



A Review of Climate Fiction (Cli-Fi) Cinema ... Past and Present

By Michael Svoboda | Yale Climate Connections – Wed., Oct. 22, 2014 | First in 5-Part Series

Will this fall mark the beginning of serious ‘cli-fi’ in cinema? Can action-relevant climate change messages thrive in popular feature films?



Cinema is in its serious season.

After the autumnal equinox, the number of character-based and/or epic dramas appearing in theatres generally increases. It may be that Americans become more somber as the days grow shorter — or because nominations for Academy Awards are due in early January. Over the past four years, three-quarters of the nominees for the Academy’s highest accolade — Best Picture — have premiered in the final quarter, a third in December alone.

Fictional films about climate change (cli-fi), by contrast, have thus far been summer fare. Ten years ago, *The Day After Tomorrow* (*Day After*) opened on Memorial Day weekend. This year’s additions to the cli-fi roster, *Snowpiercer* and *Into the Storm*, opened in June and August respectively.

That may be about to change. Christopher Nolan’s new film, *Interstellar*, will open on Nov. 7. The title clearly points to the stars, but the trailers begin with deteriorating environmental conditions on Earth, at least partly because of climate change. Is this the beginning of “serious” cli-fi?



That question will rise again later in this series, after working back through the cli-fi films of the last decade to *Day After*. In revisiting this material, there will be surprises—and spoilers. Some reviews of *Snowpiercer* referred to it as a second *Day After*; it’s actually the ninth. And *Day After* itself was inspired by a book for which its authors claim interstellar authority.

Is there a logic, a pattern, to how these films get made? In attempting to answer this question, this series will pose a question climate change communicators will do well to consider: Can action-relevant messages about climate change survive translation into feature films?

Passenger-Train Earth

By the summer of 2014, vaguely environmental sentiments had already been voiced in two major releases, *Noah* and *Godzilla*. *Noah* expressed doubt that humans could live in nature without despoiling it; *Godzilla* presumed nature would balance whatever humans did — if sometimes in monstrous ways. These are not mantras for sustainability.

Snowpiercer plowed into theaters in June, just as *Godzilla* was leaving. But as a result of a dispute with his American distributors, [director Joon-ho Bong's film](#) was only shown in smaller art-houses, the sort of venues where foreign and indie films live. Thus [the American box office](#) for *Snowpiercer*, now available on dvd, is much lower than its foreign take, and lower than the domestic take for films that received far less acclaim.

Snowpiercer is the name of the train that circum-locomotes the globe each year, its powerful engine and sleek shape piercing any snow that might pile atop its rails in this icy landscape. Inside this endlessly migrating machine, nearing the completion of its 17th annual circuit as the film begins, lives a diverse remnant of humanity.

In this and in many other respects, *Snowpiercer* is better than its original source material. The monochromatic [French graphic novel](#) by Jacques Lob, Benjamin Legrand, and Jean-Marc Rochette includes only Caucasian characters. And their ice-age landscape is the result of black-and-white malice, “a climate bomb.” (Something like a nuclear winter has darkened the skies.) In Joon-ho Bong's film, the ice age is the unintended consequence of a too-successful attempt to offset global warming by spraying aerosols in the upper atmosphere.

In both the book and film, however, the train is segmented by class. The wealthy live in spacious compartments near the front; the poor live crammed atop one another in dark and grimy cars at the rear. After years of neglect and abuse, rebels (whose leaders are played by Chris Evans, John Hurt, and Octavia Spencer) decide to fight their way to the front. In this effort they are aided by a “Kronole”-sniffing engineer (played by Kang-ho Song) who designed *Snowpiercer's* security system.

After capturing their immediate overseer (Tilda Swinton), the rebels claw their way forward, suffering losses with each advance. When a battered remnant finally reaches the engine, powered by an almost-perpetual motion machine, *Snowpiercer's* designer, Willard (Ed Harris), explains that their rebellion had been part of a larger plan: a necessary culling of the population and a practicum for his successor, the surviving leader of the rebels (Chris Evans).

And now the perfectly correct number of human beings, all in their proper places, all adding up to what? Humanity. The train is the world; we passengers humanity.

In the graphic novel, the rebel accepts Willard's offer; he becomes the keeper of the engine. In the final scenes of the movie, by contrast, viewers learn that the Korean engineer's obsession with Kronole has been tactical rather than pharmaceutical: it's an explosive. Having observed signs that Earth has warmed in the 17 years since *Snowpiercer* began circling it, the engineer blows open one of the tightly-sealed outer doors, derailing the train in the process. Only two survivors emerge from the wrecked train cars: the Korean engineer's teenage daughter (Ah-sung Ko) and an African-American boy (Marcanthonee Reis).



Into the Storm and Climate Selfies

Strangely missing from *Snowpiercer*, a film set in the late 2030s, is something ubiquitous in *Into the Storm*: digital recording technology. In this 21st century update and knockoff of *Twister*, everyone has a smartphone, and many have sophisticated digital video cameras. Trading on the film craft of *Blair Witch Project* and *Cloverfield*, every scene of this movie, written by John Swetnam and directed by Steven Quale, purports to be some character's personal video record of that moment.

Twister (1996) followed an amiable group of scientists as they tracked tornados through central Oklahoma, hoping to place a barrel of advanced instruments in the path of a funnel. The heavily equipped crew of *Into the Storm* is focused on getting good footage, "weather porn," that can be assembled into a documentary and then sold to a cable network.

Weather models take these storm trackers to Silverton, a small Oklahoma town where the local high school is preparing for an afternoon graduation ceremony. After a few false starts, funnels begin to form and then, ominously, merge. The town is destroyed by the F5 tornado that results, so big that those over whom it passes experience several seconds of calm while in its hurricane-like eye.

Twister made no claims about climate change. The storm tracker (Sarah Wayne Callies) in *Into the Storm* hints at it when she observes that weather patterns are changing. "What used to be a once-in-a-lifetime storm seems to be happening once a year now." And, she then acknowledges, tornadoes may "start shifting to places they've never been before . . . like Los Angeles, or Chicago, or even London." The reference to Los Angeles is likely a nod to the tornado sequence in *Day After*, from which the special effects team behind *Inside the Storm* almost certainly learned some tricks. (Recently [published research](#) lends credence to this clustering of tornadoes.)



Tornadoes rip through Los Angeles early in TDAT. One multi-funnel sequence from Into the Storm.

