 12, 2023.
7. "Cameron continues: "The Na'vi represent something that is our higher selves, or our aspirational selves, what we would like to think we are" and that even though there are good humans within the film, the humans "represent what we know to be the parts of ourselves that are trashing our world and maybe condemning ourselves to a grim future".
8. Ebert, Roger (December 11, 2009). "Avatar." *Chicago Sun-Times*. Archived from the original on December 13, 2009. Retrieved January 13, 2023.
9. Devine, Miranda (January 2, 2010). "Hit by the leftie sledgehammer." *The Sydney Morning Herald*. Archived from the original on April 9, 2010. Retrieved January 13, 2023.
10. List of highest-grossing films. Wikipedia. Retrieved January 12, 2023.
11. Although later, NPR's Linda Holmes crowned *Twister* as her choice for the "best bad movie" ever. Holmes, Linda (April 8, 2016). "Pop Culture Happy Hour: Best Bad Movies And A Punishing Quiz." Retrieved March 22, 2023.
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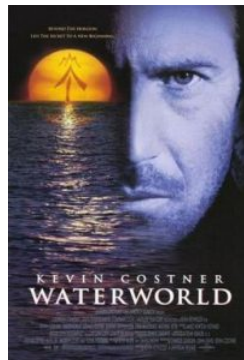
1.5: Post-Climapocalyptic Dystopias

This is a difficult to module to write, because as I am doing so, in January 2023, California is experiencing a devastating weather event, likely caused by climate change. For the past two weeks, parts of the state have been overwhelmed by heavy rains caused by an [atmospheric river](#). “[A] thin but long plume of moisture in the atmosphere that stretches from the tropics or subtropics into higher latitudes,” the current one stretches from Hawaii to the U.S. West Coast is commonly referred to as the “Pineapple Express.” But this current one is dumping unprecedented amounts of rain from the San Francisco Bay area to Los Angeles, from the coast inland to Sacramento, with Santa Cruz hardest hit so far. Flooding, mudslides, sinkholes, impassable roads, and the deaths of at least nineteen people so far have led President Biden to declare a major disaster in California.

Merriam-Webster defines [dystopia](#) as “an imagined world or society in which people lead wretched, dehumanized, fearful lives.” It is often opposed to a “utopia,” or an idealized state or society. Unfortunately, the California storms and the resulting devastation are all too real and seem eerily prescient to the post-climapocalyptic dystopia depicted in the 1995 film *Waterworld*, the first Hollywood film set in a world clearly destroyed by global warming.



“Endless WaterWorld” by _Hadock_ is licensed under CC BY-NC-SA 2.0.



Waterworld poster. [Image used under fair use.
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<https://en.Wikipedia.org/wiki/File:Waterworld.jpg>]

The most expensive film ever made at the time, *Waterworld* is set in 2500. The polar ice caps have melted, raising the oceans 25,000 feet and covering the Earth. A mythical “Dryland” seems out of reach. Humans struggle to survive in this world, adapting to living on boats and “atolls” of floating communities. The film’s anti-hero, The Mariner (Kevin Costner), not only has adapted more effectively than others through a variety of mechanized innovations on his boat, he has evolved, we discover, by growing gills and webbed feet. The Mariner arrives at an atoll to trade dirt, a rare commodity, which we later learn he recovered from the bottom of the ocean due to his unique ability to breathe underwater. At the atoll, he encounters a girl named Enola (Tina Majorino), who has a map to Dryland tattooed on her back, and her guardian, Helen (Jeannie Tripplehorn). A gang of pirates called “Smokers,” led by Deacon (Dennis Hopper), attack the atoll in pursuit of Enola and the secret her tattoo holds. Kevin, Enola, and Helen escape, and the anti-hero gradually evolves further into their protector, guardian them against further attacks by Deacon and others with nefarious intentions. Eventually he unlocks the map’s secret and leads them to Dryland (which is the top of a now-lush Mt. Everest). However, The Mariner ironically cannot share their new life there; having adapted to life on and in the water, he returns to his life wandering the oceans.

At the time of the film's release, the press was largely silent on the ecological themes raised by its creators. Those themes likely were overshadowed by all the hype around the cost of the film, which was amplified by a number of cost "overruns" and significant production setbacks. Filmed primarily off the coast of Hawaii, *Waterworld*'s multimillion dollar atoll set pieces were destroyed by a hurricane, which had to be rebuilt. (Steven Spielberg had warned director Kevin Reynolds not to shoot on open water after his own struggles filming *Jaws*.) Costner also was injured while tied to the mast of his watercraft, the "trimaran," when a squall hit during filming. Dissatisfaction with Mark Isham's original music score, considered too bleak, led to the development of a new score by now-famed composer James Newton Howard, and script problems also led to the last-minute hiring of Joss Whedon for rewrites. And creative differences between Costner and Reynolds led the director to quit the film before its release. Considered the biggest box office bomb of all time after its domestic release, it did manage eventually to become profitable after release in foreign markets and to home video via VHS, Laser Disc (remember those?), DVD, Blu-ray, and streaming. It also spawned a wildly popular attraction, "Waterworld: A Live Sea War Spectacular," at Universal Studios in Hollywood, Japan, and Singapore, generating billions in revenue.

Critically panned in 1995, reconsiderations of the film – and its themes – have been more favorable. *The Guardian*, in 2020, called it "a cult classic in the making."^[1] In 2009, *Slate*, upon the film's release as a 2-disk extended edition dvd, suggested that it was an "eco-parable" ahead of its time.^[2] Its depiction of the after effects of the melting of the polar ice caps, while likely significantly over-exaggerated based on current estimates of those potential impacts, is chilling and seems somewhat prescient. *Waterworld* opens with the Universal Studios logo morphing into an image of our planet being swallowed by blue while a narrator explains "The future: the polar ice caps have melted, covering the Earth with water."



Although current science suggests that this would not be possible, the effects would still be devastating. Flooding of islands and coastal areas (with the Maldives predicted to be the first nation entirely under water as well as the Gulf Coast region of the U.S.) would force climate refugees to seek other homeland; many marine and land mammal species could be rendered extinct.^[3] And the melting of the polar ice caps will accelerate global warming, which will, in turn, cause more rapid melting, one of the many feedback mechanisms that will accelerate abrupt climate change:

Snow and ice have long played a vital role in moderating Earth's climate. The white surfaces reflect the sun's radiation, which in turn helps maintain a comfortable temperature for life on the planet. But with a warming planet, that ice melts or thins, exposing the dark water below, which absorbs that radiation. So each year the global temperature rises, melting more ice and snow. It's a positive feedback loop: warming causes ice melt, ice melt causes warming. And that process — also called Arctic amplification — leads to what we are observing now, which is a rapidly changing climate.^[4]

After its chilling opening, *Waterworld* continues with our first glimpse of the Mariner, who is engaged in an act of recycling, using a homemade device that transforms his urine into potable water. He powers his trimaran through wind energy, although we come to find out that gas-guzzling watercraft still exist and are the preferred modes of transportation of Deacon and the Smokers. Staunchly anti-science and -sustainability, Deacon worships "Saint Joe" Hazelwood, infamous pilot of the Exxon Valdez and cause of the [1989 oil spill ecological disaster](#). He is obsessed with finding the mythical Dryland, which he plans to exploit for its resources as soon as he gets his hands on it: "If there's a river we'll dam it, and if there's a tree we'll ram it," he declares. But the film may not have gone as some may have hoped for an eco-parable: it never explicitly claims that the flooding was human-caused, and it ends

on a somewhat unfounded (but unsurprising for a “summer blockbuster”) note of hope in the lush landscape of dryland. For me, the hope is that *Waterworld* managed to open viewers’ eyes to the catastrophic possibilities of climate change. As David Zax in *Slate* argued, “... few things can make the future more vivid than a good science fiction movie.”^[5]

Stephen Spielberg’s *A.I. Artificial Intelligence* (2001) is set in the 22nd century against a more realistic backdrop of the effects of global warming causing rising sea levels to wipe out coastal cities, reducing the world’s population. A plot centered around human-like robots programmed to love takes over from there, so that the environmental issues remain in the background. (Until the film’s end set two thousand years later when the earth is now buried under glacial ice and humans are extinct, replaced by androids.



The Day After Tomorrow movie poster. [Image used under fair use. For more information regarding copyright, see https://en.Wikipedia.org/wiki/File:The_Day_After_Tomorrow_movie.jpg]

Three years later, a film considered by many to be at the apex of the Cli-Fi Dystopia films was released. *The Day After Tomorrow* (2004) depicts a series of fast developing, extreme weather events that usher in a new ice age across the Northern Hemisphere and devastating weather across the world, from tornadoes to tsunamis and hail storms. The main character is a scientist ignored by those in power – a relatively common trope in Cli-Fi Films. Here the scientist is Jack Hall (Dennis Quaid), a paleoclimatologist, someone who studies climates for which direct measurements were not taken. As Jack and his fellow scientists work to convince politicians, slow to take action, of the seriousness of the events and how to ensure the survival of affected populations, a subplot shows those effects on a small group – including Jack’s son, Sam (Jake Gyllenhaal) – stranded in the New York Public Library after a massive tsunami-like storm surge quickly inundates Manhattan.

