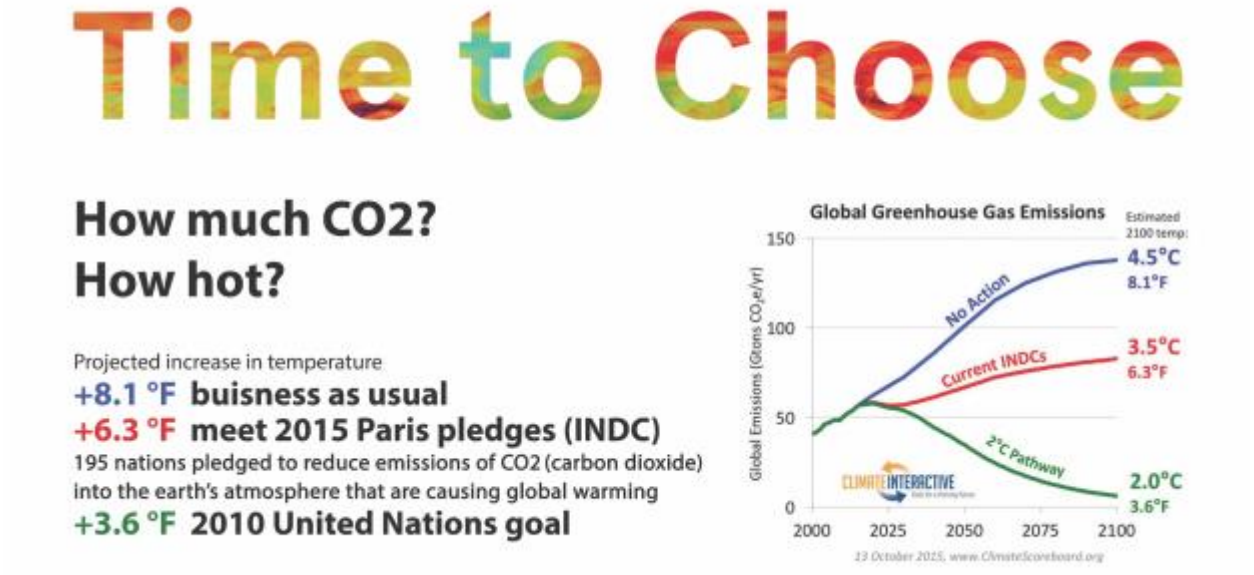
Curated by Elizabeth L. Langhorne

The exhibition ***Earth, Fire, Water, Air: Elements of Climate Change*** at the Central Connecticut State University Art Gallery, March 9 – April 13, 2017, explores climate change through visual means in a juxtaposition and intermingling of art and science. "We can register what is happening with satellites and scientific instruments, but can we register it in our imaginations, the most sensitive of all our devices? ... Art, like religion, is one of the ways we digest what is happening to us, make the sense out of it that proceeds to action."[1]



[1] Bill McKibben, "What the warming world needs now is art, sweet art," Grist, April 22, 2005

The modern world uses a lot of energy. Energy is fundamental to economic activity—powering homes and businesses. We Americans consume nearly one quarter of the world's energy (although America is home to only five percent of the world's population). And we use 40% of that energy to generate electricity[2], and 28% for transportation[3].

In 2015 most of American energy (81%) comes from burning fossil fuels: carbon rich coal, oil, natural gas.[4] These formed millions of years ago from dead plants and animals. Humans all over the world now extract these fossil fuels from the earth to run our modern world.

Carbon is fundamental to life. If you weigh 100 lbs, you are about 18% carbon. But when humans began to burn fossil fuels, we started to release more carbon into the air than the natural carbon cycle can handle. Plants in the process of photosynthesis normally absorb CO2 to create new growth, but we are adding so much CO2 along with other invisible greenhouse gases into the earth's atmosphere that we create a gaseous blanket that is heating up the globe, causing the average temperature of the earth to go up. The earth has a fever!

The NASA video, created with information gotten from space satellites, shows the increased carbon emissions swirling around the globe. How do we lower the levels of CO2? Almost a third of U.S. greenhouse gas emissions come from electricity; more than a quarter comes from transportation, with passenger cars causing 59% of that.[5] Did you know that some SUVs emit more than 4 times the carbon than light cars?[6]

Use less electricity! Use transportation that does not depend on fossil fuels!