Reviews of *Into the Storm*, scheduled for dvd release on November 18, have been decidedly mixed: high marks for special effects, low marks for plot, script and acting. But meteorologists who revere *Twister* have made their peace with *Into the Storm*. Seven contributors to [Capital Weather Gang](#) recommended it. And Mashable climate and weather reporter Andrew Freedman confessed, "[Into the Storm Is Pure Weather Porn. And That's OK.](#)"

Although skeptical about the film as a whole, [Dorothy Woodend](#), film reviewer for The Tyee, says that *Into the Storm* gets one thing about human nature exactly right: "the tendency of humans to stand in the path of imminent disaster and destruction and simply watch it happen. . . . Instead of running away, they film [it]."

One leaves *Into the Storm* convinced that every impact of climate change will be exhaustively documented. When it affects them personally, humans will make and post videos of their experience. “Adapting” thus means making sure one’s smartphone is fully charged before the hurricane, surge, thunderstorm, flood, heatwave, tornado, drought, blizzard, freeze, or migrating virus hits. Those who survive will then rebuild their lives right in the path of that same danger, as the citizens of Silverton vow to do in their final video testimonials.

An Arm and a Leg, or Euphoria over Dystopia

Into the Storm offers, sadly, a realistic depiction of how humans have reacted, and will likely continue to react, to the extreme weather risks linked to a warmer climate. Life will go on — on Facebook, Instagram, and YouTube.

By contrast the implicit message of *Snowpiercer* is that responding to climate change will ultimately crash the system, wiping out everything in the process.

Humans will not act to reduce the causes.

When they respond to the consequences, the results will be catastrophic.

The response to the catastrophe will be oppressive.

The only possible response to the oppression is further destruction.

Which will leave an Asian Eve and an African Adam to repopulate an ice-bound Earth — if they are not eaten by the polar bear they see on the mountain ridge in the final frames of the film.

Why then the broad acclaim for *Snowpiercer*, at [Daily Kos](#), [Grist](#), [The New York Times](#), and [Salon](#) (Joe Romm at [Climate Progress](#) and Ann Hornaday at [The Washington Post](#) bucked this trend.)

One example of Joon-ho Bong’s real genius is the character of Gilliam (John Hurt), who is missing an arm and a leg. Initially, viewers infer that Gilliam lost them to the cold, or they were hacked off as punishment. Only at the end of the film is it explained that Gilliam sacrificed his limbs, when anarchy and want ruled the rear of the train, to prevent the killing of children for food.

Inventing a new circle of hell, as Bong does with his striking visuals and world-spinning stories, is a praiseworthy artistic accomplishment. But it is not at all clear that one can reverse-engineer solutions from such a broken world.

Next: **Ice-Fi: The Motion Pictur-Ice-sque Legacy of *The Day After Tomorrow***

Michael Svoboda, Ph.D., is an Assistant Professor of Writing at The George Washington University with a long interest in climate change communications.

<http://www.yaleclimateconnections.org/2014/10/a-review-of-climate-fiction-cli-fi-cinema-past-and-present/>



Ice-Fi: The Motion Pictur-Ice-sque Legacy of *The Day After Tomorrow*

By Michael Svoboda | Yale Climate Connections – Wed., Oct. 29, 2014 | Second in 5-Part Series



It's Day After meets...a whole list of films based at least in part on its success. But is humans' affinity for this abrupt-ice-age vision a challenge to be overcome?

Early in [The Player](#), Robert Altman's 1992 dark satire of Hollywood, a young studio executive (Tim Robbins) fields pitches from filmmakers. He sums up their descriptions by checking off the genres and emotions in play. They come back with the names of similar, notably successful, movies.

So it's a kind of psychic, political thriller, comedy with a heart. With a heart. Yeah. Not unlike Ghosts meets Manchurian Candidate.

In an e-mail exchange, a film editor who insisted on anonymity confirmed the logic underlying this fictional exchange: "I'm not a Studio Suit that has the power to greenlight movies but ... there are some givens: If an idea works, [like] showing cold in [The Day after Tomorrow](#) (*Day After*), look for more scripts that show the exact same thing."

Day After did work — with a worldwide [box office](#) of nearly \$550 million. And in the last decade, at least eight production teams pitched stories based on that success. Here's how those films might be described, *Player* fashion.

2014 — [Snowpiercer](#) (worldwide theatrical release) — Former luxury train rolling through an ice-age landscape, angry passengers in coach: It's *Day After* meets [Murder on the Orient Express](#). (Yes, there's a graphic novel behind Joon-ho Bong's screenplay, but *Day After* clearly influenced his depiction of the new ice age.)

2013 — [100 Degrees Below Zero](#) (straight to dvd in US) — College-age brother and sister wander through Paris, waiting for their father and new stepmother to rescue them, as ash from an erupting Icelandic volcano plunges the world into an ice age: It's *Day After* meets [Volcano](#) meets [Midnight in Paris](#).

2013 — [The Colony](#) (theatrical release in Canada) — Geoengineering program goes too far, plunging planet into an ice-age — and savagery: Here, think *Day After* meets [Mad Max: Beyond the Thunderdome](#).

2010 — [Ice 2020](#) (British TV mini-series) — Construction of an oil drilling platform in the Arctic, without adequate safeguards, destabilizes the North Atlantic Current, plunging the world into an ice age: It's *Day After* meets [Deepwater Horizon](#). (Screenwriters also take note of significant events in the real world.)

2010 — [*Ice Quake*](#) (TV movie) — Methane seeps destabilize the geology beneath an Alaska town, flash-freezing machines and people when rifts release the pent-up gas: It's *Day After* meets [*Northern Exposure*](#).

2010 — [*Arctic Blast*](#) (Australian TV) — Rifts in the ozone layer allow in super-chilled air, freezing the planet: *Day After* meets [*On the Beach*](#).

2009 — [*Ice Twisters*](#) (straight to dvd) — Weather experiment goes awry, freezing the planet: Think *Day After* meets [*Twister*](#).

2006 — [*Absolute Zero*](#) (straight to dvd) — A shift in Earth's magnetic field plunges planet, even Miami, into a deep freeze: It's *Day After* meets [*Miami Vice*](#).

An Ice Age of One's Own

Success spurs imitators. But eight?

Climate science itself may be a factor in this burst of "Ice-Fi," for it provides a steady stream of material with which filmmakers can tell slightly different stories. Each of these films experimented with a different explanation for possible changes in Earth's net average temperature: variations in Earth's orbit, tilt, or magnetic field (*Absolute Zero*); density of cloud cover (*The Colony*); aerosols or particles in the atmosphere, whether natural (*100 Degrees Below Zero*) or manmade (*Snowpiercer*); methane released from melting tundra (*Ice Quake*), and changes in the distribution of heat through the atmosphere and oceans (*Day After* and *Ice 2020*). *Arctic Blast* played on popular misunderstandings of the ozone layer.