Days later, the superstorms dissipate, but not after leaving many frozen to death. Sam survives and is rescued by his Dad, and after admitting his mistake in not acting sooner, the U.S. President orders all survivors evacuated to Mexico. *The Day After Tomorrow* ends with astronauts on the International Space Station looking down at Earth’s transformed surface, its ice sheets extending across much of the Northern Hemisphere – and its unprecedentedly clear air, ostensibly from the dissolution of human-caused pollution (not unlike what happened in many locations during the COVID-19 pandemic):



Directed by Roland Emmerich, the film was based on the book *The Coming Global Superstorm* (1999) by Art Bell and Whitley Strieber, which warns that global warming might produce sudden and catastrophic climate change. Although a box office success, critics were mostly lukewarm, praising the special effects but dismissing *The Day After Tomorrow* as a popcorn thriller. Roger

Ebert of the *Chicago Sun-Times* described the film as “profoundly silly.”^[6] Scientists were equally dismissive due to the film’s inaccuracies, especially depicting meteorological phenomena as occurring over the course of hours, instead of decades or centuries. For example, J. Marshall Shepherd, a research meteorologist at the NASA Goddard Space Flight Center, gave the film his own rating: “I’m heartened that there’s a movie addressing real climate issues. But as for the science of the movie, I’d give it a D minus or an F.”^[7] But at least one scientist emphasized the potential benefits of blockbuster Cli-Fi Films like *The Day After Tomorrow*. Stefan Rahmstorf of the Potsdam Institute for Climate Impact Research argued:

Clearly this is a disaster movie and not a scientific documentary, [and] the film makers have taken a lot of artistic license. But the film presents an opportunity to explain that some of the basic background is right: humans are indeed increasingly changing the climate and this is quite a dangerous experiment, including some risk of abrupt and unforeseen changes.^[8]

In contrast to the splashy special effects and summer blockbuster-esque nature of Emmerich’s film, *The Road* (2009) has more of an indie-feel, with its more pared-down and often harsh, “realistic” portrayal of a post-apocalyptic world. In fact, Tom Huddleston from *Time Out* called the film “the bleakest and potentially the least commercial product in recent Hollywood history.” Based on the Pulitzer Prize-winning Cormac McCarthy novel of the same name, the film never explains the nature of the near-extinction event from which the two main characters, Man (Viggo Mortensen) and Boy (Kodi Smit-McPhee) struggle to survive. Like *Waterworld*, the film does not dwell on what caused the current environment and society; unlike *Waterworld*, the journey on the eponymous road does not lead to some mythical or imagined better place. Emmerich (like McCarthy) is focused on the day-to-day fight to survive dire, often deadly, circumstances.^[9] It’s a chilling, effective portrayal of survival in a hostile world like (or that is) a post-climapocalyptic dystopia, the bleakness of which is clear in this trailer:



Two years later, Emmerich produced an explicitly (and equally bleak) post-climapocaylpse film, *Hell*. In 2016 Germany, global temperatures have risen by ten degrees Celsius. Crops have failed, little water or food is available, and social order has broken down. The sun is so hot that traveling outside during daylight hours is dangerous. *Hell*’s characters, driving in a car covered in cardboard for shade except a small sliver on the driver’s side, face numerous threats as they drive to the mountains where water is rumored to remain. The final threat they face mirrors one of the obstacles depicted in *The Road*: humans captured so that others can feed on their flesh. In both films, cannibalism, widely considered taboo in modern society, represents the deepest depths to which humans will descend in the face of extreme natural disasters like those that may be caused by climate change. The film – including its title – is far from original or subtle, but creators, like Emmerich, of Cli-Fi films may have felt that the time for subtlety depicted in films like *FernGully* or even *Avatar* may have passed.

The Colony (2013) is a Canadian film directed by Jeff Renfroe and starring Laurence Fishburne, Kevin Zegers, and Bill Paxton. It is a rather forgettable movie; Rotten Tomatoes gives the film a score of 18% based on reviews from 33 critics, and a rating average of 4 out of 10.^[10] However, in the canon of Cli-Fi films it is somewhat unique: it opens with a depiction of efforts to mitigate the effects of climate change. Set in the near future of 2024, humans constructed climate modification towers to control the warming, but the machines break down, causing the climate to shift to the other extreme. When it begins to snow and does not stop, the remaining humans live in underground bunkers facing such challenges as controlling disease and producing sufficient food. This, in term, leads to a familiar additional challenge: cannibalism.

The next year brought the release of one of my all-time favorite Cli-Fi Films: *Snowpiercer*. I saw it when it opened in theatres (at my local [Alamo Drafthouse](#)) and was, frankly, blown away by its taut storyline, setting-all-in-one-train, dark cinematography, the performances of actors Chris Evans, Tilda Swinton, Ed Harris, Octavia Spencer, and others, and Bong Joon-ho's direction (he later won an Oscar for *Parasite*; see **Scene 6: Psychological Thrillers** in this text). And it happens, like *The Colony*, to open in a world where attempts to address the effects of climate change have failed.



Director Bong Joon-ho. “(2013.09.09) Conférence de presse ‘Snowpiercer/Le Transperceneige’” by Centre Culturel Coréen is licensed under CC BY-NC-ND 2.0.

Based on a French graphic novel series, *Snowpiercer* is set, somewhat alarmingly, in the very near future of 2031. 17 years earlier, an attempt to stop global warming by injecting aerosols into the atmosphere to cause a dimming/cooling effect catastrophically backfires and creates a new ice age. A small number of survivors live in a self-contained, self-sustaining train that repeatedly circumnavigates the globe. However, segregation and social stratification divides the train into near-starving “have-nots” in the back and the well-fed elite toward the front, fomenting a rebellion by those in the rear. Led by Curtis Everett (Chris Evans) and his second-in-command, Edgar (Jamie Bell), a small band fights their way to the front, encountering violent resistance and scenes of relative normalcy and even shocking opulence. I’ll avoid giving away the ending on this one and instead encourage you to screen the film asap — surely this exciting trailer will inspire you to do so:



Snowpiercer draws on some common tropes and themes of previous Cli-Fi Films (an anti-hero turned hero and younger “sidekick,” revelations of shocking food sources, exploitation of children, and the like). A. O. Scott of *The New York Times* wrote about the film, “Planetary destruction and human extinction happen a half-dozen times [on film] every summer. It’s rarely this refreshing, though.”^[11] Indeed, the movie is fairly unique in its setting on a single train, often dark and claustrophobic but with occasional bursts of blinding light reflected off the frozen earth of which we occasionally catch glimpses through windows. Joon-ho takes full advantage of that setting, creating an on-the-edge-of-your-seat tension as the viewer wonders what awaits the rebels through the next door as they fight their way from car to car to the front of the often visually stunning train.



“Snowpiercer-Internatioanl-Character-Poster-Chris-Evans-455×650” by cine-asie is licensed under CC BY-NC-ND 2.0.

Like Scott, reviewers were largely positive, often glowing. Chris Nashawaty of *Entertainment Weekly* gave the piece an “A” rating, stating, “Snowpiercer sucks you into its strange, brave new world so completely, it leaves you with the all-too-rare sensation that you’ve just witnessed something you’ve never seen before ... and need to see again.”^[12] Joshua Rothkopf of *Time Out New York* scored the film five out of five stars, calling it a “headlong rush into conceptual lunacy—but you’ll love it anyway.”^[13] A popular reboot as a tv series, with events on the train starting about seven years after the global catastrophe, premiered in 2020. And the film became a favorite for many climate activists besides me. One article by a climate journalist read, “‘Snowpiercer’: If You Care About Climate Change, This Sci Fi Thriller Is For You.” In it, author Kate Aronoff suggests that the point of the film “is how interconnected the climate crisis is to the logic of capitalism, and how wary we should be of solutions that stem from it,” adding that “[c]onfronting the climate crisis means confronting capitalism and the inequality it produces: It’s literally impossible to do one without the other—so do it right.”^[14]

Snowpiercer’s depiction of geoengineering gone array apparently is not realistic; MIT scientists argue that such accidental effects are unlikely. With geoengineering, humans would deliberately try to cool the Earth, to counter the warming we’re causing. There are potential unintended, harmful consequences, though, including environmental – such as shifting rain patterns, affecting crops and vulnerable species. And social consequences could include conflicts over control of such interventions and individual nations making choices that could affect the entire planet.^[15]

That same year, *Interstellar* (2014) premiered, taking as its starting point a devastated world, but it never directly mentions climate change as the cause. Written and directed by Christopher Nolan, the film is set in 2067 when the Earth is on the verge of total ecological collapse, with drastic changes in weather patterns and devastating food shortages driving human beings to the brink of extinction. We never learn exactly what caused this (there is a vague reference to a crop disease called “a blight”). But it seems clearly human-caused or exacerbated, and ex-NASA pilot Joseph Cooper (Matthew McConaughey) goes on a quest to find a planet capable of supporting human life, later taken up by his daughter (Jessica Chastain). It is an optimistic, often majestic, film, but like virtually all Cli-Fi Films, it fails to offer any realistic, viable solutions, with the two choices being to die on Earth or find another planet to escape to. In spite of the note of optimism at the end – another scientist, Amelia (Anne Hathaway), is seen setting up a colony on a viable planet – we can’t help but wonder if humans will destroy this one too.