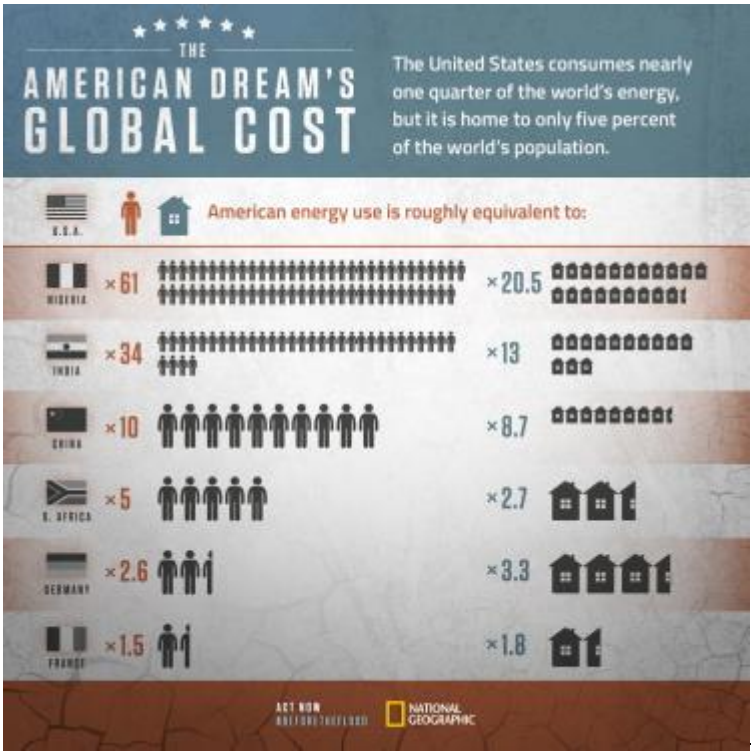
More information on:

Climate Change in general: Justin Gillis, "Short Answers to Hard Questions about Climate Change," New York Times, Nov. 28, 2015
Leonardo DiCaprio's Before the Flood - Full Movie/ National Geographic 2016
Natural Carbon Cycle: Earth Vision Institute, *Getting the Picture: Our Changing Climate* *2.3* free online climate education resource accompanying James Balog's film *Chasing Ice*.
The True Cost of Coal, Beehive Design Collective narrative pamphlet for this art work
Electricity, C2ES Center for Climate and Energy Solutions: Electricity Overview
Transportation: C2ES Center for Climate and Energy Solutions: Transportation Overview
CO2 Emissions. NASA Video, A Year in the Life of Earth's CO2
The Hidden Carbon Dioxide World, Discovery Education, Vimeo Clip from documentary film Racing Extinction 2015
BP Oil Spill: The Gulf Oil Spill Disintegrated This Island/ National Geographic 2015
Drilling near National Parks: Earth Vision Institute, 1000 Cuts. James Balog video. 2015
President Obama Clean Power Plan. Environmental Protection Agency fact Sheet: Overview of the Clean Power Plan 2015

---

[2] Environmental Protection Agency, Energy and the Environment, accessed March 7, 2017.
[3] U.S. Department of Energy (DOE), Oak Ridge National Lab (2015) *Transportation Energy Data Book: Edition 34*, accessed March 7, 2017.
[4] U.S. Energy Information Administration | Annual Energy Outlook 2015
[5] C2ES Center for Climate and Energy Solutions Transportation Overview
[6] Philippe Squarzoni, *Climate Changed: A Personal Journey Through the Science* (Abrams 2014), 182

More information on international



Source **http://channel.nationalgeographic.com/before-the-flood/interactives/the-american-dreams-global-cost/**

More information on Our State Connecticut

CT's commitment to reduce its total greenhouse gas emissions to at least 80 percent below 2001 levels by 2050 and on 2015 Governor's Council on Climate Change (GC3), CT Fund for the Environment, Connecticut Climate Plan
CTfastrak, 10 ways to get to a more vibrant central connecticut
Bike New Britain, bikenewbritain.org

What we can do

-Make sure your lighting is efficient. LED light bulbs generally use up to 80 percent less energy than traditional incandescents, and they last longer.
- Turn off lights when no one is in the room.
- Replace old appliances with ENERGY STAR program certified products for energy efficiency.
- Adjust your thermostat up in warm months and down in cold ones, especially when you're not home.
- Use public transportation when possible, walk or ride a bike to your destination.
- Carpool whenever possible.
- Reduce your car trips by planning ahead and consolidating your errands.
- Buy a fuel-efficient car or even a zero-emission electric vehicle.
- Learn about your carbon footprint. https://www3.epa.gov/carbon-footprint-calculator/
- Reduce, reuse, recycle

Fire

2016 is the hottest year on record!