Another factor may be geography. *Day After* focused most of its visual special effects on New York City. *Ice 2020*, the three-hour UK miniseries, offered an ice-age portrait of London. *100 Degrees Below Zero*, an amusingly bad example of the genre, spent its limited special-effects budget on damaging iconic landmarks of Paris. *Arctic Blast* includes a few visuals of Australia. And *The Colony* has Canadian roots. In short, filmmakers may be marketing local versions of this particular apocalypse; each country (or major city) can have an ice age of its own.



Ice-Age New York City / Day After; London / Ice 2020; Paris / 100° Below Zero; view from Snowpiercer

Which suggests a third factor: An ice-world is beautiful, frightening, and high contrast. It's much harder to visualize the risks of a gradual 2 to 4 degree rise in temperature than a sudden 40 degree, 50 degree or more drop. "Hollywood plays to easy fears," the film editor explained in the previously mentioned e-mail, "and people are as afraid of freezing to death as they are of sharks and airplane crashes. . . . Heat causes the antithesis of action, dead calm."

Climate scientist [Stefan Rahmstorf](#) in an e-mail exchange offered a complementary view: "Snow and ice are beautiful and fascinating substances; there is something deeply romantic about being locked in snow and ice (think of the NY public library in *The Day After Tomorrow*), great stuff for cinema. Making a film about a hot climate is probably harder."

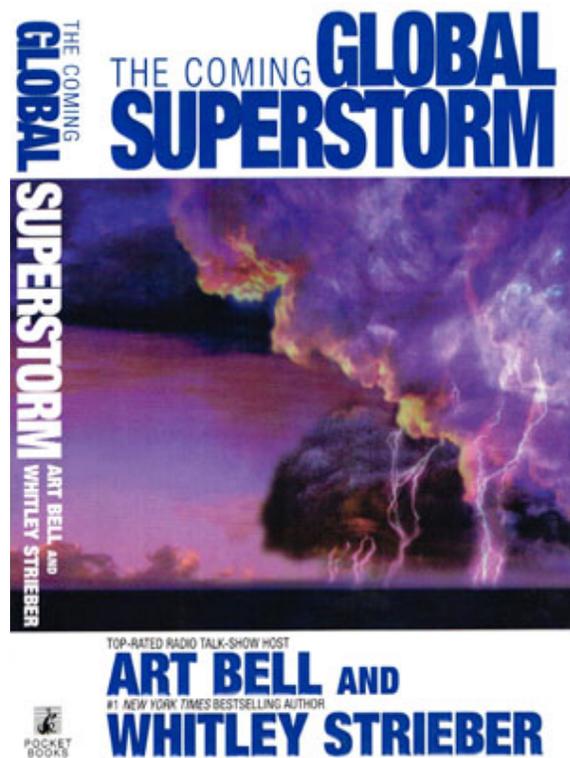
In other words, one big change, like ice-sheets enveloping the world, is more easily associated with climate than lots of smaller changes, which are more readily seen merely as weather. Thus the shift from temperate to Arctic conditions may be both the most dramatic and most immediately intelligible option available to filmmakers.

And there is some precedence for this. In e-mail exchanges, [Mike Hulme](#), author of *Why We Disagree About Climate Change* (2009) and *Can Science Fix Climate Change?* (2014), first confirmed the general point made above — “ice . . . offers a more dramatic and material symbol of climate change (cooling) than anything associated with heating” — and then pointed to an historical example. For an article on late 19th century depictions of historic climate change in Northern Europe, geographer [Stefan Bronnimann](#) collected drawings and photographs of well-known glaciers, on which artists had painted palm trees to suggest the region’s much warmer pre-historic climate. The paradoxical juxtaposition of Arctic and tropical elements made these images quite popular.

From the Icy Cold of Space

But how did the director of *The Day After Tomorrow*, [Roland Emmerich](#), who had no model to imitate, come up with his original idea for an abrupt-ice-age version of climate change?

In the publicity materials for *Day After*, Emmerich, whose [first film](#) was about military manipulation of a space lab’s weather experiments, recounted a fateful walk through a bookstore in North Carolina, where he was then filming *The Patriot* (2000): “I found this book, *The Coming of the Global Superstorm*, and I read it. . . . and I said. ‘Hmmm, this sounds like a movie.’”



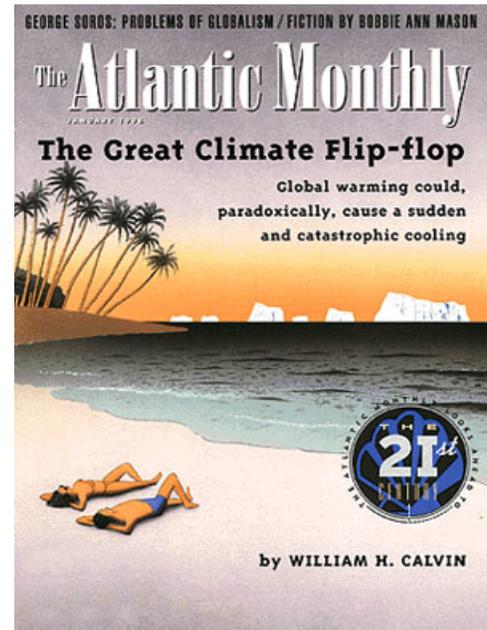
Co-authored by [Art Bell](#) and [Whitley Strieber](#), *The Coming Global Superstorm* (TCGS) is an odd mixture of dramatic meteorological speculation and coy insinuation of extraterrestrial influences. Strange ancient artifacts, the authors suggest, seem at odds with what we know of humanity’s biological and social evolution.

On [Unknown Country](#), Whitley Strieber’s personal website, the paranormal provenance of the meteorological speculations hinted at in TCGS is acknowledged frankly:

The subject of global warming is taken very seriously at Unknown Country. Prior to his encounter with the [Master of the Key](#) in 1998, Whitley Strieber was unaware of the concept of climate change, but the insights given to him during that meeting affected him profoundly, and the information he was given became the foundation for his best-selling book, The Coming Global Superstorm. The book later became the inspiration for the movie blockbuster The Day After Tomorrow.