The post-climapocalyptic desert wasteland in *Mad Max: Fury Road* (2015 – and another favorite of mine) is an imagined future that is opposite from the flooded planet of *Waterworld* or the arctic planet of *The Day After Tomorrow* or *Snowpiercer*. The movie, which like *Interstellar* never explicitly mentions climate change, nevertheless centers on a common trope in Cli-Fi Films: control of limited resources (fuel, water, food, etc.) which always leads to conflict. As argued by Judith Eckenhoff in “The Desert Wasteland and Climate Change in *Mad Max: Fury Road*,” “[I]t is a critique of the capitalist greed, continued reliance on fossil fuels, and increasing resource scarcity that are at the core of the discourse surrounding climate change.”^[16]



“Mad Max Fury Road – Electric Billboard AD NYC 1055” by Brechtbug is licensed under CC BY-NC-ND 2.0.

Fury Road is the fourth installment in George Miller’s series of *Mad Max* films, begun in 1979 with Mel Gibson as the antihero Max Rockatansky. Recasting Tom Hardy in the titular role, the movie opens with Max getting captured by the War Boys, the followers of the warlord Immortan Joe (Hugh Keays-Byrne). Max is imprisoned in Joe’s fortress, The Citadel, and used as a human “blood bag” for the diseased Boys, including Nux (Nicholas Hoult). From the Citadel, Immortan Joe controls the water supply, dispensing it at intervals to the desperate locals gathered below. Meanwhile, battle-worn Imperator Furiosa (Charlize Theron), one of Joe’s lieutenants, helps his five enslaved “wives” escape their own imprisonment in The Citadel. Joe and the War Boys pursue in elaborate, gas-guzzling vehicles, Max strapped to the front of Nux’s. When Max manages to free himself after a crash, he reluctantly forges an alliance with Furiosa and the women. When it becomes clear that their destination, the storied “Green Place,” is now a wasteland as well, the women decide to turn back and, with Max’s (and Nux’s, who sacrifices himself) help, Kill Joe and take control of the Citadel. At the end, Max exchanges a respectful look with Furiosa and disappears wordlessly into the crowd.



Hopefully, that scene conveys a sense of the stunning, elaborate set pieces, costume and makeup, and overall cinematography and sound of *Fury Road*. Like *Snowpiercer*, I saw the film when it opened in 2015 at my local Alamo Drafthouse, and I was – to put it colloquially – blown away. Many critics were (rightfully, in my opinion) ecstatic, some even calling it the greatest action film of all time. Robbie Collin of *The Daily Telegraph* gave the film a full five stars and praised its acting, screenplay, choreography, stunts, humor, and direction, describing it as a “Krakatoan eruption of craziness.”^[17] Lindsay Bahr of the Associated Press described the film as “radically visionary.” IGN reviewer Scott Collura gave the film a 9.2 out of 10, writing: “the over-the-top stunts and eccentric characters and designs are all hugely important to *Fury Road*, as are the troubled figures like Max himself and Furiosa, but it’s the overriding sense of the film’s uniqueness, its striving to be something more than just another action movie, that is most impressive.” As Dan Hassler-Forest in *Science Fiction Film & Television* put it, no other film “has made the post-apocalyptic, warlord-ravaged hellscape that seems like the inevitable end game of global capitalism so much fun.”^[18]



“Mad Max: Fury Road Review!” by AntMan3001 is licensed under CC BY-SA 2.0.

A significant difference between *Fury Road* and Cli-Fi films that came before is its strong feminist perspective, with Furiosa the protagonist as much as, if not more than, the titular antihero Max. The female characters’ drive not just to survive their current circumstances but to escape to a better life is at the heart of the film and the reason for the journey on the titular road. It is their fury, more than Max’s, that we feel, their strength that we applaud and within which we revel. While Max and Nux assist, it is Furiosa and the women she leads who rebel against and end the violent regime of the post-capitalist, patriarchal villain Joe. Taylor Boulware writes that *Fury Road* “is utopian, not in the sense that it presents an ideal world, but that it imagines successful liberatory revolution and the destruction of decrepit systems of oppression, out of which a more perfect, egalitarian world can then emerge.”^[19] The sustainability that the film’s end implies is grounded in taking responsibility for one’s actions, solving real-world, current challenges, and not seeking escape in some idealized elsewhere. It’s the closest to actual solutions to the challenges of human-induced climate change that a Cli-Fi film had produced up to that point.

Does the filmmakers’ reliance on the tropes of hyper-masculinity – brutal violence, souped-up car culture, spectacular explosions, heavy metal, and the like – undermine its feminist messages and vision for a post-capitalist, post-climatic dystopia? Perhaps, but in the opinion of this viewer, these make for one heck of a ride and for other viewers perhaps made the metaphoric spoonful of medicine more digestible, even appealing. Again, like movies like *Avatar* and *The Day After Tomorrow*, the blockbuster effect of *Fury Road* to potentially shift attitudes toward climate change should not be underestimated.



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KNOWLEDGE CHECK

Videos

Opening Scene of ‘Waterworld’: <https://youtu.be/Kd7rScF8tIs>

The Day After Tomorrow — Ending Scene: <https://youtu.be/WcQC1c-53uA>

The Road (1/9) Movie CLIP – God Never Spoke (2009): <https://youtu.be/WEP25kPtQCQ>

Snowpiercer Official US Release Trailer #1 (2014) – Chris Evans Movie: <https://youtu.be/nX5PwfEMBM0>

Mad Max Fury Road – Ending Scene: https://youtu.be/rA0jO_FuNag

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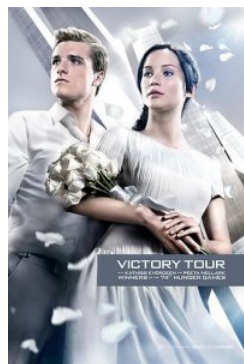
1.6: Heroes and Deus Ex Machina

In “Post-Climapocalyptic Dystopias,” we explored films that had at their heart an “antihero.” These are characters that “may lack conventional heroic qualities and attributes, such as idealism, courage, and morality. Although antiheroes may sometimes perform actions that most of the audience considers morally correct, their reasons for doing so may not align with the audience’s morality.”^[1] These characters redeem themselves, to some extent, in the end, even though they may remain flawed. In *Waterworld*, for example, The Mariner begins as a man concerned only with his own survival but along his journey finds himself compelled to protect, and even care for, others (although in the end he does decide to, we assume, return to his loner existence). Although we don’t learn a lot about Max before the events of *Fury Road*, we do understand, based on his initial reaction to Furiosa and the other women, that his first instinct is self-preservation, but like The Mariner he comes to find himself allied with the women in their shared journey of survival. And Furiosa can be viewed as an antihero as well, having been in the service of Immortan Joe prior to her rebellion against him. Personally, I find antiheroes to be some of the most interesting characters in cinematic history.



Deus ex machina in Euripides’ *Medea*, performed in 2009 in Syracuse, Italy; the sun god sends a golden chariot to rescue Medea.
Licensed by I, Sailko under CC BY 2.5.

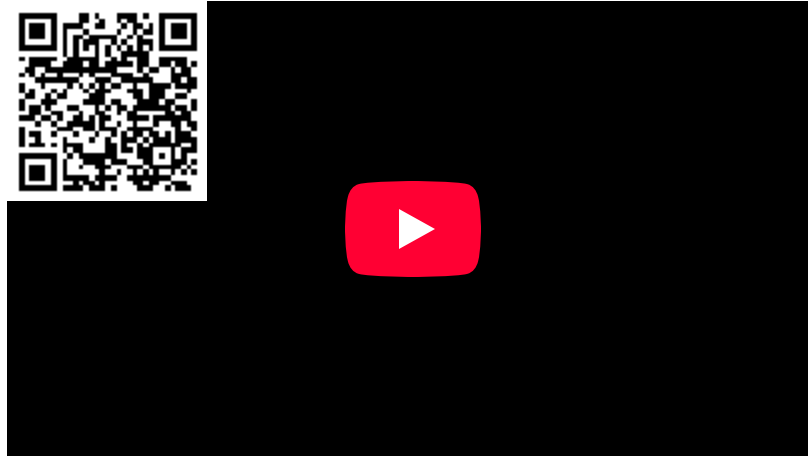
But it seems inevitable that eventually a solution to the problems presented by climate change in film would be the true hero, with the attendant characteristics of idealism, courage, and morality. In the 2010s, a series of films appeared that depicted heroes saving the world. These most often depict a world ravaged by the effects of climate change, about which they can do nothing without the intervention of heroes or even superheroes. It is no coincidence that most of these also were box-office blockbusters. Additionally, creators of these films sometimes relied on a “Deus Ex Machina” ending, which is a structural convention dating back to ancient Greece that literally means “god from the machine.” Often contrived, the plot device entailed the sudden appearance of one or more gods, who ascended from on high in a chariot or other “machine,” to intervene in, and resolve, the problems of human (also somewhat common in Shakespeare’s plays).



