

Sources for Global Climate Change (GCC) Information (updated: March 5, 2014)

The following information is provided for those who wish to learn more about global climate change. These materials are organized from the most basic information to more complex issues. Included are a number of the international and national assessments that represent the general scientific consensus on specific topics. It is important to remember that scientists are naturally skeptical and constantly test and retest their hypotheses as more observations are obtained and as knowledge advances. Climate science, like all the sciences, builds on current knowledge to generate deeper and broader understanding. This is an ongoing process that underpins the scientific method.

Below are websites where you can explore the fundamentals of the role of greenhouse gases in maintaining Earth's energy balance, and the role of additional (anthropogenic) greenhouse gases that result in an enhanced warming of the planet. The latter is called the Enhanced Greenhouse Effect (GHE) and is an important mechanism contributing to global climate change or what is popularly called "global warming". Global warming is a "catch all" term meaning that Earth's globally averaged surface temperature has warmed (~0.80 °C since 1900).

Understanding global climate change:

- 1) The United States' National Academy of Sciences (NAS) has a website devoted to Global Climate Change (GCC) (<http://nas-sites.org/americasclimatechoices/>). This is an excellent first step to learn more about the basics of GCC. You might start with their 2012 booklet entitled Climate Change: Evidence, Impacts and Choices (<https://nas-sites.org/americasclimatechoices/more-resources-on-climate-change/climate-change-lines-of-evidence-booklet/>).
- 2) More recently (February, 2014) the United States' National Academy of Sciences (NAS) and the British Royal Society jointly released a report entitled "Climate Change: Evidence and Causes" that is freely available (<http://dels.nas.edu/resources/static-assets/exec-office-other/climate-change-full.pdf>). It is accompanied by a freely available 8 page overview of climate change basics (<http://dels.nas.edu/resources/static-assets/exec-office-other/climate-change-basics.pdf>).
- 3) The U.S. Global Change Research Program (USGCRP) coordinates and integrates federal research on changes in the global environment and their implications for society (<http://www.globalchange.gov/>).
- 4) The most authoritative documents on the issue of global climate change are produced by the Intergovernmental Panel on Climate Change (called the IPCC). The IPCC assessments are available at <http://www.ipcc.ch>. The Fourth Assessment was released in March 2007 and the Fifth Assessment's Summary for Policymakers is available in draft form at (http://www.ipcc.ch/report/ar5/wg1/docs/WGIAR5_SPM_brochure_en.pdf). The full report is expected in spring 2014. In addition to the Summary for Policymakers there are reports from 3 different Working Groups (WG): WG1 (The Physical Science Basis), WG2 (Impacts, Adaptation and Vulnerability) and WG3 (Mitigation of Climate Change). The 2007 documents are all available at the IPCC site (<http://www.ipcc.ch>).
- 5) The Pew Center provides well balanced information (<http://www.pewclimate.org/>). The document entitled Climate Change 101 is excellent and available at <http://www.c2es.org/science-impacts/climate-change-101>.

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You can review U.S. efforts on the environment and global climate change at <http://www.whitehouse.gov/energy/climate-change>.

A new National Scientific Climate Assessment Report will be released in spring 2014. A factsheet giving the highlights is available at (http://downloads.globalchange.gov/factsheets/NCA_factsheet.pdf). The full draft (127 MB file) is available in draft form at <http://ncadac.globalchange.gov/download/NCAJan11-2013-publicreviewdraft-fulldraft.pdf>.

The State of the Arctic Report Card is published annually and is available at <http://www.arctic.noaa.gov/reportcard/>.

Additional resources:

- In November 2006 Sir Nicholas Stern, Head of the Government Economics Service and Adviser to the Government on the economics of climate change and development, presented his report to the Prime Minister and the Chancellor of the Exchequer on the Economics of Climate Change. http://webarchive.nationalarchives.gov.uk/20130129110402/http://www.hm-treasury.gov.uk/stern_review_report.htm
- The Yale School of Forestry and Environmental Studies' website has excellent content including economic information (<http://environment.yale.edu/>).
- The *New Scientist* has posted an article entitled: Climate change: A guide for the perplexed. May 16 2007 at <http://environment.newscientist.com/channel/earth/dn11462>. This reviews 26 of the most common myths and misconceptions about climate change.
- The NAS has an excellent website on energy (<http://needtoknow.nas.edu/>) and has an excellent publication titled: What you need to know about energy? available as a free download at http://www.nap.edu/catalog.php?record_id=12204
- Another valuable website for data & graphs is the Goddard Institute for Space Studies: <http://www.giss.nasa.gov/>. There is much information and many data sets available here.
- Another valuable website for data & graphs is the Climate Research Unit at the Univ. of East Anglia. <http://www.cru.uea.ac.uk/>.
- For those who follow blogs and information sites: <http://www.realclimate.org/>; <http://climatenexus.org/>; <http://www.climatecentral.org/>; <http://www.climate.org/>

Books on the topic include:

- Andrew Dessler, *Introduction to Modern Climate Change*, Cambridge University Press, 2012.
- Andrew Dessler and Edward Parson, "The Science and Politics of Global Climate Change: A Guide to the Debate", 2nd Edition, Cambridge Press, 2010.
- David Archer, *Global Warming: Understanding the Forecast*, 2nd Edition. Blackwell, Malden, MA., 2011.
- Burton Richter, *Beyond Smoke and Mirrors: Climate Change and energy in the 21st Century*, Cambridge University Press, 2010.
- Henry Pollack, *World Without Ice*, Penguin Books, London, 2009.
- David Archer, *The Long Thaw: How Humans are Changing the Next 100,000 Years of Earth's Climate*, Princeton University Press, 2009.
- Spencer Weart, *The Discovery of Global Warming* online: <http://aip.org/history/climate/index.html>

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Much information is available on the Byrd Polar Research Center Website (<http://bprc.osu.edu/>) and on our group website (<http://www-bprc.mps.ohio-state.edu/Icecore/front-page.html>) where copies of our publications are also freely available.