With its particularly strong El Niño, 1998 was the year Earth’s average global temperature spiked, well above the averages for the years immediately before and after. By happenstance, the cover story for the January 1998 issue of *The Atlantic*, “[The Great Climate Flip-Flop](#)” by William H. Calvin, explored the possibility of a global-warming induced breakdown of the Atlantic Meridional Overturning. [Calvin](#), a theoretical neurophysiologist who went on to publish books on human evolution and abrupt climate change (*A Brain for All Seasons*, 2003) and on ways to mitigate climate change (*Global Fever*, 2008), is not mentioned in *TCGS*. But perhaps the *Master of the Key* saw the article?

Aliens play no role in *Day After*, not that Emmerich is averse to working with them (see [Independence Day](#), 1996). Several now iconic elements of the film, however, come straight out of Bell and Strieber’s book: the research buoys with the inexplicably dropping temperature readings, the worried exchanges between British and American scientists, the powerful storm that strikes Japan, the superstorms that can sustain themselves over land while pulling super-chilled air down from the troposphere (Bell and Strieber dub them “tornado-canes”), the instantaneously frozen mammoth, and people burning library books to keep warm. But where Bell and Strieber illustrated the ground-level effects of their superstorms by chronicling events in Paris, Emmerich visited his destruction on the Big Apple, the city he had wrecked in an earlier film ([Godzilla](#) 1998).



Peg Science

When *Day After* was released, Roland Emmerich and senior producer Mark Gordon expressed pride in the scientific underpinnings of their film.

Gordon: [W]e really did a lot of research and had lots of consultations for the science.

Emmerich: The only thing we did for dramatic reasons was to make the time period shorter.

Understood in that context, and from the filmmakers’ perspective, these comments make sense, many climate scientists’ real concerns notwithstanding. Compared with their work in *Independence Day* and *Godzilla*, *Day After* is a rigorous piece of science fiction. More often, science is the peg with which filmmakers briefly suspend viewers’ disbelief in the dramatic crisis they have created. In the case of *Day After*’s eight imitators, climate science was also a way to tell the same story with marketable differences.

One final conclusion might be drawn from *Day After*’s Ice-Fi legacy: Humans seem peculiarly drawn to this abrupt-ice-age vision of climate change — like moths mistaking a porch-light for the moon. That could be a problem.

The author would like to thank Dan Bloom, creator of the [Cliffies](#), for the tips to Ice Quake and Interstellar.

Next: [The Long Melt ... The lingering influence of *The Day After Tomorrow*](#)

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<http://www.yaleclimateconnections.org/2014/10/ice-fi-the-motion-pictur-ice-sque-legacy-of-the-day-after-tomorrow/>



The Long Melt: The Lingering Influence of *The Day After Tomorrow* By Michael Svoboda | Yale Climate Connections – Wed., Nov. 5, 2014 | Third in 5-Part Series

Like some of the severe storms related to a warming climate, the now 10-year-old Day After Tomorrow has a ‘long tail’ of influence ... both on films that have followed in its path, and on public understanding of climate change.

Roughly 40 minutes into *The Day After Tomorrow* (*Day After*), after the freak ice-storm in Japan, the tornadoes in Los Angeles, and the plane-smashing thunderstorms in the Northeast, a few dozen scientists meet at NOAA headquarters to ponder what is happening with the weather. The biggest influence on the planet’s weather is the sun, but its output has not changed. “What about the North Atlantic Current?” asks paleo-climatologist Jack Hall (Dennis Quaid), who then relays news he has just received from the U.K. The current is failing, he explains, the storms will not just continue but likely get worse. Grimly, he concludes: “I think we’re on the verge of a major climate shift.”

Massive superstorms do indeed develop in the second half of *Day After*, instantly freezing whatever they pass over while pushing huge waves and crippling blizzards toward the coasts. Before he undertakes a treacherous journey from Washington, D.C., to New York to rescue his son (Jake Gyllenhaal), Hall makes one last attempt to explain the situation to his political bosses, including Vice President Becker (played by the Cheney-like Kenneth Welsh): residents in the northern states are trapped; those in the southern states must be evacuated to Mexico. Hall eventually finds his son in an upper-floor room of the New York City Public Library, where he and his companions have been burning books to keep warm. At the film’s end, the storms have subsided, and survivors emerge to begin life in a new ice age. The climate has shifted — “major” indeed.

If not a full-scale shift, many in the environmental community hoped that a major motion picture addressing climate change would at least push the debate on climate change forward. Greenpeace and the Natural Resources Defense Council (NRDC) organized actions to coincide with *Day After*’s release. The activist MoveOn.org used the film to highlight what it considered then-President George W. Bush’s poor record on environmental issues, hoping thereby to weaken his chances for winning a second term. Bush’s decisive win that November indicates that *Day After* fell short of MoveOn’s ambitions, but the film has nonetheless had a significant impact, not just within the film industry (see [part 2 of this series](#)), but also in the public sphere and in the academy.

***The Day After Tomorrow* and the Public Profile of Climate Science**

The film unquestionably increased the public profile of climate science. Included in a November 2004 [Environment article](#) by Anthony Leiserowitz (publisher of this site) was this finding: *The Day After Tomorrow* generated more than 10 times the news coverage of the 2001 IPCC report.”

This result seemed to confirm what some scientists, including [Michael Molitor](#), the primary science consultant for *Day After*, had [predicted](#): “This film could do more in helping us move in the right direction than all the scientific work and all the U.S. Congressional testimonies put together. . . . Nothing I have done in the twenty-three years of my climate change career may have a greater impact than this film.” Similarly, in an e-mail exchange, Stefan Rahmstorf (Potsdam Institute for Climate Impact Research) said [his review](#) of *Day After* “is consistently amongst the most-viewed items on [his] home page.”



But not all of the buzz was positive. Some scientists who pre-viewed the film, like Rahmstorf, were willing to grant director Roland Emmerich and his screenplay co-author, Jeffrey Nachmanoff, poetic license for their high-speed version of climate change. Others were less forgiving. In *Geology Today*, [David Nowell](#) lamented that “this highly profitable Trojan horse undermines decades of serious research and legitimate concern [about climate change].” In *New Republic*, science writer Greg Easterbrook [decried](#) “the preposterous science of *The Day After Tomorrow*.” And in a Stefan Lovgren [article](#) for *National Geographic News*, Janet Sawin, then director of the Energy and Climate Program at Worldwatch Institute, worried that *Day After* might be seen as “blow[ing] a serious issue out of proportion,” which “could cause people who are skeptical to become even more skeptical.” In their reviews of the film, “professional” climate skeptics, like the Cato Institute’s [Patrick Michaels](#), worked to stoke that process.