“Poster for ‘Catching Fire’, Sequel to ‘The Hunger Games’” by JoeInSouthernCA is licensed under CC BY-ND 2.0.

Few young adult novels have captured the post-climapocalyptic dystopia as imaginatively and horrifyingly as *The Hunger Games* series, by Suzanne Collins. In 2012, the first book in the series was adapted for the screen. In it, the global warming that brought about societal collapse that created the totalitarian regime of Panem is nearly forgotten history. Panem (formerly North America) is divided into 12 Districts, and each year a boy and a girl from each are selected as “tributes” and forced to compete in the Hunger Games, an elaborate televised fight to the death. When her younger sister is selected as tribute, Katniss Everdeen (Jennifer

Lawrence) volunteers to take her place – cementing her status early as a hero, willing to sacrifice herself for others, in the series. With her district’s male tribute, Peeta Mellark (Josh Hutcherson), Katniss travels to the Capitol to train and compete in the Hunger Games.



Her survival (and Peeta’s) at the end of the film, however, is short-lived. The subsequent three films in the series show her evolving into, albeit reluctantly and largely symbolically at first, the leader of the rebellion: the “Mockingjay.” The rebellion leads to the eventual death of Katniss’s arch nemesis, President Snow (Donald Sutherland), the installation of a new, more benevolent President, and the end of the games.

The Hunger Games is the twenty-first highest-grossing film franchise of all time – and the first entry in the “Cli-Fi Film Franchise.” The next was a sleeper hit: *Kingsman: The Secret Service* (2014), directed by Matthew Vaughn – another personal favorite that was quite a surprise when I saw it originally. In the film, eco-terrorist Richmond Valentine ([Samuel L. Jackson](#)) seeks to address [climate change](#) by – reminiscent of Klaatu in *The Day the Earth Stood Still* – saving the earth from humans and wiping out most of humanity. He is eventually thwarted by members of the Kingsman – an elite British intelligence service named for the tailor shop in Savile Row used as a front for their operations – including veteran Kingsman Harry Hart (Colin Firth) and rookie, legacy recruit Gary “Eggsy” Unwin’s (Taron Egerton). Popular at the box office, the film received mixed reviews but spawned two sequels, *Kingsman: The Golden Circle* (2017) and *The King’s Man* (2021), and a fourth film in the franchise is apparently in the works.

Even more popular has proven the Marvel Cinematic Universe, a *twenty-film* franchise beginning in 2008 based on classic heroes from the comic books. The character Thanos, lurking in the background in several of those films, comes to the fore in *Avengers: Infinity War* (2018). With motives somewhat similar to Richmond Valentine’s and Klaatu’s, Thanos (Josh Brolin) fears the destruction of limited resources in the universe by its inhabitants and seeks to restrict population growth and eliminate half of all life by “restoring balance” one planet at a time. He believes he can do this using the “Infinity Stones,” six gems created when different cosmic forces were crystalized during the Big Bang. *Infinity War* follows Thanos across planets as he battles different groups of Avengers to take possession of all six stones. His success at the climax of this film led to an ending that was shocking and even controversial to many Marvel fans, sparking a huge wave of social media commentary and backlash (I will leave it to you to watch the film to find out why). In its sequel, *Avengers: Endgame* (2019) – and the related *Spiderman: Far from Home* in the same year – the members of the Avengers and their allies attempt to reverse Thanos’s shocking actions.

The benefit of these movies featuring heroes in the “classic,” ancient Greek or comic book vein (often as instruments of “Deus Ex Machina”) is their popularity and reach; however, they offer fairly unrealistic solutions for the problems of human-caused climate change. More nuanced, sustainable solutions that do not rely on the hope that no other bad actors, like Snow, Valentine, or Thanos, will appear and require similar heroic actions are needed. In the next module, the films address climate change through more complex, internal, psychological means – but we’ll see whether or not they offer more potentially viable solutions.



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KNOWLEDGE CHECK

Video

The Hunger Games (2012 Movie) – Official Theatrical Trailer – Jennifer Lawrence & Liam Hemsworth:
<https://youtu.be/mfmrPu43DF8>

1. Antihero. Wikipedia. Retrieved February 24, 2023.

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1.7: Psychological Thrillers

In “Heroes & Deus Ex Machina,” we explored films that had classic heroes at their heart. The characters – and films they inhabit – that are highlighted in this module are decidedly more . . . complex, with threats as much internal as external. The previous module also focused on blockbuster films, while here, we see films that more accurately could be called independent films, produced outside the major film studio system (like Marvel). These films tended to arrive later in the history of cli-films, although one early model for these was *The Fire Next Time* (2006). Set in bucolic Kalispell, Montana, against a backdrop of environmental issues like climate-change-fueled forest fires, the film focuses more on the conflicts that arise from those issues among the various and diverse townspeople, from “an incendiary talk show host to a tolerance-preaching ex-cop, from anti-environmental activists burning a green swastika to Native American families fleeing mounting racism.”^[1] Director Patrice O’Neill suggests that the conflicts among the residents pose a greater existential threat than those from the environment around them.

One of my favorite, independent Cli-Fi Films is *Take Shelter* (2011), perhaps due to the brilliant lead performance by Michael Shannon. Shannon (who would go on to become an acclaimed actor) plays Curtis LaForche, who suffers from insomnia, apocalyptic dreams when he can sleep, and visions including rain “like fresh motor oil” and swarms of menacing black birds. He fears he may have inherited his mother’s paranoid schizophrenia but still obsessively builds a shelter to protect his family, his wife Samantha (Jessica Chastain) and their deaf daughter, Hannah. His bizarre behavior increasingly alienates him from them, his friends, employer, and the close-knit townspeople.

Curtis loses his job just before Hannah is about to get a cochlear implant, and tensions between him and Samantha begin to crescendo. Then, he gets into a fight with a friend at a community gathering, shouting that a devastating storm is coming and insisting that none of them are prepared. Afterward, a tornado warning leads the family to take shelter but Samantha is not convinced there is a real storm, leading to a climactic confrontation between the two. Curtis agrees to get help, and they embark on a vacation before he will leave to check into a psychiatric facility. But at the beach, as Hannah signs “storm,” a dark, oily rain begins to fall, the sky darkens, water spouts amass, and a tsunami forms in the distance. The musical undercurrent of strings adds to the tense urgency as the film comes to an end:



A YouTube element has been excluded from this version of the text. You can view it online here: <https://pb.libretexts.org/fil2/?p=74>

That scene gives me chills every time. *Take Shelter* was critically acclaimed; Roger Ebert of the *Chicago Sun-Times* gave the film four out of four stars and praised Shannon’s performance, writing, “Here is a frightening thriller based not on special effects gimmicks but on a dread that seems quietly spreading in the land: that the good days are ending, and climate changes or other sinister forces will sweep away our safety.”^[2] It’s a masterful entry in this category of Cli-Fi Films, and a tough act to follow.



“Louisiana Levee Sunrise” by ianmalcm is licensed under CC BY 2.0.



“Isle de Jean Charles is located in Louisiana” by Alexrk2 is licensed under CC BY 3.0

But the next year, *Beasts of the Southern Wild* (2012) proved another outstanding entry in the Cli-Fi Film psychological thriller sub-genre. *Beasts* is set on a fictional island in the Louisiana Bayou, “Isle de Charles Doucet,” known by the residents as the “Bathtub.” The island is in a vulnerable location beyond the levees built to protect the land and its residents from the hurricanes, erosions, storm surges, and rising seas that are becoming all too common in that area thanks to climate change. Director Benh Zeitlin claims that the Bathtub was inspired by Louisiana’s Terrebonne Parish, most notably the rapidly eroding Isle de Jean Charles. In January 2016, the state received substantial funding from the U.S. government to assist in the resident’s resettlement, making them among the country’s first climate refugees. It is against this backdrop that the imaginary but realistically vulnerable world of the film is set.

Beasts of the Southern Wild tells the story of six-year old Hushpuppy (Quvenzhané Wallis), for whom the island represents a natural world of wonder in which to explore and grow up. Her optimistic, wise-beyond-her-years belief in the balance of humans and nature is challenged as she comes to grips with her father’s illness and impending storms and floods that all threaten her existence and that of the island she calls home. The titular beasts are aurochs, prehistoric creatures Hushpuppy learns about in school, then imagines are released by melting ice, threatening the community and, lending a fantastical element to the film. *Beasts* is as much about Hushpuppy’s interior world/imagination, navigating real (poverty) and imagined (the aurochs) threats, and her relationship with her father and potential orphanhood, as it is a disaster/Cli-Fi Film, with the undercurrent of impending doom mirroring that of *Take Shelter*, with its focus on family and relationships between its member similar as well.



