

Global Climate Change Online Teaching Resources

Grades 4 - 14

****Note many of these website lead to PDF files that may not open. Instead they may be downloaded to your computer. Check your down load files,**

Large comprehensive curricula that deal with Climate Change.

1. **DLESE** A place to search for science curriculua by grade level and topic, select their climate change collection.

<http://www.dlese.org/library/index.jsp>

2. Wildlife and Wildlands

Funded by EPA explores many ecosystems and the impacts on nature.

<http://www.globalchange.gov/resources/educators/toolkit>

Explore your ecoregion

<http://www.globalchange.gov/resources/educators/toolkit/explore>

3. Conceptualizing Climate Change

<http://www.iclimate.org/ccc/>

Purdue University. Has excellent teaching materials for El Nino, ecological impacts, greenhouse gasses, extreme weather and natural processes (natural processes included Milankovitch cycle.

4. Climate Discovery Teachers Guide UCAR. Excellent materials on CO₂, Nitrogen cycle, ocean and atmosphere, and the energy cycle etc.

<http://eo.ucar.edu/educators/ClimateDiscovery/index.htm>

5. Windows to the Universe On line interactive materials UCAR

http://www.windows2universe.org/earth/Water/co2_cycle.html

NOVA Teachers Domain A listing of videos that deal with climate

http://www.teachersdomain.org/browse/?fq_hierarchy=k12.sci.ess.watcyc.climate

Rapid Climate change

NOVA Teachers Domain Rapid climate change data from Ice Core Data.

http://www.teachersdomain.org/asset/ess05_vid_climatechange

Teaching materials by topic

The Greenhouse Effect

The CO₂ Cycle. Animated game.

http://www.windows.ucar.edu/earth/climate/carbon_cycle.html

Take Aim at Climate change. A short video suited for teens singing rap.

<http://passporttoknowledge.com/polar-palooza/whatyoucando/taacc/>

Green house gas short video

http://www.teachersdomain.org/resource/ess05.sci.ess.watcyc.lp_global1/

NOVA Teachers Domain –<http://www.teachersdomain.org/> REGISTRATION PAGE

You will have to register to access it but there is no charge. This website has over 100 videos on many topics. Search for climate change, ice loss etc to tease out videos and activities that are relevant to climate change.

http://www.teachersdomain.org/resource/ess05.sci.ess.watcyc.lp_global1/

This site opens to 5 short videos dealing with *Greenhouse effect, Carbon Dioxide, Greenland ice sheet, Physics of Climate change, and Natural Climate Change in Africa*. Teaching activities are also found on this site. Also Search the NOVA domain for other topics such as Climate Change Ice Loss etc.

NOVA Teachers Domain short video Rapid climate change data from Greenland Ice Core Data.

http://www.teachersdomain.org/asset/ess05_vid_climatechange/

NOVA Teachers Domain Antarctic Ice Sea Level change animation showing rising sea levels

<http://www.teachersdomain.org/resource/ess05.sci.ess.watcyc.sealevel/>

Perdue Teaching materials -Conceptualizing Climate Change

<http://www.iclimate.org/ccc/>

This is a curriculum that covers many topics of climate change, Ecological impacts, Greenhouse gases, Extreme Weather, Natural Processes. Move the cursor over the each title and a menu appears for different topics. Each lesson includes a powerpoint, an activity and teachers guide. All are excellent. I have chosen one below for its particular content.

Natural cycles. The Milankovitch cycle. Ice ages and Interglacial ages. Teaching Activity

Arctic Ice Loss

UCAR's Climate Discovery Teachers Guide offers four main topics. CO₂, Nitrogen, Ocean and Atmosphere and Energy cycle. The activity below deals with Ice and Albedo (reflection of sun and heat back into atmosphere)

Ice and Albedo

<http://eo.ucar.edu/educators/ClimateDiscovery/ESS.htm>

More Ice activities.

When polar ice caps melt. Activity with ice blocks & pans.

http://www.esrl.noaa.gov/gmd/education/lesson_plans/When%20Polar%20Ice%20Caps%20Melt.pdf

Compare images of Arctic Sea Ice Extent

http://www.windows2universe.org/earth/polar/sea_ice/sea_ice_compare.html

National Geography Short video of Arctic ice melt (very good)

<http://video.nationalgeographic.com/video/player/news/environment-news/sea-ice-vin.html>

The Tundra

Conceptualizing climate and climate change Purdue materials

curriculum Select Arctic ecosystems.

<http://www.iclimate.org/ccc>

Greenland Melt

Video on melting glaciers. Cost 49.00 2 minute preview frames the issues.

http://www.ambrosevideo.com/items.cfm?id=1298&category_id=1&auto_play=1

Glacier Retreat

Climate Discovery Activity. Where have all the Glaciers gone?. Examine Swiss glaciers

http://eo.ucar.edu/educators/ClimateDiscovery/LIA_lesson4_9.28.05.pdf

(material will download to your computer find it in your computers download file)

UCAR windows to the Universe -- Compare - Glaciers then and now. photos of Glaciers to that shows ice loss.

http://www.windows2universe.org/teacher_resources/teach_glacier.html

UCAR Windows to the Universe. Make a model of glacier motion and learn what affects the speed of the glacier.

http://windows2universe.org/teacher_resources/teach_flubber.html

Sea Level Rise

DLESE teaching box. Global Ups and Down sea level rise. Grade 3 -12

This teaching box focuses on the concept that changes in sea level have occurred in the past, are occurring now, and will continue to occur.