Even these negative responses, however, generated interest. Many scientists and policymakers worked with the media to fact-check *Day After*. National Geographic News published a Q&A with Worldwatch Institute’s Tom Pugh. NBC [posted Q&As](#) conducted with National Center for Atmospheric Research and with Eileen Claussen of Pew Center for Climate Change (now called Center for Energy and Environmental Solutions, or C2ES). These and other organizations, including NOAA, posted fact sheets and/or FAQs on their websites. And in their New York Times and Wall Street Journal articles, respectively, [Andrew Revkin](#) and [Sharon Begley](#) provided scientific commentary on the public squabbles over *Day After*.

***The Day After Tomorrow* and Public Opinion about Climate Change**

Despite the spirited arguments about the science and the mostly negative reviews of the plotting — “[It’s Raining, It’s Boring](#)” (WSJ), “[What a Disaster!](#)” (WP), “[A Perfect Storm of Clichés](#)” (WP), “[Smart Hero, Dumb Officials, Huge Sheet of Ice](#)” (NYT) — *Day After* was a success at the [box office](#), taking in nearly \$86 million over its Memorial Day weekend opening in the U.S. and more than \$544 million by the end of its worldwide run. These numbers dwarf those for *An Inconvenient Truth* (~10X) and *Age of Stupid* (~100X), two films with which it has been compared by academic researchers.



So what impact did *Day After* have on its many millions of viewers (21 million in the U.S. alone)? Groups of researchers quickly mobilized to answer this question.

In the November 2004 *Environment* [article](#) mentioned earlier, Leiserowitz reported the results of surveys taken one week before and one month after *Day After*'s release: "The film led moviegoers to have higher levels of concern and worry about global warming, to estimate various impacts on the United States as more likely, and to shift their conceptual understanding of the climate system toward a threshold [or tipping point] model." The film also seems to have influenced viewers' expressed willingness to act on the issue, including through the votes they said they would cast in the fall election.

[Researchers](#) analyzing the responses of British filmgoers reported different results. One group found that after watching *Day After* people were willing to allocate significantly more of a hypothetical charity budget to mitigating climate change. But the film also led viewers to believe climate science predicted a colder future for the U.K. A second group of researchers found that *Day After* viewers expressed increased concern about climate change, but they could not connect that concern with actions in their everyday lives.

In Germany and Japan, where the reality of climate change was already widely accepted, *Day After* seemed to confuse matters. The scale and speed of the impacts depicted made viewers question what they thought they knew about climate change, and whether actions at the individual, community, or national level could lessen such risks. Potsdam Institute for Climate Impact Research sociologist [Fritz Reusswig](#) summed up the German results for *Nature* this way: "Most people here associate climate change with heatwaves and floods; the film has made them ask: If this is what climate change is like, then we are no longer sure it is real."

The Twilight of The Day After Tomorrow

Since this first wave of studies, researchers have re-examined *Day After* from a variety of perspectives. Most have found that the poetic license taken with the underlying science made it harder for audiences to gauge the actual risks posed by climate change. But there are [rhetorical strategies](#), some have argued, for dealing with this. Others have called attention to the film's emphasis on [individual survival](#) or to the ways it [perpetuates stereotypes](#) about class, development, gender, and race.

Then there are the extended discussions of *Day After* in recent books on cinematic depictions of science and scientists. [David A. Kirby](#) (*Lab Coats in Hollywood*, 2011) and Sydney Perkowitz (*Hollywood Science*, 2007) both highlight *Day After*'s sharp scenes about the politics of climate science, echoing comments made at the time by Rahmstorf ("chillingly realistic") and [Sir David King](#) ("remarkably realistic"). Perkowitz gives *Day After* a special award "for illustrating the conflict that can and does occur when scientific findings clash with government policies or political agendas."

Vice-President Becker (Welsh) dismisses Hall's (Quaid) first warnings about the coming climate shift.



Finally, *Day After* has become a ready point of reference for discussions of climate science. From 2004 to 2006, *Nature* or *Science* articles on climate research often included a cautionary — not-as-quickly-as-depicted-in — nod to *Day After*. Such references became less frequent after 2006, but they can still be found in articles specifically focused on the Atlantic Meridional Overturning. (See, for example, [this article](#) from the May 9, 2013, issue of *Nature*.) Perhaps not surprisingly, *Day After* sometimes figured in mainstream and [social media responses](#) to Hurricane Sandy. And last May, NBC used footage from the film to illustrate a [news story](#) about “[National Landmarks at Risk](#),” a report released by Union of Concerned Scientists.



This squares with the experience of several scientists contacted as part of the research on this series. Asked whether *Day After* had made it harder or easier for them to communicate climate change, all said the film had facilitated their work.

I credit Day After with at least making a wider audience think about climate change as a globally and locally important phenomenon, rather than something that was only relevant to scientists. . . . I like to use pop culture references in my talks, because it helps to establish a common ground for discussion of a science or science communication topic. Day After has served that role for me in the past, and likely will again.

[Sunshine Menezes](#), PhD., Exec. Dir., Metcalf Institute on Marine and Environmental Reporting

I think the net impact of Day After was educational. It increased overall public awareness and some basic knowledge — to a greater extent even than An Inconvenient Truth, according to one study I recall — and, while melodramatic, it made some impacts of climate change, like the potential for big unexpected changes, more real for many people.

[Ben Strauss, PhD](#), Vice-President for Climate Impacts, Climate Central

The film did a good job of . . . driving home the message that human activities are changing the climate and there might be unforeseen dangers associated with those changes. . . . Of course there were also misunderstandings but. . . . the events in the film were so exaggerated that I found it relatively easy to steer the conversation to more realistic climate change impacts.

[Tatiana Rynearson](#), Assoc. Prof. of Oceanography, Grad. School of Oceanography, Univ. of Rhode Island

For many Americans, even 10 years after its release, *The Day After Tomorrow* is still a ready point of reference for discussions — and visualizations — of climate change. As if it were the day before yesterday.

