

# Grand Challenges – Climate Myths

## *Every Little Helps*

An extract from 'Sustainable Energy - Without the Hot Air' by David MacKay<sup>1</sup>

All agree that *something* must be done urgently, but *what*?

...

This heated debate is fundamentally about **numbers**. How much energy could each source deliver, at what economic and social cost, and with what risks? But actual numbers are rarely mentioned. In public debates, people just say "Nuclear is a money pit" or "We have a *huge* amount of wave and wind." The trouble with this sort of language is that it's not sufficient to know that something is huge: we need to know how the one "huge" compares with another "huge," namely *our huge energy consumption*. To make this comparison, **we need numbers, not adjectives**.

Where numbers are used, their meaning is often obfuscated by enormity. Numbers are chosen to impress, to score points in arguments, rather than to inform:

*"Los Angeles residents drive 142 million miles – the distance from Earth to Mars – every single day."*

*"Each year, 27 million acres of tropical rainforest are destroyed."*

*"14 billion pounds of trash are dumped into the sea every year."*

*"British people throw away 2.6 billion slices of bread per year."*

*"The waste paper buried each year in the UK could fill 103,448 double-decker buses."*

...

The result of this lack of meaningful numbers and facts? We are inundated with a flood of crazy innumerate codswallop. The BBC doles out advice on how we can do our bit to save the planet – for example "switch off your mobile phone charger when it's not in use;" if anyone objects that mobile phone chargers are not *actually* our number one form of energy consumption, the mantra "every little helps" is wheeled out. Every little helps? A more realistic mantra is:

***If everyone does a little, we'll achieve only a little.***

Adjectives provide fuel for soundbites which can be an effective tool for covering a lack of academic rigor or planting doubt about the authenticity of opponents' claims (cf. *fake news* or *alternative facts*). The adjective can work on a number of levels; it assumes a scale commensurate with the prejudices of the audience (regardless of actual impact) and serves to undermine claims associated with genuine scientific endeavour which are more likely to be couched in caveats and caution.

A suitable path for students following this Grand Challenge could be to identify a range of actions whose importance is either over or under emphasised and to test this meaningfulness through

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<sup>1</sup> Full text available at [www.withouthotair.com](http://www.withouthotair.com)

numbers and/or visualisations. Students would be encouraged to consider the merits of different metrics (energy, carbon, cubic metres, parts per million etc.) and how and where they might be best exercised to exert influence on different groups (e.g. students, politicians) and at different levels (campus, city etc.)

Individual numbers can be powerful; having passed through global CO<sub>2</sub> concentrations of 400 ppm we are currently fighting to keep within of 2°C of warming (or 1.5°C if you want to hit Paris targets). One of the difficulties with global targets is that they can appear isolated from actions that can be taken at an individual or local level which compromises the willingness to engage. Mike Berners-Lee<sup>2</sup> has suggested a '10 tonne lifestyle', a carbon budget designed to limit annual GHG emissions associated with everyday activities (in 2004 annual UK household emissions were estimated at 26 tonnesCO<sub>2</sub>e)<sup>3</sup>. While not sufficient to avoid runaway climate change (which could require a 3–5 tonne lifestyle), it provided a modest aspiration (achievable in the short term) and an accounting framework to assist in meeting the national emissions reduction targets.

Climate change is often represented through time series data (temperatures, CO<sub>2</sub> concentrations and so on), and while public skills at interpreting graphs may be lacking, scientists have often found other ways to illustrate data. Ed Hawkins<sup>4</sup> has successfully popularised climate data through visualisations such as his climate spirals or warming stripes (Figure 1) which are now available as ties flip flops, legging and t-shirts. Students in this challenge should consider other novel ways to present their numbers or data.

