



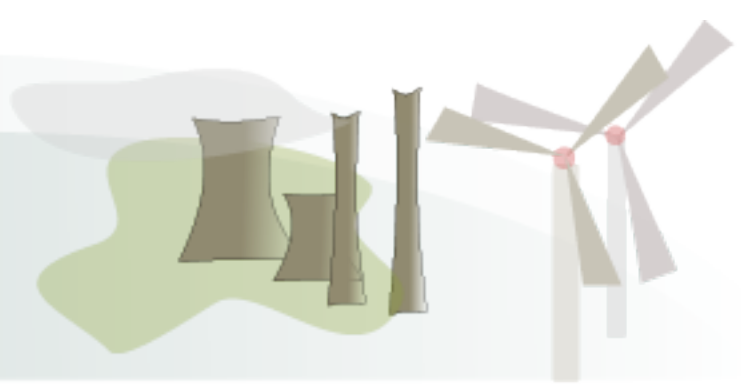
Climate Change - Resources

Thank you for downloading this Climate Change resource from the *GeoBus* website.

This resource pack was developed in partnership with [Dr James Rae](#) of the School of Earth & Environmental Sciences, University of St Andrews. Special thanks are due to Rasa Juras and Dr Rosanna Greenop for their involvement.

The development of this resource would not have been possible without the generous support of the *GeoBus* sponsors, which we gratefully acknowledge.





Overview

We recommend structuring climate change teaching into sections on: **Evidence, Causes, Impacts, and Solutions**. The NASA climate website follows a similar structure and is attractive and reliable.

Websites

Alliance of Climate Educators (ACE) - US based charity giving effective school assemblies and interactive resources aimed at teenagers. Some free resources, small fee for more <https://acespace.org/>

CLEAN net – comprehensive list of climate change teaching resources. Reliable, but variable quality. http://cleanet.org/clean/community/resource_developers.html

Metlink – UK-based, focussing on weather, but also covering climate <http://www.metlink.org>

NASA - provides an excellent framework for thinking about climate change, and reliable info with great visuals. See related tabs, the *Explore* menu, and FAQs. <http://climate.nasa.gov/evidence/>

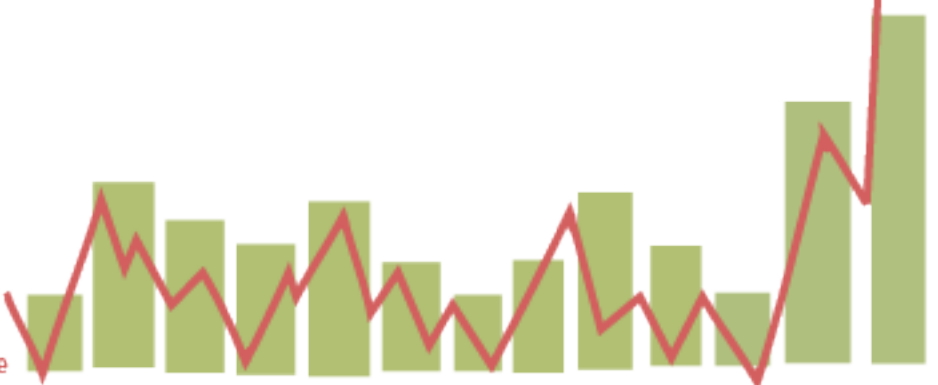
NASA climate kids - NASA resources designed for children. Has easy to understand explanations of key processes. <http://climatekids.nasa.gov>

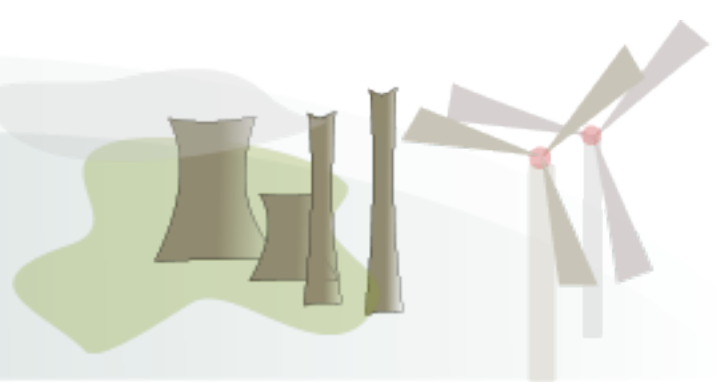
Videos

ACE “the deal” –overview of climate change aimed for teenagers, this video talks about America but has some excellent graphics <https://www.youtube.com/watch?v=RNOtcSYA0Bo> (15 min)

Bozeman Science – global climate change overview <http://www.bozemanscience.com/ap-es-034-global-climate-change> (7 min) – goes quickly through the greenhouse effect, environmental and human impacts, and climate treaties.