Next: [Interstellar: Looking for the Future in all the Wrong Spaces](#)

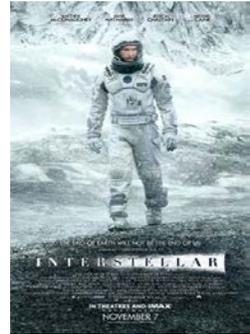
<http://www.yaleclimateconnections.org/2014/11/the-long-melt-the-lingering-influence-of-the-day-after-tomorrow/>



Interstellar: Looking for the Future in All the Wrong Spaces

By Michael Svoboda | Yale Climate Connections – Wed., Nov. 12, 2014 | Fourth in 5-Part Series

Those eagerly anticipating *Interstellar* as a possible “[serious season](#)” addition to the genre of cli-fi had plenty of company. But while often beautiful and sometimes compelling, *Interstellar* is closer to climate skepticism than it is to climate fiction. So eager is director Christopher Nolan to make the case for the [return to space](#) that he effectively accuses nature of neglect if not outright abuse. Humanity must look elsewhere, the film seems to argue, because Earth is no longer a reliable provider.



MOVIE REVIEW

Stacking Dust Bowls

True, Nolan’s evocative depiction of a new dust bowl — he actually uses interviews from Ken Burns’ [documentary](#) about the 1930s as if they were recollections of his own in-the-not-too-distant-future drought — constitutes evidence of adverse climate change. But because researchers rarely attribute his historic reference point to rising CO2 levels, that evidence doesn’t implicate humans.

The closest the authors of a [recent article](#) on [the 1934 drought year](#) come to any suggestion of anthropogenic climate change, for example, is “dust aerosol forcing.” Unsustainable farming practices may have increased soil erosion and thereby contributed to the dust storms that worsened the effects of the drought. Nolan does not concede even this. Rather, in the Dust Bowl interviews, he has an elderly woman explain: “you didn’t expect this dirt that was giving you this food to turn on you and destroy you.”

The essential vocabulary of contemporary climate science — greenhouse gases, carbon dioxide, fossil fuels, global mean temperature — is never used in *Interstellar*. By fitting one dust bowl inside the other, without any critique of farming practices, Nolan makes Earth the agent of his characters’ misfortunes.



Michael Caine plays Professor Brand. The adult Murphy (Jessica Chastain) observes crops being burned to prevent the spread of blight.

If Earth Is Their Home Then Why Don't Humans Breathe Nitrogen?

At its heart, *Interstellar* is the story of two families. A former NASA pilot, Cooper (Matthew McConaughey), wonders how, with yields diminishing due to the spreading blights, he can keep the family farm solvent. And even if he succeeds, what will this mean for his two children, Tom (Timothée Chalamet), and Murphy (Mackenzie Foy)? In the course of solving his daily quota of problems, Cooper dismisses a series of “anomalies” until he confronts a clearly unnatural pattern that has formed in the dust blown into his daughter’s bedroom. He eventually recognizes the pattern as binary code for the geographical coordinates of a place not too far from their home.

At that location, Cooper and Murphy discover a hidden NASA facility managed by Professor Brand (Michael Caine), one of Cooper’s former teachers, and his daughter (Anne Hathaway). The secret facility, Brand explains, is a missile launching station. As Cooper was led to it by one anomaly, Brand now wants him to pilot NASA’s follow-up mission to another anomaly, a wormhole that has opened up near Saturn. The goal: find another habitable planet.

Shouldn’t that energy be put into saving our home planet? Cooper asks. Brand challenges Cooper’s assumptions about humanity’s relationship with Earth.

Earth’s atmosphere is 80 percent nitrogen. We don’t even breathe nitrogen. Blight does, and as it thrives our air gets less and less oxygen. The last people to starve will be the first people to suffocate. . . . We’re not meant to save the world; we’re meant to leave it.*

To save humanity, Brand’s group is simultaneously pursuing two plans: Plan B, search for habitable planets on the other “side” of the wormhole; Plan A, create a space station, a sort of ark for some of those still left on Earth. For Plan A to succeed, however, Brand must solve a fundamental problem regarding the relationship between gravity and energy; otherwise they will never get the station into space.

Advanced Bootstrapping — or Hyper-Lomborging

Brand persuades Cooper to pilot the mission. The scene of Cooper trying to make peace with his daughter Murphy before he leaves is the most heart-wrenching in the film. Cooper explains that he does not know how long we will be away — for two reasons. The first is the uncertainty involved in any long trip. The second is the fabric of time itself. His time will be slowed by the high speeds of space travel and by the gravitational fields he will traverse. Two years for him may be a decade or more for her. Cooper and his daughter do not part well.

[Many reviews](#) of *Interstellar* have explained the conundrums Nolan plays with in this part of his film. They have also pointed out, sometimes gleefully, the [errors and impossibilities](#) in his tale. (Nolan neglects to provide a Sun to account for the energy that warms and illuminates the habitable planets Cooper and the younger Brand visit.) More distressing from the environmental perspective attempted here is the exotic bootstrapping revealed — **spoiler alert!** — at the end of the film.

In a creatively visualized sequence, viewers learn that Cooper himself is the author of the anomalies he observed earlier. More, the wormhole near Saturn, the one Cooper and his colleagues used to reach the habitable planets, was placed there by the distant descendants of those now living on Earth. Humanity’s future selves found the way to get through the present impasse.

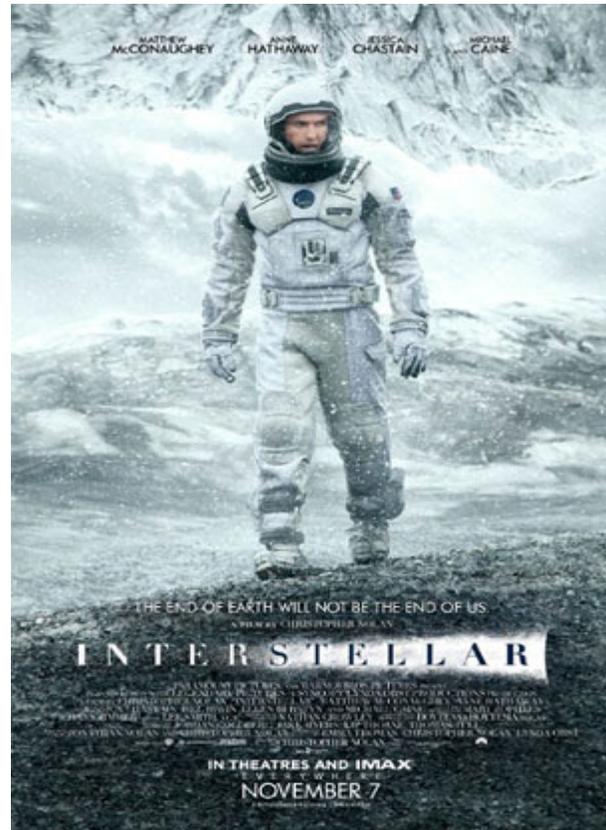
Danish political scientist [Bjorn Lomborg](#) has often argued that the hard work of substantially reducing CO2 emissions should be left to inevitably richer future generations. Nolan has done him one better. When the time is right, the solution for humanity's problem will be sent from the future by g-mail — gravity can be shaped, Cooper discovers, to deliver messages through space-time.