<http://www.teachingboxes.org/seaLevel/index.jsp>

TED Talks (18 minutes) – *Discovering ancient climates in ocean and ice* High School Level Discusses the role that Western Antarctica can play in sea level rise and how they study ancient climate changes. .

http://www.ted.com/talks/rob_dunbar.html

Sea Level Rise - Short video shows floating ice vrs land based ice impacts on sea level. Has three other “exercises in this curriculum relevant to climate change.

level. http://oceandrilling.coe.tamu.edu/curriculum/Sea_Level/Ice_Volume/activity.html

Impacts on Forests

Beetle Infestation

PBS Newshour - Listen to report on beetles and follow lesson plan. Select the classroom applications. If they don't open, search your down loads files to find the documents.

http://www.pbs.org/newshour/extra/features/health/jan-june08/beetle_4-28.html

Climate Discovery Teachers Guide -Trees recorders of Climate
http://eo.ucar.edu/educators/ClimateDiscovery/LIA_lesson5_9.28.05.pdf

Coral Reefs – Coral Bleaching

Process of Coral Bleaching

This short video explains the process of coral bleaching.

<http://www.youtube.com/watch?v=miLyqOrnwZc&NR=1>

Coral bleaching for younger students

Animation of coral growth and coral bleaching

<http://www.youtube.com/watch?v=iW8nCALx5iA>

Climate Change impacts on Great Barrier Reef

Corals Climate change. Impacts on Great Barrier Reef.

<http://www.archipelago.co.uk/environment>

What is coral Bleaching Produced by Great Barrier Reef Park Authority

<http://www.archipelago.co.uk/environment>

Coral Bleaching a white hot problem

Temperatures and coral bleaching activity using data....

High School level

http://www2.vims.edu/bridge/DATA.cfm?Bridge_Location=archive0406.html

Coral bleaching for younger students

Animation of coral growth and coral bleaching

<http://www.youtube.com/watch?v=iW8nCALx5iA>

Coral Reef Watch

Curriculum from NOAA Satellite and information service

Remote sensing and coral reefs. Grades 4-6.

http://coralreefwatch.noaa.gov/satellite/education/reef_remote_sensing.html

Ocean Acidification

Ocean acidification teaching resources. Woods Hole Oceanographic Institute

This website links to 7 different sites that offer teaching materials plus other sites for acidification education.

<http://www.whoi.edu/OCB-OA/page.do?pid=32866>

Ocean acidification -- EuroOceans. video

This has the most detail about acidification and its impacts on marine organisms such as pteropods, coccolithophores corals... good for HS level.

<http://www.youtube.com/watch?v=eedBMXudQfE>

The other CO₂ problem -Acidification for younger kids.

Claymation video produced by kids for kids ~ 5 minutes

<http://www>

Coral Sand and Vinegar: Investigating Ocean Acidification

http://ww.oceanfest.soest.hawaii.edu/downloads/5_Ocean_Acidification.pdf

Acidification Great Barrier Reef Park Authority Animations for young students on climate change and acidification.

http://www.reefed.edu.au/home/reefbeat/climate_change_and_our_great_barrier_reef

Acidification. An interactive on-line game that explain ocean acidification and its impacts on organisms.

<http://i2i.stanford.edu/AcidOcean/AcidOcean.htm>

Extreme Weather Events

Hurricanes and climate are they getting stronger

http://www.windows2universe.org/teacher_resources/hurricane_climate/teach_hurricane_climate.html

Ocean Oscillations that cool and warm the planet.

Investigating El Nino

<http://www.iclimate.org/ccc/>

Fossil Fuels

Activities for Conceptualizing Climate and Climate Change

<http://www.iclimate.org/ccc> choose fossil fuels.

Alternative Energy Sources. .

Build a wind turbine - Hands on kits for building classroom wind turbines and testing their efficiency. <http://www.kidwind.org/xcart/home.php?cat=4>

Climate Skeptics.

Sun Spot activity. Select Natural Processes.

<http://www.iclimate.org/ccc>

Population growth

World Population 7 minute video. Begins with 1-AD and follows human population growth to the present.. Video has a map a light goes on with each 1 million people added to the planet. Very good!

<http://www.youtube.com/watch?v=4BbkQiQyaYc&feature=related>

Teaching population issues a number of lesson plans

http://www.populationeducation.org/index.php?option=com_content&view=article&id=335&Itemid=2

Energy savings.

EPA guidelines for energy savings.

Savings for home, office to driving to schools. It has a section for conservation for teens.

<http://www.epa.gov/climatechange/wycd/index.html>

Taking action websites for students

Green Schools - <http://www.greenschools.net/>

Cool Schools <http://www.coolschoolchallenge.org/whos-cool.aspx>