

SNAPSHOT

Temperature spiral goes viral

From hockey-stick shaped graphs to maps of shrinking sea ice, graphics can be a powerful way to communicate complicated information about climate change. These visuals can make a lasting impact on the public debate in a way that thousands of words of academic scholarship never could. But designing an accurate graphic that also captures the public's imagination is not a perfect science.

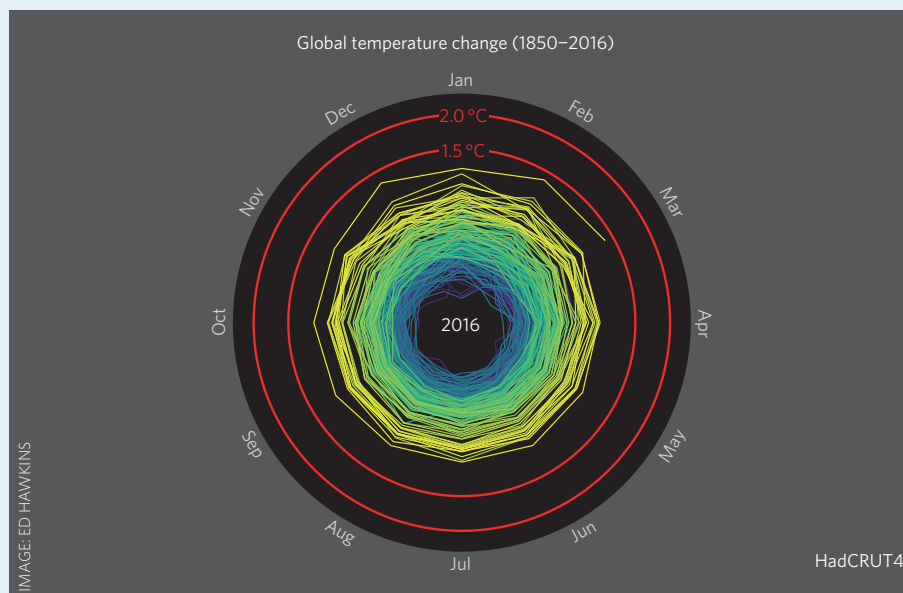
That was demonstrated most recently by a new kid on the block — an animated spiral chart showing global temperature change from 1850 to today, which over 2.5 million people viewed on Facebook after it was shared by a popular science site. (<https://www.facebook.com/IfreakingLoveScience/>).

The chart, created from HadCRUT4.4 data by climate scientist Ed Hawkins from the University of Reading, has certainly captured people's attention. Hawkins's blog, *Climate Lab Book* (<http://www.climate-lab-book.ac.uk/>), where it was first posted, has had over 100,000 hits. Mainstream news outlets including the *Washington Post* picked it up, and it even crashed the University of Reading's servers at one point with so many people trying to view the now 'viral' spiral.

Although it may be one of the most effective examples of public outreach in recent years, it was not a particularly targeted effort. "I certainly wasn't aiming for this to happen. It was just experimentation", Hawkins explains. It all came about through an e-mail exchange with a Norwegian colleague, who was the first to suggest a spiral. "I thought that was a good idea too, so I spent a couple of hours working on it and sent it back to him". They agreed that it looked good, so he put it online "and everything went a bit crazy".

So, what makes a good climate change image? "Humans are fundamentally visual animals", Duncan Clark, director of data-visualization studio Kiln says, "sometimes displaying something visually makes a point absolutely obvious that wouldn't be obvious looking at it in a different way". The spiral does that, as it shows how much of an outlier 2016 is, he explains.

The importance of such snappy, straight-to-the-point, images has been



accentuated by social media. "The things that get the maximum number of eyeballs at the moment are things which you can encapsulate into a video or a GIF and then you can just have them roll on people's Facebook walls or twitter feeds", Clark says. That's how the spiral worked: as a series of images overlaid on one another in a short, rolling video. "In that format, people can consume the graphic without leaving the social media bubble", which could partially account for the spiral's popularity.

So does that mean dumbing down the scientific message for public consumption? "It is a challenge sometimes, because the bigger message we're trying to convey is that the long-term trends are what is important", says Mark Serreze, director of the National Snow and Ice Data Centre (NSIDC), which has created many of the popular sea-ice images.

The question of whose responsibility it is to ensure the information is communicated accurately is a difficult one, with scientists often asked to step out of their comfort zone into the potentially fraught world of public engagement. Clark is sympathetic. For him, it is a team game: "You can't expect scientists to be great at differential equations and interaction design because they're two quite different things. A world where

scientists are producing information and feeding it through to people who are good at bringing it to life is a rich space for collaboration."

The graphics can also outgrow their original owners. Like the NSIDC, Hawkins has shared his data. Now there is a version that incorporates temperature projections out to 2100, made by a scientist at the US Geological Survey (<http://go.nature.com/212Wld0>), and other versions that visualize the same data in new and interesting ways.

That passing of the baton shows how graphics can help information travel. Ultimately, it is about raising awareness of one of the world's most pressing issues, and making the best use of the tools available. "You have a wonderful tool for fighting ignorance with information. Education is the best weapon against this. We engage exactly because [climate change] is such a polarised topic", Serreze says.

Hawkins' experience shows successful engagement can take many forms — an academic paper, a lecture or perhaps a spot on TV news. Or it could be a spiral image that goes viral, born because a couple of researchers thought it looked cool.

MAT HOPE