Beasts was critically acclaimed, and the ~~time~~ ~~critic~~ Roger Ebert gave it a rave review, calling it a remarkable creation. . . . Sometimes miraculous films come into being, made by people you've never heard of, starring unknown faces, blindsiding you with creative genius. 'Beasts of the Southern Wild' is one of the year's best films."^[3] Wallis became the youngest ever nominee for the Academy Award for Best Actress for her portrayal of Hushpuppy. The film is a brilliant meditation on human's often fractious relationship with the natural world, seen through the imaginative, hopeful eyes of a child, helping to make its themes around climate change accessible and compelling.

In stark contrast, the events of *First Reformed* (2017) are seen through the eyes of an alcoholic minister, Ernst Toller (Ethan Hawke), who leads a historic Dutch Reformed Protestant Church in upper New York. Toller counsels a radical, environmental activist whose despair over climate change leads him to suggest that his pregnant wife, Mary (Amanda Seyfried), abort their baby so it won't have to live in an increasingly devastated world. After Toller discovers Michael dead from a self-inflicted gunshot to the head, he conducts the memorial service, held at the directions of the deceased at a toxic waste dump. One of the most affecting scenes in the film is during the service. Michael's suicide note requested a specific song (sung by a youth church choir in a moment of brilliant and oxymoronic juxtaposition):



After that, Toller spirals into despair himself, suffering from memories of a son who died in the Iraq War, failing health, and increasing awareness, spurred by Michael and Mary, of the effects of climate change on the world around him. Woven throughout the film are images of those effects as Toller is drawn into activism himself, the film focusing on his interior monologues as he navigates his escalating despair. Like *Beasts*, there is a fantasy element as Toller and Mary become literally, physically intertwined, pressed together face-to-face, then (metaphorically, one presumes) float over images of a climate-ravaged world. Toller's existential crisis comes to a head as he straps on a suicide vest left behind by Michael, with plans to detonate it at a church event where the head of a local polluting factory will be in attendance. The final scenes of the film are not for the faint of heart, and many viewers may find the ambiguous ending frustrating.

First Reformed, although not a box office hit, was critically acclaimed, receiving nominations at the Independent Spirit Awards for Best Film, and Best Director and Best Screenplay for Paul Schrader while winning the Best Male Lead for Hawke (Schrader was also nominated for an Academy Award for Best Original Screenplay). What I find particularly compelling about the film as not just a psychological thriller but a Cli-Fi Film as well, is its connection of climate change to religion. Toller even argues that climate change advocacy should be a mission of "The Church," broadly conceived, on behalf of God and the nature he created under Judeo-Christian beliefs. This is a unique perspective among the films explored here.

The same year a polarizing film titled *Mother!*, directed by Darren Aronofsky and starring Jennifer Lawrence and Javier Bardem, premiered. In an interview, Lawrence stated that the film is an allegory that "depicts the rape and torment of Mother Earth."^[4] If so, it deserves a mention here, but only a mention, as it seems only very superficially a Cli-Fi Film. But if *Mother!* deserves only a mention, the final film featured here deserves more attention, even as it also at first appearance is only loosely connected to climate change.



Bong at the “Film_Gisaengchung(parasite)_Press_Conference_14” by KOREA.NET – Official page of the Republic of Korea is licensed under CC BY-NC-SA 2.0.

Parasite (2019) was written (with Han Jin-won) and directed by Bong Joon-ho, who directed *Snowpiercer* five years earlier (see Chapter 5, Post-Climapocalyptic Dystopias). While Bong continues his interest in the effects of the environment on humans, *Parasite* differs from his earlier film in shifting from an action-oriented approach to a psychological thriller that borders on [black comedy](#). The film revolves around two Korean families, the wealthy Parks and the poor Kims. As science writer Ben Goldfarb argues, “They’re divided not only by social status but by topography. The Parks live behind locked gates in a spotless, well-lit house, up a steep street in the Seoul highlands — a city on a hill. The Kims, who resourcefully infiltrate the Parks’ lives over the course of the movie, squat in a subterranean bunker in a low-elevation slum.”^[5]

Parasite depicts how the Kims slowly, insidiously, and desperately infiltrate the home and lives of the Parks, while monsoons and floods threaten their world. It is a classic “upstairs/downstairs” story set in a modern world of class inequality and the indignities of capitalism (and the seemingly perpetual search for a WiFi signal). Less obviously, it illustrates the very real ways global warming worsens inequality, mirroring the themes – but through very different narrative and cinematic methods – of *Snowpiercer*.



A worldwide box office hit, *Parasite* set a new record for Bong, becoming the first of his films to gross over \$100 million worldwide. It then went on to become the first Korean film to win the top prize, the Palme d’Or, at the Cannes Film Festival and the first non English-language film to win the Academy Award for Best Picture, among numerous other accolades. Although the well-deserved attention it received as a paragon of filmmaking rarely included mentions of its environmental backdrop, *Parasite* is one of the most impactful Cli-Fi Films, with its realistic depiction of modern climate inequality, as brilliantly indicated in one moment: the morning after the deluge that destroys the Kims’ home, the matriarch of the Park family chats on the phone with a friend from the backseat of her chauffeured car. “Did you see the sky today?” she asks. “Crystal clear. Zero air pollution. Rain washed it all away.” Her obliviousness mirrors the denial over climate change that is, unfortunately, the hallmark of our age – as brilliantly depicted in the final film explored in the next chapter (and this text), “Comedies.”



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KNOWLEDGE CHECK

Videos

- Take Shelter – Ending Scene: https://youtu.be/G_LWivXz6YM
- BEASTS OF THE SOUTHERN WILD – Official Trailer: <https://youtu.be/pvqZzSMIZa0>
- First Reformed (2017) – Funeral Song of Michael Mensana: <https://youtu.be/eROsvnr3QZM>
- Parasite – Official Trailer (2019) Bong Joon Ho Film: <https://youtu.be/5xH0HfJHsaY>

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 4. White, Adam (September 16, 2017). "Mother! explained: what does it all mean, and what on earth is that yellow potion?" *The Daily Telegraph*. London, England. Retrieved March 28, 2023.
 5. Goldfarb, Ben (February 28, 2020). "‘Parasite’ As Climate Fiction." living on earth, Public Radio's Environmental News Magazine. Retrieved March 29, 2023.
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1.8: Comedies

Parasite possibly could have been included in this chapter on Cli-Fi Films that – rather incongruously, given the seriousness of the subject matter – harness comedy to communicate their themes around climate change. And certainly other films in this resource include humor, often to provide levity in the midst of extremely serious themes. But the three films highlighted here are rare in the extent to which they view climate change through a comedic lens.

An early entry in this category is a rare (for a Cli-Fi Film) romantic comedy, *The American President* (1996). However, as was common for the earlier Cli-Fi Films, climate change was fairly tangential to the main story line. President Andrew Shepherd (Michael Douglas) pursues Washington newcomer Sydney Ellen Wade (Annette Bening), an environmental lobbyist whose firm is working to pass legislation to substantially reduce carbon dioxide emissions. Romantic and political hijinks ensue as Shepherd jockeys to assist Wade's agenda while at the same time attempting to win the passage of a crime control bill and winning Wade's heart. Although some in Shepherd's party view Wade – who has a past as an environmental activist – as a political liability, romance prevails:



A YouTube element has been excluded from this version of the text. You can view it online here: <https://pb.libretexts.org/fil2/?p=77>

The film may be best known as the inspiration for screenwriter Aaron Sorkin's later, wildly popular and critically acclaimed television drama *The West Wing*. But it also presents Sorkin's vision, via the legislation that Sydney Wade promotes, of a U.S. that could cut climate pollution by one-fifth by 2005. Bening's character tells the president's chief of staff: "It's the burning of fossil fuels that's been mostly responsible for global warming, and the 20% reduction ... is a necessary first step toward arresting the catastrophic greenhouse effect." Unfortunately, this turned out to be way too optimistic.

Over twenty years later, the hyper realistic style of *The American President* was supplanted by new technologies in film in *Downsizing* (2017), starring Matt Damon as Paul Safrânek, who undergoes a procedure to shrink his body so he can start a new life in an experimental community, Leisureland. Ten years before, in order to address overpopulation and global warming, a Norwegian scientist develops "downsizing," an irreversible process that shrinks organic material, reducing people to a height of approximately five inches. While intended to drastically decrease consumption and waste, the first subjects in the experiment discover that an added benefit is that their money goes a lot further when living this downsized existence, and it becomes a global sensation (and don't miss the appearance of a certain actor from the popular series *Ted Lasso* – remember the poster in my media room?):

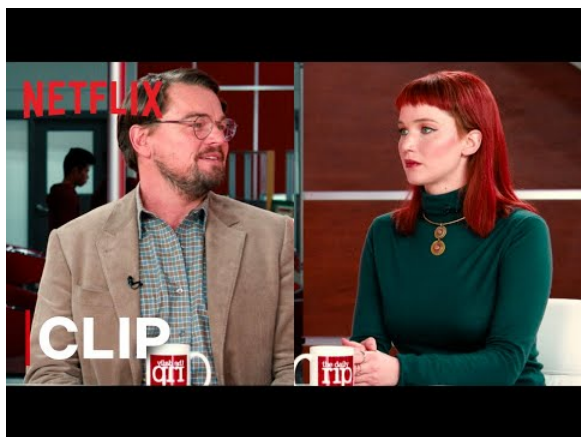


A YouTube element has been excluded from this version of the text. You can view it online here: <https://pb.libretexts.org/fil2/?p=77>

backs out of joining him in downsizing, he finds himself alone until befriendng an impoverished Vietnam activist named Ngoc Lan Tran (Hong Chau), who was shrunk by her government against her will. Through this friendship, Paul discovers that the societal inequities that exist in the “large world” have been duplicated in Leisureland, where service workers like Ngoc Lan live in slums. And in the end, it is discovered that it is too late for downsizing to save the world.

