

Global reach and engagement

Popular culture reflects both the interests of and the issues affecting the general public. As concerns regarding climate change and its impacts grow, is it permeating into popular culture and reaching that global audience?

Climate change fiction, or 'cli-fi', is an emerging genre but climate change is not yet a mainstream topic in popular culture. If you had to name a film which addresses climate change, you might think of *The Day After Tomorrow*. The film depicts the world being plunged into a new ice age as meltwater caused by global warming halts the North Atlantic ocean circulation, preventing the transport of warm surface waters to higher latitudes. While there is a scientific basis for these events to occur, the short timescales portrayed in the media often require some artistic licence. Another example might be *Waterworld*, where melting of the polar regions results in global flooding and the loss of almost all land on the planet — an extreme example of sea level rise.

While there are documentaries addressing these issues — such as *Chasing Ice*, with time-delay footage of glaciers in flux, and Al Gore's *An Inconvenient Truth* — these may be less engaging to the general population than a Hollywood blockbuster. Recent news could be straight from a movie script — thawing permafrost has released a deadly infection. This is the news from Siberia, where an unusually warm summer in a western region has caused the permafrost to thaw, releasing anthrax spores. Anthrax was last seen in the region 75 years ago, but it can survive being frozen: the cause of the current outbreak is thought to be a defrosted reindeer carcass or a local burial ground, as shallow burials are traditional in the region. The outbreak has resulted in the confirmed death of a 12-year-old boy, 115 hospitalizations and over 2,300 reindeer deaths¹. The reindeer remains are being incinerated to destroy the pathogen and prevent further spread. This is unlikely to be an isolated incident as permafrost is warming globally, with increases in northern Russia of 1–2 °C over the past 30 to 35 years (with the coldest sites experiencing increases of 0.4–0.6 °C per decade at 10 metre depth²). Thawing of these and other frozen regions could also unearth viruses and other pathogens. One virus was recovered, still infectious, from 30,000 year old ice³, hinting at the diversity that may be frozen away. Another dramatic possibility is the return of smallpox⁴, with remnants of the virus discovered on an unearthed



JEFF MENDELSON / EYEEM / GETTY

mummy⁵. It can survive being frozen, but no live virus has yet been found in historical victims. Although the risk to human health is likely to be small from such discoveries and disinterments, little artistic licence would be needed to create a disaster tale, as demonstrated in the TV series *Fortitude* where a thawing mammoth leads to death and upheaval in a remote Arctic settlement.

In another example of what could emerge from the melting ice, a study has been published regarding an abandoned cold war base beneath the Greenland Ice Sheet⁶. Camp Century was a US military base built within the ice sheet in northwest Greenland that was abandoned in 1967. Little effort was made to decommission and remove waste when it was deserted as its location within the ice sheet was expected to lock it away for eternity. Now, using business-as-usual scenarios, the authors predict that the base may be uncovered in the next 75 years, leading to remobilization of liquid waste left behind and potential political ramifications of dealing with these issues.

While cli-fi might be playing catch up with other genres, climate change does have some high-profile advocates from popular culture. Leonardo DiCaprio, in his acceptance speech for his first Oscar, spoke of climate change and his direct experience of it while filming *The Revenant* — the role that led to his best actor award. While he has spoken on environment issues in the past, this was an event with global coverage garnering a broader reach. Recent research⁷ looks at the impact of DiCaprio's acceptance speech on the media coverage, tweets and

Google searches of 'climate change' or 'global warming'. While traditional media studied showed little change, there were over 250,000 related tweets that day — a 636% increase on expectations. Furthermore, web searches increased 261%, and remained elevated for 4 days. This level of engagement was around four times greater than that seen in the daily averages during the Conference of the Parties Paris meeting in late 2015, or on Earth Day in April 2015.

On an even bigger stage, climate change was featured in the opening ceremony of the Rio Olympics — with an estimated audience of three billion people. The presentation highlighted the links between global atmospheric carbon dioxide and increasing planetary temperature, presented using the recent viral spiral⁸, and the subsequent melting of polar regions and associated sea-level rise.

The effect of having such high profile commentary on the issue is positive, as it delivers the message to an audience that may not engage with climate change otherwise. Such engagement is vital: increased awareness is essential if societal change is to occur. □

References

1. Tundra ablaze as reindeer carcasses infected with deadly anthrax are incinerated. *The Siberian Times* (05 August 2016).
2. Romanovsky, V. E. et al. *Bull. Amer. Meteor. Soc.* **97** (*State of the Climate in 2015* special supplement), S149–S152 (2016); <http://go.nature.com/2bk0xL8>
3. Yong, E. *Nature* <http://doi.org/bnt2> (2014).
4. Phillips, K. E. Climate threat: thawing tundra releases infected corpses. *Livescience* (26 March 2008).
5. Reardon, S. *Nature* <http://doi.org/bnt4> (2014).
6. Colgan, W. et al. *Geophys. Res. Lett.* <http://doi.org/bnt5> (2016).
7. Leas, E. C. et al. *PLoS ONE* e0159885 (2016).
8. Hope, M. *Nature Clim. Change* **6**, 657 (2016).