It's on this basis that Nolan invites viewers to get over their troubled relationship with Earth. Cooper himself never returns to Earth. Instead he is found outside the wormhole near Saturn by a routine patrol from the space station his now elderly daughter successfully floated off Earth.

The Faked Apollo Moon Landings

The warped science of *Interstellar* comes with some strange politics. A grumpy discontent pervades the early scenes on Earth, the result of the economic dislocations created by the blighted crops and the declining population. “We used to look up to the sky and wonder about our place in the stars,” Cooper complains, “now we just look down and worry about our place in the dirt.” “We were meant to be explorers,” he whines at another point, “not caretakers.”

By far the strangest example is the exchange between Cooper and the principal and counselor at his childrens' school. Murphy fought with some of her classmates, the counselor explained, after refusing to admit that the photographs of the Apollo moon landings in his (Cooper's) old textbook had been faked. The new corrected editions explain that the Apollo Program was an elaborate ruse to bankrupt the Soviet Union. Now, however, the enemy is hunger; everyone must focus on meeting the immediate needs of the nation.



For some on the right, Nolan's depiction of such arch political correctness makes him an upstanding conservative. “*Interstellar* breaks with the left's pessimism,” wrote [an op-ed columnist](#) for the New York Post. But other conservatives have been puzzled by these odd scenes. “Just what are the politics of Christopher Nolan's new film?” asks [James Pethokoukis](#) of National Review. And who should be affirmed and who disturbed by the fact that Nolan's two “leading” scientists in *Interstellar* — Prof. Brand and Dr. Mann, the leader of the earlier missions through the wormhole — both falsified their results? (Is the “Mann” just a coincidence?)

One possible explanation for these odd scenes is that they reflect the iconoclasm of Nolan's own beliefs. Another and perhaps more likely explanation is that big budget films cannot afford to be clearly identified with any political position. Nevertheless, strong emotional reactions sell tickets; so red flags are waved at both ends of the political spectrum.

Stellar Campaign Loses to Animated Hero

In the weeks leading up to its release, *Interstellar* received more than 90 reviews and a number of prominent feature stories, including cover stories in [Time](#) and [Entertainment Weekly](#). The film did reasonably well on its opening weekend, bringing in roughly \$50 million, aided in part by the higher price of its IMAX tickets.



But *Interstellar* was not the [box office winner](#) that weekend; it was Walt Disney’s animated feature, *Big Hero 6*. The Guardian’s [Jordan Hoffmann](#) explained the results this way: “Christopher Nolan’s SF juggernaut was no match for a giant cuddly robot — probably because the Disney film made sense and wasn’t three hours long.”

Should climate change communicators be relieved that *Interstellar*’s anti-Earth message was edged out by a “giant cuddly robot”? Or should they be depressed that Americans were almost equally captivated by two utterly improbable, if not impossible, stories?

Perhaps instead of either they should highlight the one practical piece of advice inadvertently delivered by *Interstellar*: Don’t stop worrying about the global environment until a functioning wormhole arrives somewhere in the solar system.

**None of the science-checking articles on Interstellar addressed this odd claim. An evolutionary biologist contacted in preparation for this article said he thinks local levels of oxygen might be affected by the rotting vegetation afflicted by blight, but not global atmospheric concentrations.*

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Next: [\(What\) Do We Learn from Cli-Fi Films?](#)

<http://www.yaleclimateconnections.org/2014/11/interstellar-looking-for-the-future-in-all-the-wrong-spaces/>



(What) Do We Learn from Cli-Fi Films? Hollywood Is Still Stuck in the Holocene

By Michael Svoboda | Wed. Nov. 19, 2014 | Fifth in 5-Part Series



Noah Gittel, in his [review](#) for The Atlantic, first expressed his disappointment with *Interstellar* as a message film—“as a climate-change parable, it fails”—then he broadened his critique:

Why does Hollywood keep getting the environment wrong? Maybe it’s for the same reason 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.

Gittel’s review, along with many others published last week (including the one posted [here](#)), answers one of the questions raised in the [first part](#) in this series: No, *Interstellar* is not the beginning of serious cli-fi.

His broader critique of Hollywood also re-raises the key question asked here four weeks ago: “Can action-relevant messages about climate change survive translation into feature films? Here, however, Gittel lets Hollywood too easily off the hook. Yes, America’s gridlocked political debate on climate change has limited Hollywood’s efforts to represent climate change, but many of the mis-representations seen on the screen are due to filmmakers’ own engrained ways of thinking. Simply put, Hollywood is still stuck in the Holocene.

Just Another Dystopia

One of the more surprising feats Christopher Nolan accomplishes in *Interstellar* is the either/or choice he creates between concern for the environment and humanity’s cosmic ambitions. While many reviewers contested his answer most accepted the dichotomy, as if the diminution of the U.S. space program was due to federal spending on the environment. Left out of this accounting is the other 98 percent of the federal budget. (Funding for all sciences, including medicine, makes up only 2 percent of the [budget](#).)

In the 98 percent world, American popular culture was very much affected by 9.11 and the decade of military spending that followed.

First, Americans’ interest in stories about broken worlds increased. In “[A Brief History of the Cinematic Apocalypse](#),” in *Entertainment Weekly*’s 4 July 2014 Apocalypse Issue, critic Chris Nashawaty provided a timeline of “apocalyptic” films that simultaneously tallied and categorized them. Their number rises after September 11, 2001, but environmental disaster films make up only a small portion of that increase.

Seen in this context, climate science is source of useful plot angles and devices—something to catch and hold viewers’ attention until they are emotionally engaged—but no more important than accounts of alien invasions, nuclear holocausts, or zombies. To paraphrase screenwriter

George Walizak, who figured in a 12 Aug 2004 *Nature* article about an American Film Institute screenwriting workshop for invited scientists, “the laws of thermodynamics” (emphasis in original) are more important for filmmakers than the laws of thermodynamics. Some science may be required to set up a disaster, but once the action begins, thermodynamics takes over.