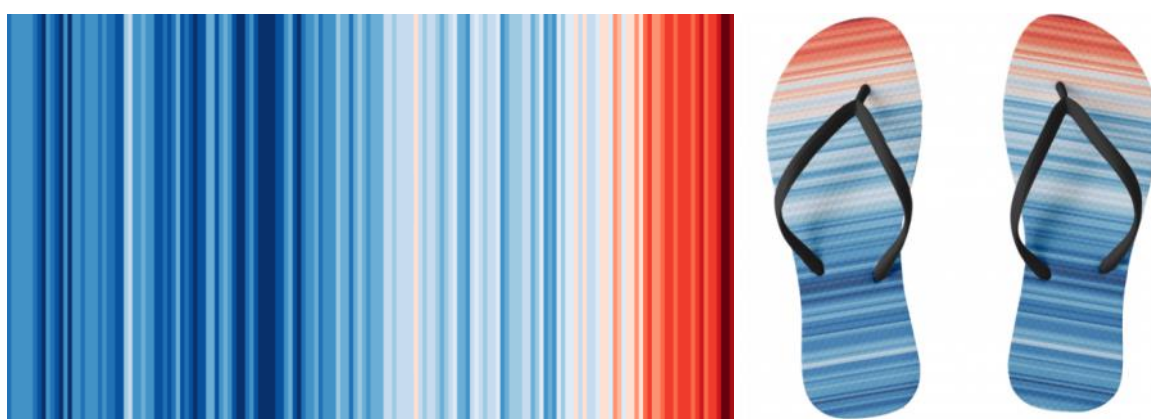


Figure 1. Left: annual global temperatures from 1850-2017 (colour scale represents the change in global temperatures covering 1.35°C); right: warming stripes themed merchandise)

Another aspect of the Challenge is to develop a social media campaign to promote the information or insight that has been generated. Social media presents opportunities to gain a wide audience and tools to gauge impact, but in its more transient forms it can be difficult for ideas to gain the traction or longevity to effect change. Timing is often crucial and, rather like surfing, it may be necessary to pick up on an existing wave. Recent campaigns such as the school strikes in support of climate action and 'Climate Emergency' declarations<sup>5</sup> from local authorities are raising awareness but often offer an emotive outlet rather than solutions. Providing scientific support to such campaigns through meaningful metrics may be one way to generate additional impact.

<sup>2</sup> Mike Berners-Lee, *How Bad are Bananas?: The Carbon Footprint of Everything*, Profile Books, (2010).

<sup>3</sup> Druckman, A. and Jackson T., *An Exploration into the carbon footprints of UK Households*, Resolve Working Paper 02-10 (2011), ISSN 1755-7259

<sup>4</sup> [www.climate-lab-book.ac.uk](http://www.climate-lab-book.ac.uk)

<sup>5</sup> <https://climateemergency.uk>

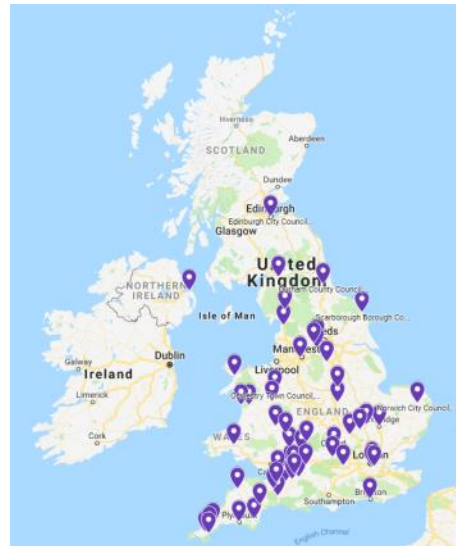


Figure 2. UK authorities that have declared a climate emergency

Throughout the Challenge, the Centre for Energy and the Environment (CEE) can help students to access data on energy and water consumption in every building across the campus. Furthermore we can help identify a range of sources and national statistics on all aspects of energy, water, waste and transport (including air quality) as well as details about the homes we live in and the appliances we use.

For more details on Grand Challenges 2019 see: <https://www.exeter.ac.uk/grandchallenges/>

To sign up, go to the 'Choose your Challenge' event which is taking place on **Tuesday 26th March 12:30-13:30 in Hatherly Labs B10**. The following Challenges are available to Exeter students.

- Climate Change: Mitigation, adaptation or geo-engineering?
- Food for Thought: Securing sustainable food systems in the 21st century
- Gender Inequality: How can we create a language of equal rights for the 21st century?
- Global Security: Confronting the complex security challenges of the future
- Mental Health: Improving access for hard to reach groups

<https://www.exeter.ac.uk/grandchallenges/moreinfo/chooseyourchallengeevent/>

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