The bottom chart shown displays data from 1880 to 2015 depicting the rise in CO2 emissions. It also displays the accompanying rise in temperature above the average healthy temperature of the globe: 57.5ºF.

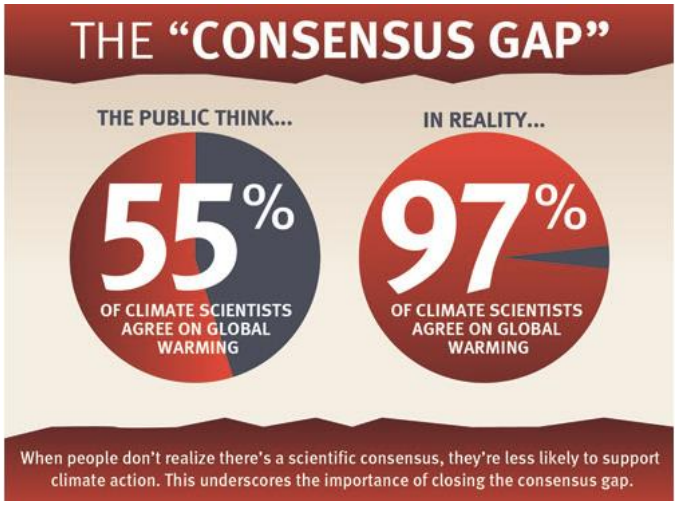
When scientists take ice cores from glacial ice formed long ago, the bubbles of air caught in this ice reveal how much CO2 was in the air even 400,000 years ago. The top chart shows that over the 1000s of years temperature and CO2 have remained through ice age cycles in sync. However, in modern times CO2 is rising rapidly.

What awaits us? The fear is that even a temperature rise of 3.6°F will create changes not just in our short-term weather, but in our long-term climate which humans will have less control over. Already we are witnessing more devastating storms and droughts. Hurricane Katrina, Hurricane Sandy, California droughts and wildires are such events. Can you think of others?

What awaits the animals of the earth? NASA satellites have recorded a 10 day shift in the arrival of spring in the northern hemisphere due to climate change. Will bees be able to adapt to this shifting schedule of flower blooms? Bees are, it is often said, pollinators of 1 of every 3 bites of food that we eat. Bees are already disappearing in massive numbers, due in part to the pesticides that we use. What role does climate change play in challenging our human food supply?

More information on

Hottest year on record. NASA video, Global Warming from 1880to 2016
Ice cores, Getting the Picture: Our Changing Climate, "Secret Messages in the Ice 1.4"
Data on precipitation and drought, NOAA Climate.gov data snapshots maps



https://www.skepticalscience.com/graphics.php?g=82

Climate Change Deniers: *Merchants of Doubts* 2015 documentary film trailer

On Bees and Climate Change, NASA video, Sting of Climate Change
Backyard Urban Beekeeping: Katie Valentine, "How A Rise in Backyard Beekeeping Can Help Teach City Dwellers About Climate Change," @Think Progress, June 4,2014
Bees' Waggle-Waggle Dance, "Dance of the Honey Bee," from Bill Moyers.com.
and NOVA, "The Waggle Dance."

More information on Our State Connecticut

On Nomad 9, interdisciplinary MFA program, Hartford Art School on art, ecology, urbanism, history, technology: http://www.nomad9mfa.org/philosophy/
CT Beekeepers Association: http://ctbees.org/
@TedKennedyJr. Announces Bipartisan Support for Legislation to Promote Pollinator Health
New Britain's bee logo: http://www.courant.com/news/connecticut/hc-new-britain-city-branding-0125-20170124-story.html
Bee Video created by New Britain 5th graders, displayed at Closing Reception, Wed. April 12, 4-7

What we can do:

Protect and increase bee habitat, especially along roadways and utility right of ways
Plant a wildlife garden with native plants that bees like: Sunflowers, Joe-Pye Weed, Asters, Purple Coneflowers, Goldenrod, etc
Don't buy neonic pesticides!
Become a backyard beekeeper