Neither a critical nor box office success, *Downsizing* nonetheless presents a unique possible solution to human-caused climate change, even as it proved ineffective. But films like it contribute to the larger creative, outside-the-box thinking that may eventually lead to more viable solutions.

It is fitting that as we wrap up our exploration of Cli-Fi Films, we return to the first movie mentioned in the introduction to this text. It also happens to be the first explored here that was created for streaming – specifically Netflix. *Don’t Look Up* is a black comedy “[b]ased on real events that haven’t happened – yet” about two astronomers, Kate Dibiasky (Jennifer Lawrence) and Dr. Randall Mindy (Leonardo DiCaprio) attempting to warn humanity of an approaching comet that will destroy the planet. Their warnings fall on deaf ears, from frivolous treatment by the media (see clip below), to denial by NASA’s director, to exploitation for political and financial gain by President Orlean (Meryl Streep) and her staff (including her son/Chief of Staff, Jason, played by Jonah Hill). The film is a damning condemnation of today’s real-world American “idiocracy.”



A YouTube element has been excluded from this version of the text. You can view it online here: <https://pb.libretexts.org/fil2/?p=77>



Poster for *Don’t Look Up*. Copyright is believed to belong to the distributor of the film, Netflix, the publisher of the film or the graphic artist. Used under fair use.

Source: https://en.Wikipedia.org/wiki/Don%27t_Look_Up

The film actually is an allegory for climate change, according to director Adam McKay: “This movie came from my burgeoning terror about the climate crisis and the fact that we live in a society that tends to place it as the fourth or fifth news story, or in some cases even deny that it’s happening, and how horrifying that is, but at the same time preposterously funny.”^[1] Bong Joon-ho, director of *Snowpiercer* and *Parasite*, called *Don’t Look Up* one of his favorite films of 2021, but reviews were mixed. The *San Francisco Chronicle*’s critic praised the film, writing, “*Don’t Look Up* might be the funniest movie of 2021. It’s the most

depressing too, and that odd combination makes for a one-of-a-kind experience... McKay gives you over two hours of laughs while convincing you that the world is coming to an end.”^[2] Others weren’t so impressed; David Rooney of *The Hollywood Reporter* called the film “[a] cynical, insufferably smug satire stuffed to the gills with stars that purports to comment on political and media inattention to the climate crisis but really just trivializes it.”^[3] But the week of its release on Dec. 24, 2021, *Don’t Look Up* was the most-streamed English-language film on Netflix, so trivialized or not, its perspective on the climate crisis was garnering audience attention.^[4]

Scientists also paid attention, with numerous climatologists and climate advocates waxing positive. One remarked, “*Don’t Look Up* is satire. But speaking as a climate scientist doing everything I can to wake people up and avoid planetary destruction, it’s also the most accurate film about society’s terrifying non-response to climate breakdown I’ve seen.”^[5] Laura Hiscott in *physicsworld* stated that “the film brings a beautiful bluntness to the topic in a way that I haven’t seen before in fiction” and praised it for capturing the complexities of climate change.^[6] And climate policy expert Ayana Elizabeth Johnson and McKay co-wrote an op-ed in *The Guardian* advocating for the value of humor in promoting action on climate change, stating: “We can’t just sit back and watch what’s happening to the planet. We are not an audience. Like it or not, we are in this story.”

After sharing sobering statistics on the lack of media coverage on what they term the “climate catastrophe,” McKay and Johnson argue:

Clearly we need to reassess how we’re communicating this massive story. So, *Don’t Look Up* tries to do something that perhaps doesn’t feel natural with a story as dark as climate change: make the audience laugh. Because when people laugh together it gives them perspective, relief and, most of all, a semblance of community. This is not conjecture. Research shows that humor can lower our defenses and make hard truths easier to hear.

Hopefully comedy can help elucidate how our culture of swipes, clicks and likes is taking us further and further away from the one subject we must talk about.

The director and climate expert policy expert end the piece some advice that is worth including here in its entirety (quoting under [fair use](#) for educational purposes):

Maybe some film or gif or TikTok has jostled you to think seriously about what you can do. Specifically you. Well, here’s one way to answer that question: think of a Venn diagram with three overlapping circles. In the first, put what you’re good at. (So, which Avenger are you and what are your specific super powers?) In the second, put what part of the climate challenge you want to work on. (Your mission, should you choose to accept it.) In the third, put what brings you joy. (What, for you, isn’t work because you love it so much?) And then find your way to the epicenter of that [climate action Venn diagram](#) for as many minutes of your life as you can. We don’t all have to do the same thing – in fact we shouldn’t. And if you want some help getting started, we’ve got you covered with some specific suggestions for steps you can take toward a safer planet.

You see, when it comes to climate change, we are all in the writers’ room right now, deciding how the story unfolds and how it ends. And that story can be funny, dire, hopeful or all of the above. But not every story is guaranteed a happy ending, even though that’s mostly what we see in movies. So we can’t just sit back and watch. We are not an audience. Like it or not, we are in this story.^[7]

I couldn’t have put it better. So I will end this chapter here and save a few words of my own for the conclusion, a consideration of what’s next for Cli-Film Films.



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KNOWLEDGE CHECK

Videos

The American President – Stay Away from Dupont Circle: <https://youtu.be/L2GqDrlZuGU>

Downsizing (2017) – Official Trailer – Paramount Pictures: <https://youtu.be/UCrBICYM0yM>

Leonardo DiCaprio & Jennifer Lawrence’s Interview Goes Wrong! | Don’t Look Up | Netflix India: <https://youtu.be/RiJdBAOtL5Y>

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 2. LaSalle, Mick (December 7, 2021). "Review: Leonardo DiCaprio and Jennifer Lawrence star in very funny, very depressing 'Don't Look Up.'" *San Francisco Chronicle*. Archived from the original on December 10, 2021. Retrieved March 31, 2023. [1.08: Comedies#return-footnote-77-2](#)
 3. Rooney, David (December 7, 2021). "Leonardo DiCaprio and Jennifer Lawrence in Adam McKay's 'Don't Look Up': Film Review." *The Hollywood Reporter*. Archived from the original on December 9, 2021. Retrieved March 31, 2023. [1.08: Comedies#return-footnote-77-3](#)
 4. Don't Look Up. Wikipedia. Retrieved April 2, 2023. [1.08: Comedies#return-footnote-77-4](#)
 5. Kalmus, Peter (December 29, 2021). "I'm a climate scientist. Don't Look Up captures the madness I see every day." *The Guardian*. London, United Kingdom. Archived from the original on December 29, 2021. Retrieved April 2, 2023. [1.08: Comedies#return-footnote-77-5](#)
 6. Hiscott, Laura (January 17, 2022). "Laughing in the face of danger: how Netflix's Don't Look Up captures climate complexity." *physicsworld*. January 17, 2022. Archived from the original on February 5, 2022. Retrieved April 2, 2023. [1.08: Comedies#return-footnote-77-6](#)
 7. MacKay, Adam, and Johnson, Ayana Elizabeth (January 13, 2022). "Why our secret weapon against the climate crisis could be humour." *The Guardian*. Archived from the original on February 14, 2022. Retrieved April 3, 2022. [1.08: Comedies#return-footnote-77-7](#)
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1.9: Conclusion - The Future of Climate Fiction Films



“Climate Change – Marsh Erosion (2)” by ChesapeakeBayEO
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Just yesterday, I read an article in *The Guardian* about an English couple, Simon and Genny Measures, who are, as the author put it, the country’s “latest climate crisis refugees.” Rising tides and storms are destroying the coast in their village of Hemsby, forcing residents to be permanently evacuated, their picturesque seaside chalets deemed unsafe and demolished by the local government. Another couple, Malcolm Debbage and his partner, Frances Bolton, were one of eleven households in Hemsby to lose their homes during the “beast from the east” in 2018. Debbage states, “The people of Hemsby are unacknowledged victims of climate change”; another resident warned, ““We are the canary in the coalmine. What is happening here could happen to any major coastal community around the UK.”^[1] It already is happening elsewhere on our planet.