NASA climate in a minute movies – excellent short summary cartoons: Gas Problem, Earth has a Fever, Sea Level, Usual Suspects cover key points. http://climate.nasa.gov/climate_resource_center/earthminute





Evidence: it's happening

Earth is warming and weather is getting weirder – these resources give evidence for climate change.

Websites

NASA Vital signs – up to date records <http://climate.nasa.gov/vital-signs/global-temperature/>

Climate Change Spiral <https://www.climate-lab-book.ac.uk/spirals/>

Interactive climate time machine http://climate.nasa.gov/climate_resource_center/interactives

Interactive on climate change indicators http://climate.nasa.gov/climate_resources/25/

Interactive on ice loss <http://climate.nasa.gov/interactives/global-ice-viewer/#/>

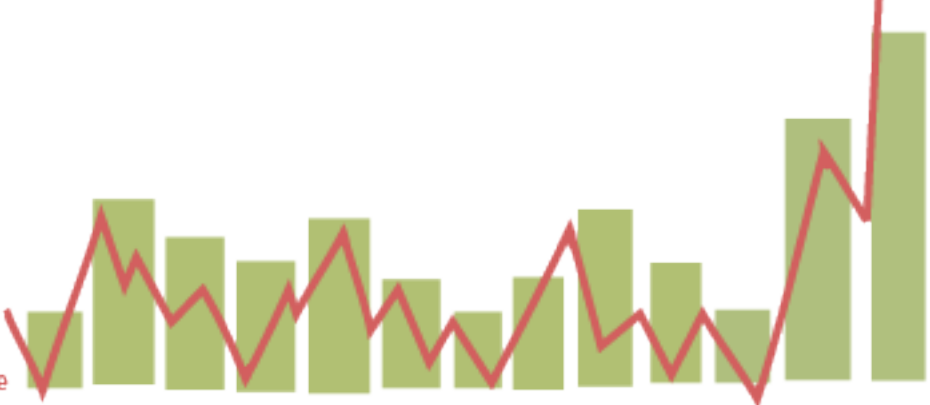
Videos

Climate Change Spiral http://blogs.reading.ac.uk/climate-lab-book/files/2016/09/spiral_aug2016.gif

Climate and CO₂ Spiral – <http://openclimatedata.net/climate-spirals/from-emissions-to-global-warming-line-chart/>

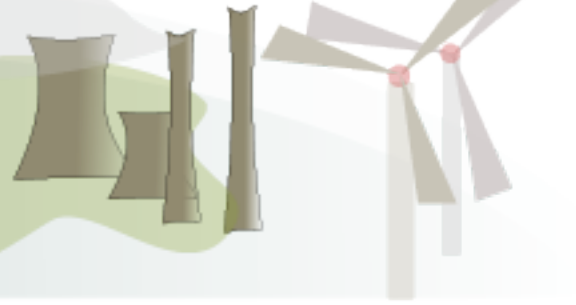
NASA climate in a minute cartoon

Earth has a Fever http://climate.nasa.gov/climate_resource_center/earthminute



Climate Change

Additional Resources



Causes: it's us

The cause of climate change is simple: CO₂ warms climate and we've dumped it in the atmosphere

Websites

Natural vs man-made climate change <https://www.bloomberg.com/graphics/2015-whats-warming-the-world/>

Ice core CO₂ records <http://earththeoperatorsmanual.com/segment/5>

Evidence that recent CO₂ is man-made <http://earththeoperatorsmanual.com/segment/6>

Videos

GeoBus:

The Greenhouse Effect in a minute <http://tinyurl.com/js9dpy8>

Geological context; What's different this time? <http://tinyurl.com/zhd3u2k>

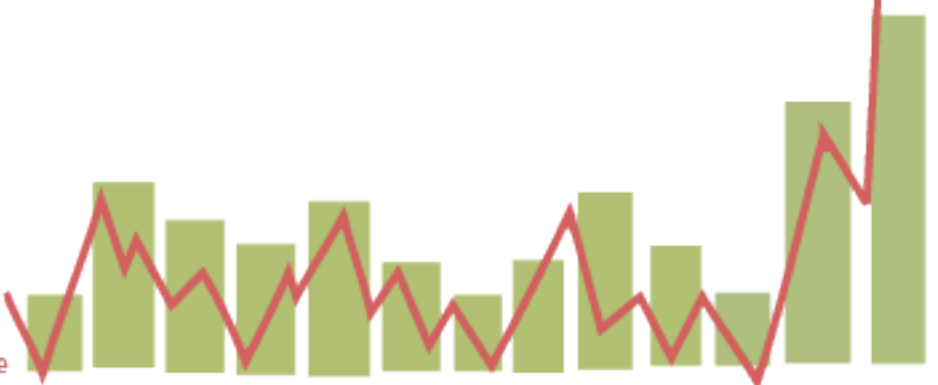
NASA climate in a minute cartoons:

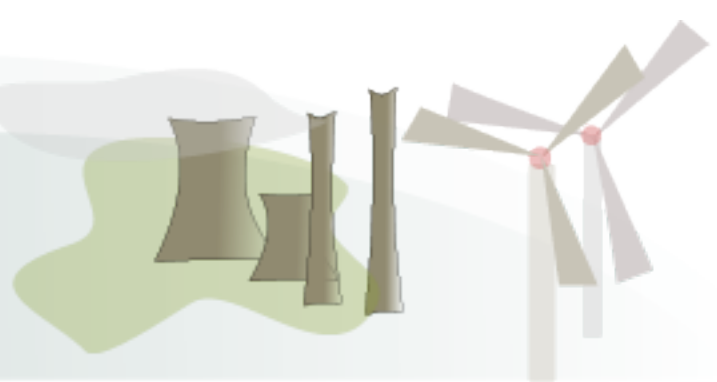
Gas problem http://climate.nasa.gov/climate_resource_center/earthminute

Usual suspects. Natural vs man-made climate change http://climate.nasa.gov/climate_resource_center/earthminute

Science of the Greenhouse effect <http://www.bozemanscience.com/the-greenhouse-effect/> (8minutes)

How GHGs make the planet warmer, scientist talking to camera. This video is aimed at higher students https://www.youtube.com/watch?v=AIBk0pGV_BQ





Impacts: it's serious

Climate change is bad news: higher sea levels and shortage of food and water will drive mass migration for humans, and mass extinction of plants and animals.

Websites

Sea Level Interactive climate time machine http://climate.nasa.gov/climate_resource_center/interactives

Global weirding; extreme weather, text explanation <https://acespace.org/blog/why-global-warming-means-global-weirding>

Extreme events: steroids and home runs analogy - <http://cleanet.org/resources/43778.html>

Videos

GeoBus:

Climate Impacts in a minute – <http://tinyurl.com/jr49es2>

Ice-Albedo Feedback in a minute <http://tinyurl.com/gpgv3rh>

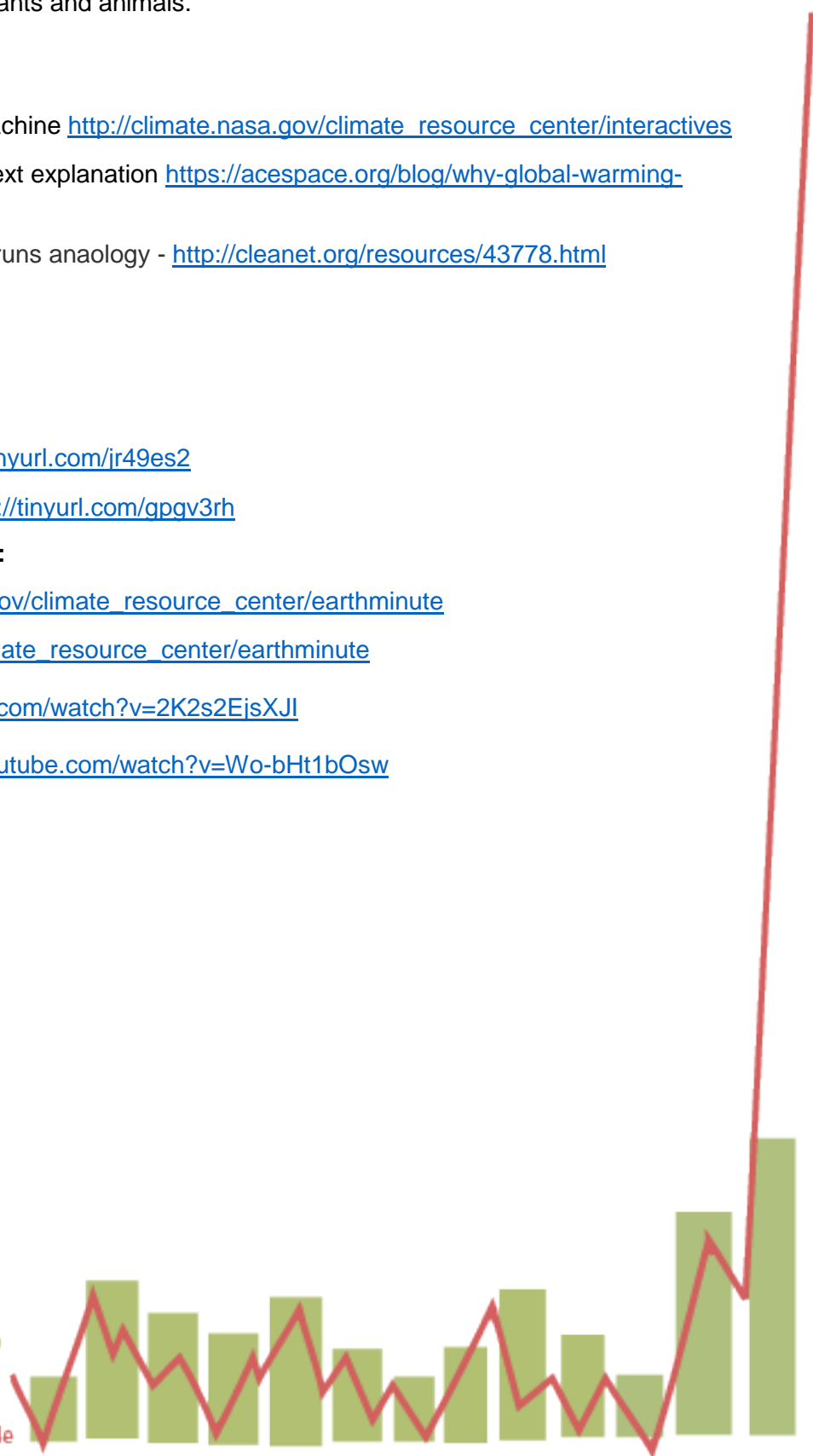
NASA climate in a minute cartoons:

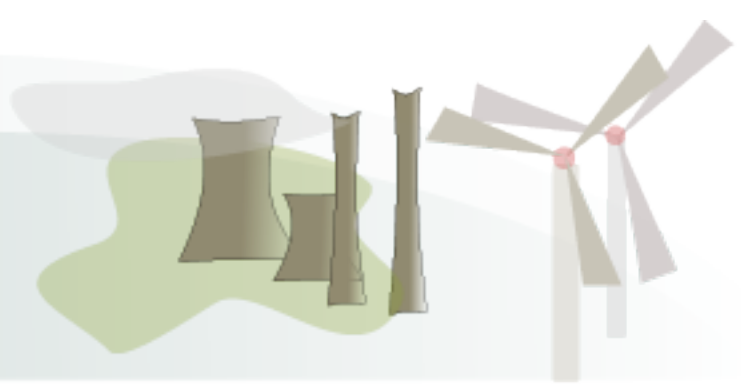
Running a Fever http://climate.nasa.gov/climate_resource_center/earthminute

Sea Level http://climate.nasa.gov/climate_resource_center/earthminute

Storm impact - <https://www.youtube.com/watch?v=2K2s2EjsXJl>

Ocean acidification - <https://www.youtube.com/watch?v=Wo-bHt1bOsw>





Solutions: it's solvable

Humans are ingenious and resourceful: fixing climate change won't be easy, but it can be done

Websites

Alliance for Climate Change <https://acespace.org/students>

School Projects: Do One Thing (DOT) <https://acespace.org/action/projects>

Write to your

MP: <http://www.results.org.uk/sites/default/files/files/How%20to%20write%20to%20your%20MP.pdf>

Videos

Renewables roundup <http://earththeoperatorsmanual.com/main-video/earth-the-operators-manual>

Leonardo Di Caprio at the Tesla factory <http://channel.nationalgeographic.com/before-the-flood/videos/welcome-to-the-gigafactory/>

Dealing with Climate Change Denial

Skeptical Science - clear answers to common arguments by climate change deniers, with optional levels of detail and an accompanying iPhone app. <https://skepticalscience.com>

Climate access, conversations with skeptics - best practice on how to field awkward questions. http://www.climateaccess.org/sites/default/files/T&T_Best%20Practices%20for%20Talking%20with%20Climate%20Skeptics.pdf