Middle-Aged, Divorced (or Widowed), White Man vs Nature

Second, because the vast majority of Americans are not personally involved in fighting the war against terrorism, films turned to representative heroes. (After 9.11, the number of [superhero movies](#) also increased.) Without collective national action against tangible enemies like terrorists, it also becomes more difficult to depict collective national action against an abstract problem like climate change. Personal motives are expected.



LEFT: Jack Hall (Dennis Quaid) with his son Sam (Jake Gyllenhaal) in NYC after the superstorm has subsided. RIGHT: Cooper (Matthew McConaughey) tells his daughter Murphy (Mackenzie Foy) that he has agreed to pilot the mission through the wormhole.

In their [analysis](#) of *The Day After Tomorrow*, [Robin Murray](#) and Joseph Heumann, co-authors of four books on films that engage environmental issues, highlight the personal relationships that drive the film’s hero, Jack Hall, especially his relationship with his son. Matthew McConaughey plays the same sort of father-hero role in *Interstellar*; [Richard Armitage](#) plays that role in *Into the Storm*. And [Jeff Fahey](#) plays it in two B-list films.

In fact, in at least seven of the twelve movies discussed in this series, the healing or strengthening of family relationships (husband-estranged spouse, father-children) is one of the emotional subplots. Adverse climate change brings families together.

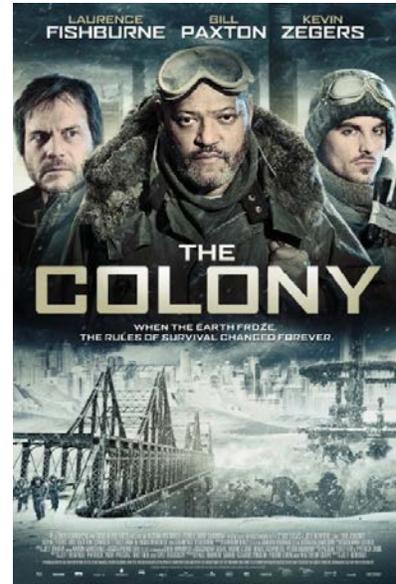
But only if they survive. With the exception of the three films that focus on local disasters (*Ice Quake*, *Ice Twisters*, *Into the Storm*), significant declines in global population are depicted or implied in the climate change films reviewed in this series. At the end of these films, the survivors must struggle to keep warm on a no-longer-overpopulated Earth that has slipped into a new ice age. Thus, far from dealing with the challenges posed by living in the new geological epoch that is the [Anthropocene](#), these films reboot the [Holocene](#). Once again, it is man vs. nature, albeit a middle-aged, divorced, estranged, widowed—or just recently remarried—man who is trying to reconnect with his children. And now warming the planet is a good thing.

The Nuclear Button

A third factor has complicated fictional depictions of climate change: the legacy of nuclear armageddon films.

By depicting the terrible destruction wrought by an exchange of nuclear weapons, or by imagining the broken worlds that might emerge in the wake of such exchanges, filmmakers could deliver a simple cautionary message: Don't do this.

From *Day After* and its imitators, audiences are likely to take away the message that abrupt climate change poses a threat. But unlike nuclear armageddon, which can be avoided by **not** using the multi-billion-dollar weapons systems humans have already built, avoiding catastrophic climate change involves taking new actions and making substantial new investments. “Do” messages are inherently more demanding than “don't” messages, especially if they involve changes in established routines, like the burning of fossil fuels to power our daily lives.



Ironically, two cli-fi films, *The Colony* and *Snowpiercer*, could be read as “don't-do-this” messages. The ice ages depicted in these films are the result of geo-engineering experiments gone badly wrong. Doing something about climate change thus seems worse, far more dangerous, than doing nothing.

The Cli-Fi Genre

The evidence reviewed here suggests that the cinematic norms followed by feature filmmakers may systematically distort their depictions of climate change science and policy options, just as journalistic norms once biased news stories toward “balance.”

As Murray and Heumann explained in an email exchange, “cinema has the potential to bring environmental issues such as climate change to the forefront . . . [but] awesome cinematic presentations may actually obscure the ecological points on display.”

For example, instead of showing viewers ways to work together to avoid disasters, Film and Media Studies professor [J.P. Telotte](#) observed in a recent [NYT Room for Debate](#) discussion of cli-fi, these “films make us feel better about our ability to survive them.” Because the viewer, like the on-screen survivor, is still alive at the end of the film, the risks posed by climate change are displaced onto others who are seen as lacking the luck or resourcefulness of the survivor and the viewer.

What is needed, [George Marshall](#), founder of the Climate Outreach Information Network, argued in the same Room for Debate discussion, are “stories about *successful* struggle[s] to defend *shared* values with *resolution* in a world that is stable, secure, and in some ways *better*” (emphasis in the original).

Can Hollywood produce such stories?

No one has done more to promote cli-fi than [Dan Bloom](#)—he persuaded the *New York Times* to run the discussion that included Telotte and Marshall—and he remains optimistic about the genre’s prospects. “This is a long-term project, the popularizing of the cli-fi motif,” he said in an email exchange, “but I believe we will see more daring movies . . . about climate change in the near future.” He then pointed out that HBO has greenlighted a film adaptation of Margaret Atwood’s [MaddAddam](#) trilogy.

In the meantime, Bloom works to promote the genre through the [Cliffies](#), a series of annual awards designed to highlight significant contributions to the genre. This year’s [winners](#) were selected by Bloom in consultation with outside experts. “In future years,” Bloom said, “winners will be selected by a polling and voting system [that will] allow members of the broader climate change community worldwide . . . to participate in the process.”

Recovering the Excluded Middle

Near the end of *Why We Disagree About Climate Change*, [Mike Hulme](#) reminds climate change communicators that the apocalypse, or global disaster, is an ancient myth or story type. It is thus not surprising that experienced storytellers slip into the genre so easily. But if the Anthropocene marks the beginning of a new story, then old plot elements must be refitted or discarded.

Over the last several decades, filmmakers have imagined distant futures—from dying Earths to intergalactic space missions—many times over. But they seem baffled, paralyzed even, by the challenge of realistically imagining the near- to medium-term. Perhaps the emergence of new long-form options, like those series produced for HBO and Netflix, will permit less blockbusted minds to envision these futures. And working with smaller screens may make them less susceptible to being so dazzled by their own visuals that they cover Earth in ice or, like Christopher Nolan, try to illuminate a planet with a black hole.



Interstellar's long view of Miller's planet orbiting the impossibly luminous black hole Gargantua.

<http://www.yaleclimateconnections.org/2014/11/what-do-we-learn-from-cli-fi-films-hollywood-still-stuck-in-holocene/>