As the climate crisis accelerates exponentially, I wish I could state that there is no future for Cli-Fi Films because humans will soon manage and even resolve the crisis. But obviously I can’t, and if the increasing numbers of not only films but books and series are any indication, creative grappling of this existential problem to imagine solutions is ramping up. (Tristan Bove in earth.org claims that “[c]limate change fiction officially went mainstream in 2021.”^[2]) To wit, some notable examples of books and series from the past few years include:

Books

The Ministry for the Future, by Kim Stanley Robinson

The High House by Jessie Greengrass

Something New Under the Sun by Alexandra Kleeman

The New Wilderness by Diane Cook

Migrations by Charlotte McConaghy

Termination Shock by Neal Stephenson

Diatomea by Núria Perpinyà

A Children’s Bible by Lydia Millet

Streaming and Network Series

Extrapolations (Apple TV+)

Reservation Dogs (Hulu)

Abbott Elementary (ABC)

Grey’s Anatomy (ABC)

The Rig (Amazon Prime)

Frontera Verde (Netflix)

Additionally, as I write this, a polemical new film, *How to Blow Up a Pipeline*, has arrived in theatres. I have yet to see it, but apparently the heist film — set here in my home state of Texas — considers whether violence against the fossil fuel industry is justified. It reportedly holds up the collaborative activism of the central characters as a successful model for combating climate change. Sounds controversial!^[3]

In 2014, Noah Gittell in *The Atlantic* argued that Cli-Fi Films like *Interstellar* (see **Post-Climapocalyptic Dystopias**), the subject of the article, come up short in offering solutions to the climate crisis. “Why does Hollywood keep getting the environment wrong? Maybe it’s for the same reasons that politicians have been unable to fix it: Because the ways that climate change and other environmental crises can be addressed are not dramatic or awe-inspiring. The dangers of doing nothing are horrifyingly cinematic, but the solutions are prosaic and dull.”^[4] And just last week, Tyler Harper in *BBC Culture* argued that climate fiction – either literature or film – does more harm than good, its often bleak storytelling and dire warnings sparking a kind of paralysis instead of inspiring readers/viewers to take action. He states, “the genre is also a victim of the unreasonable expectations of both members of the media and academics who insist that “cli-fi” is a form of climate activism,” and points to a lack of evidence that the genre spurs action.^[5]

I agree with Harper that we so far lack empirical evidence of the ability of climate fiction to enact change. But I have more faith in the creative abilities of filmmakers (certainly more than I have in politicians) and hold out hope that their work may contribute to solutions to this thorny problem. The imagination is a potent tool, unlimited in its capabilities. With this optimism in mind, I’d like to close this text by turning to a non-Cli-Fi Film and quoting Tom Hanks as Walt Disney (one of cinema’s most brilliant “imagineers”) in *Saving Mr. Banks* (2013): “. . . that’s what we storytellers do. We restore order with imagination. We instill hope again and again and again.” Here is to hope, restoring order, saving the planet and its inhabitants – and to the power of the storytellers. May they inspire you to action.



“hope” by ForestWander.com is licensed under CC BY-SA 2.0.

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1. Barkham, Patrick (April 3, 2023). “‘Losing your home is a massive thing’: how the climate crisis came to Norfolk.” *The Guardian*. Retrieved April 4, 2023. [1.09: Conclusion - The Future of Climate Fiction Films#return-footnote-81-1](#)
 2. Bove, Tristan (January 14, 2022). “5 Great Climate Change Fiction Novels.” earth.org. Retrieved April 4, 2023. [1.09: Conclusion - The Future of Climate Fiction Films#return-footnote-81-2](#)
 3. Shepard, Susan Elizabeth (April 21, 2023). “A Radical New Eco-Thriller Film Asks: Does the Climate Crisis Justify Blowing Up an Oil Pipeline?” Retrieved April 24, 2023. [1.09: Conclusion - The Future of Climate Fiction Films#return-footnote-81-3](#)
 4. Gitell, Noah (November 15, 2014). “Interstellar: Good Space Film, Bad Climate-Change Parable.” *The Atlantic*. Retrieved April 4, 2023. [1.09: Conclusion - The Future of Climate Fiction Films#return-footnote-81-4](#)
 5. Harper, Tyler (April 18, 2023). “What The Last of Us, Snowpiercer and 'climate fiction' get wrong.” *BBC Culture*. Retrieved April 24, 2023. [1.09: Conclusion - The Future of Climate Fiction Films#return-footnote-81-5](#)
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1.10: Appendix - The Films

3

Appendix: The Films

Judith Sebesta and Ph.D.

Below is a list of the Cli-Fi Films discussed in any detail in this resource, with links to more information in Wikipedia (when available).

3. Cli-Fi Films

Soylent Green (1973) [https://en.Wikipedia.org/wiki/Soylent_Green]

Day of the Animals (1977) [https://en.Wikipedia.org/wiki/Day_of_the_Animals]

4. Humans/"Civilization" (bad) vs. Aliens/Nature/Indigenous Populations (good)

FernGully: The Last Rainforest (1992) [https://en.Wikipedia.org/wiki/FernGu...st_Rainforest]

Princess Mononoke (1997) [https://en.Wikipedia.org/wiki/Princess_Mononoke]

The Day the Earth Stood Still (2008) [https://en.Wikipedia.org/wiki/The_Da...h_Stood_Still]

Avatar (2009) [<https://en.Wikipedia.org/wiki/Avatar>]

Twister (1996) [[https://en.Wikipedia.org/wiki/Twister_\(1996_film\)](https://en.Wikipedia.org/wiki/Twister_(1996_film))]

5. Post-Climapocalyptic Dystopias

Waterworld (1995) [<https://en.Wikipedia.org/wiki/Waterworld>]

A.I. Artificial Intelligence (2001) [https://en.Wikipedia.org/wiki/A.I._A..._Intelligence]

The Day After Tomorrow (2004) [https://en.Wikipedia.org/wiki/The_Day_After_Tomorrow]

The Road (2009) [[https://en.Wikipedia.org/wiki/The_Road_\(2009_film\)](https://en.Wikipedia.org/wiki/The_Road_(2009_film))]

Hell (2011) [[https://en.Wikipedia.org/wiki/Hell_\(2011_film\)](https://en.Wikipedia.org/wiki/Hell_(2011_film))]

The Colony (2013) [[https://en.Wikipedia.org/wiki/The_Colony_\(2013_film\)](https://en.Wikipedia.org/wiki/The_Colony_(2013_film))]

Snowpiercer (2014) [<https://en.Wikipedia.org/wiki/Snowpiercer>]

Interstellar (2014) [[https://en.Wikipedia.org/wiki/Interstellar_\(film\)](https://en.Wikipedia.org/wiki/Interstellar_(film))]

Mad Max: Fury Road (2015) [https://en.Wikipedia.org/wiki/Mad_Max:_Fury_Road]

6. Heroes & Deus Ex Machina

The Hunger Games (2012) [https://en.Wikipedia.org/wiki/The_Hunger_Games]

Kingsman: The Secret Service (2014) [https://en.Wikipedia.org/wiki/Kingsm...ecret_Service]

Avengers: Infinity War (2018) [https://en.Wikipedia.org/wiki/Avengers:_Infinity_War]

Avengers: Endgame (2019) [https://en.Wikipedia.org/wiki/Avengers:_Endgame]

7. Psychological Thrillers

The Fire Next Time (2005)

Take Shelter (2011) [https://en.Wikipedia.org/wiki/Take_Shelter]

Beasts of the Southern Wild (2012) [https://en.Wikipedia.org/wiki/Beasts...Southern_Wild]

First Reformed (2017) [https://en.Wikipedia.org/wiki/First_Reformed]

Mother! (2017) [<https://en.Wikipedia.org/wiki/Mother!>]

Parasite (2019) [[https://en.Wikipedia.org/wiki/Parasite_\(2019_film\)](https://en.Wikipedia.org/wiki/Parasite_(2019_film))]

8. Comedies

The American President (1996) [https://en.Wikipedia.org/wiki/The_American_President]

Downsizing (2017) [[https://en.Wikipedia.org/wiki/Downsizing_\(film\)](https://en.Wikipedia.org/wiki/Downsizing_(film))]

Don't Look Up (2021) [https://en.Wikipedia.org/wiki/Don%27t_Look_Up]

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Closing Credits



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Guess who deserves an acknowledgement?

YOU.

So download this badge to display your new knowledge of Cli-Fi Films in your learning portfolio, on LinkedIn, on your Insta, or anywhere you shout out your accomplishments! (Right click to save it for yourself or simply drag and drop to your desktop).



Congratulations! And thanks again for joining me on this exploration of Climate Change in Narrative Film. I hope you enjoyed it.

Index

A

accessibility

[Accessibility Statement](#)

accessible education

[InfoPage](#)

acknowledgements

[Opening Credits](#)

activism

[1.9: Conclusion - The Future of Climate Fiction Films](#)

adaptation

[Introduction- Setting the Scene](#)

adaptive textbooks

[InfoPage](#)

addiction

[1.7: Psychological Thrillers](#)

An Inconvenient Truth

[1.2: Why Narrative Film?](#)

animation

[1.4: Humans \(bad\) vs. Aliens/Nature/Indigenous Populations \(good\)](#)

antiheroes

[1.6: Heroes and Deus Ex Machina](#)

awareness

[1.4: Humans \(bad\) vs. Aliens/Nature/Indigenous Populations \(good\)](#)

C

captions

[Accessibility Statement](#)

change

[1.4: Humans \(bad\) vs. Aliens/Nature/Indigenous Populations \(good\)](#)

character study

[1.6: Heroes and Deus Ex Machina](#)

[1.7: Psychological Thrillers](#)

cinematic analysis

[1.10: Appendix - The Films](#)

civilization

[1.10: Appendix - The Films](#)

CliFi

[1.10: Appendix - The Films](#)

climate

[1.4: Humans \(bad\) vs. Aliens/Nature/Indigenous Populations \(good\)](#)

climate change

[Opening Credits](#)

[Introduction- Setting the Scene](#)

[1: Chapters](#)

[1.1: Climate Change Science The Facts](#)

[1.2: Why Narrative Film?](#)

[1.3: Cli-Fi Films](#)

[1.5: Post-Climapocalyptic Dystopias](#)

[1.6: Heroes and Deus Ex Machina](#)

[1.7: Psychological Thrillers](#)

[1.8: Comedies](#)

[1.9: Conclusion - The Future of Climate Fiction Films](#)

climate crisis

[1.8: Comedies](#)

climate fiction

[Introduction- Setting the Scene](#)

[1: Chapters](#)

[1.3: Cli-Fi Films](#)

[1.9: Conclusion - The Future of Climate Fiction Films](#)

[Films](#)

[1.10: Appendix - The Films](#)

climate mitigation

[1.1: Climate Change Science The Facts](#)

climate refugees

[1.5: Post-Climapocalyptic Dystopias](#)

climate science

[Introduction- Setting the Scene](#)

[1.1: Climate Change Science The Facts](#)

CO2 emissions

[1.1: Climate Change Science The Facts](#)

collaborative learning

[InfoPage](#)

comedy

[1.8: Comedies](#)

contemporary cinema

[1.7: Psychological Thrillers](#)

creative commons

[Opening Credits](#)

creativity

[1.9: Conclusion - The Future of Climate Fiction Films](#)

cultural commentary

[1.3: Cli-Fi Films](#)

[1.5: Post-Climapocalyptic Dystopias](#)

curriculum development

[InfoPage](#)

[About the Auteur*](#)

D

digital education

[About the Auteur*](#)

distance education

[About the Auteur*](#)

documentaries

[1.2: Why Narrative Film?](#)

dystopia

[1.5: Post-Climapocalyptic Dystopias](#)

[1.6: Heroes and Deus Ex Machina](#)

[1.10: Appendix - The Films](#)

dystopian films

[1.3: Cli-Fi Films](#)

dystopias

[1: Chapters](#)

E

ecological collapse

[1.5: Post-Climapocalyptic Dystopias](#)

ecological disaster

[1.5: Post-Climapocalyptic Dystopias](#)

ecological themes

[1.3: Cli-Fi Films](#)

ecology

[1.4: Humans \(bad\) vs. Aliens/Nature/Indigenous Populations \(good\)](#)

education

[Accessibility Statement](#)

[Introduction- Setting the Scene](#)

educational film

[1.2: Why Narrative Film?](#)

educational technology

[InfoPage](#)

entertainment

[1.8: Comedies](#)

environmental

[1.4: Humans \(bad\) vs. Aliens/Nature/Indigenous Populations \(good\)](#)

[1.10: Appendix - The Films](#)

environmental awareness

[Introduction- Setting the Scene](#)

environmental comedy

[1.8: Comedies](#)

environmental crisis

[1.9: Conclusion - The Future of Climate Fiction Films](#)

environmental disaster

[1.3: Cli-Fi Films](#)

environmental education

[1.1: Climate Change Science The Facts](#)

extreme weather

[1.1: Climate Change Science The Facts](#)

[1.5: Post-Climapocalyptic Dystopias](#)

F

feature film

[1.2: Why Narrative Film?](#)

film analysis

[1.3: Cli-Fi Films](#)

[1.6: Heroes and Deus Ex Machina](#)

[1.7: Psychological Thrillers](#)

[1.8: Comedies](#)

film genres

[1.2: Why Narrative Film?](#)

filmmaking

[1.2: Why Narrative Film?](#)

[1.7: Psychological Thrillers](#)

films

[1.4: Humans \(bad\) vs. Aliens/Nature/Indigenous Populations \(good\)](#)

G

global warming

[Introduction- Setting the Scene](#)

[1.1: Climate Change Science The Facts](#)

greenhouse gases

[1.1: Climate Change Science The Facts](#)

Greta Thunberg

[1.2: Why Narrative Film?](#)

H

heroes

[1: Chapters](#)

[1.6: Heroes and Deus Ex Machina](#)

higher education

[About the Auteur*](#)

hope

[1.9: Conclusion - The Future of Climate Fiction Films](#)

humans

[1: Chapters](#)

I

images

[Accessibility Statement](#)

indigenous land acknowledgement

[Opening Credits](#)

indigenous populations

[1: Chapters](#)

[1.10: Appendix - The Films](#)

innovation

[About the Auteur*](#)

issues

[1.4: Humans \(bad\) vs. Aliens/Nature/Indigenous Populations \(good\)](#)

J

Judith Sebesta

[About the Auteur*](#)

L

LibreTexts

[InfoPage](#)

literature

[1.9: Conclusion - The Future of Climate Fiction Films](#)

M

mature audience

[Opening Credits](#)

meta

[1.4: Humans \(bad\) vs. Aliens/Nature/Indigenous Populations \(good\)](#)

moral ambiguity

[1.6: Heroes and Deus Ex Machina](#)

movies

[1.8: Comedies](#)

N

narrative film

[1.2: Why Narrative Film?](#)

narrative structure

[1.3: Cli-Fi Films](#)

[1.7: Psychological Thrillers](#)

nature

[1: Chapters](#)

[1.10: Appendix - The Films](#)

navigation

[Accessibility Statement](#)

O

OER

[InfoPage](#)

opening credits

[Opening Credits](#)

P

policy

[About the Auteur*](#)

postsecondary learners

[Opening Credits](#)

psychological drama

[1.7: Psychological Thrillers](#)

psychological thrillers

[1.7: Psychological Thrillers](#)

[1.10: Appendix - The Films](#)

R

renewable energy

[1.1: Climate Change Science The Facts](#)

S

satire

[1.8: Comedies](#)

science

[1: Chapters](#)

science fiction

[1.5: Post-Climapocalyptic Dystopias](#)

secondary learners

[Opening Credits](#)

social change

[Introduction- Setting the Scene](#)

social commentary

[1.7: Psychological Thrillers](#)

social issues

[1.3: Cli-Fi Films](#)

solutions

[1.9: Conclusion - The Future of Climate Fiction Films](#)

storytelling

[1.2: Why Narrative Film?](#)

[1.8: Comedies](#)

[1.9: Conclusion - The Future of Climate Fiction Films](#)

student success

[About the Auteur*](#)

survival

[1.6: Heroes and Deus Ex Machina](#)

sustainability

[1.1: Climate Change Science The Facts](#)

[1.4: Humans \(bad\) vs. Aliens/Nature/Indigenous Populations \(good\)](#)

[1.5: Post-Climapocalyptic Dystopias](#)

sustainable future

[Introduction- Setting the Scene](#)

T

The Hunger Games

[1.6: Heroes and Deus Ex Machina](#)

theatre studies

[About the Auteur*](#)

transcripts

[Accessibility Statement](#)

U

usability

[Accessibility Statement](#)

V

videos

[Accessibility Statement](#)

W

web content

[Accessibility Statement](#)

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 - [Table of Contents](#) - [Undeclared](#)
 - [Licensing](#) - [CC BY-NC-SA 4.0](#)
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 - [Accessibility Statement](#) - [CC BY-NC-SA 4.0](#)
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 - [1: Chapters](#) - [CC BY-NC-SA 4.0](#)
 - [1.1: Climate Change Science The Facts](#) - [CC BY-NC-SA 4.0](#)
 - [1.2: Why Narrative Film?](#) - [CC BY-NC-SA 4.0](#)
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 - [1.5: Post-Climapocalyptic Dystopias](#) - [CC BY-NC-SA 4.0](#)
 - [1.6: Heroes and Deus Ex Machina](#) - [CC BY-NC-SA 4.0](#)
 - [1.7: Psychological Thrillers](#) - [CC BY-NC-SA 4.0](#)
 - [1.8: Comedies](#) - [CC BY-NC-SA 4.0](#)
 - [1.9: Conclusion - The Future of Climate Fiction Films](#) - [CC BY-NC-SA 4.0](#)
 - [1.10: Appendix - The Films](#) - [CC BY-NC-SA 4.0](#)
 - [Back Matter](#) - [CC BY-NC-SA 4.0](#)
 - [Closing Credits](#) - [CC BY-NC-SA 4.0](#)
 - [Index](#) - [CC BY-NC-SA 4.0](#)
 - [Glossary](#) - [CC BY-NC-SA 4.0](#)
 - [Detailed Licensing](#) - [Undeclared](#)