As the planet heats up, the sea level rises. The quickening pace of the melting of the glaciers is documented in James Balog's filming of the calving of the Ilulissat Glacier in Greenland in 2008. As the globe warms, the water temperature also increases. In fact thermal expansion of seawater has caused most of the sea level rise this past century, roughly 1.5 feet, and will continue to do so even if we reduce carbon emissions. Increased melting of the ice sheets in Greenland and Antarctica will contribute more to sea levels rising. Scientists predict that within the next century that sea levels could rise an additional 3.25 feet which could have dramatic consequences.[7]

Many people live in coastal areas. As sea levels rise, ecologically sensitive regions such as beaches and wetlands, will continue to erode. Parts of coastal cities, whether Miami, New Orleans, New York, New Haven or Mumbai, will be inundated if humans continue "business as usual." As testified to in Cortada's *Longitudinal Installation* at the South Pole, already in 2007 people around the globe were observing the effects of global warming and sea rise in their lives.

The devastating burdens of energy related disasters and climate change, like the BP Oil Blowout or Hurricane Katrina, are issues carried by people who didn't create or profit from them. The most vulnerable among us – including children, older adults, people with heart or lung

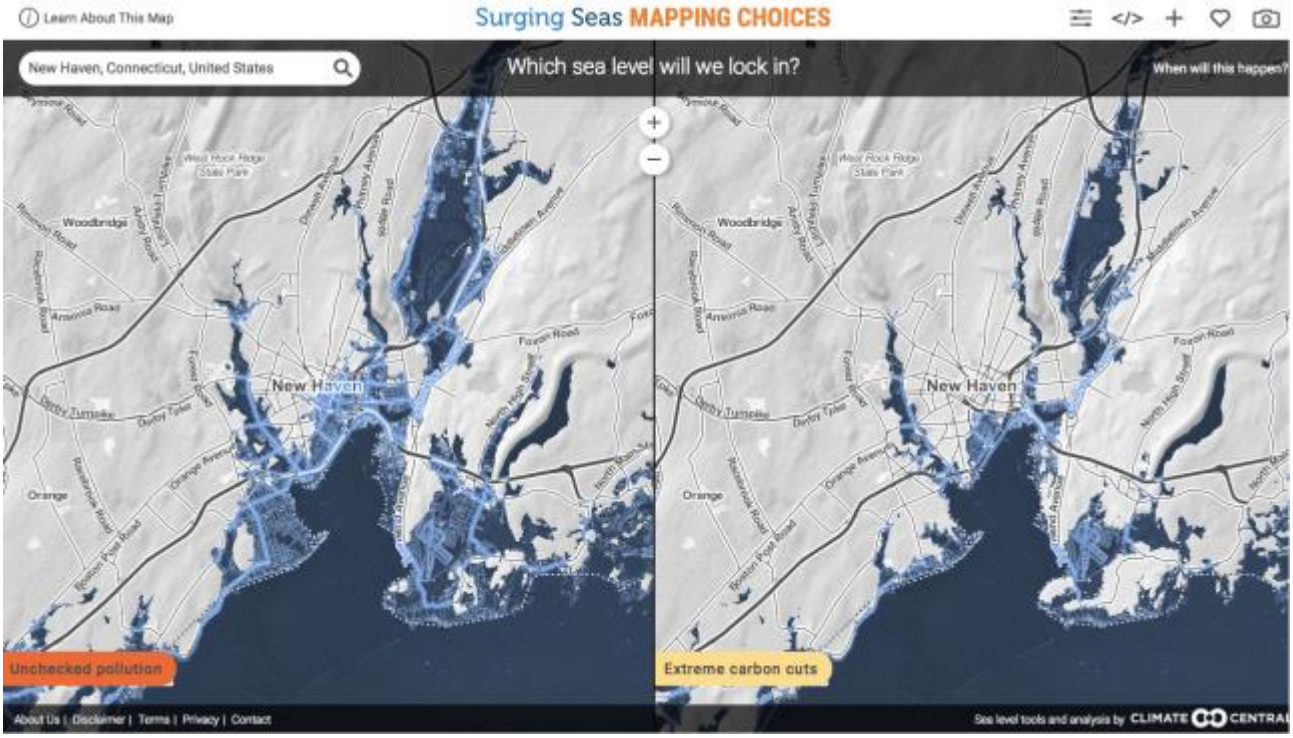
[7] Justin Worland, "Antarctic Ice Melt Could be Responsible for a Dangerous Rise in Sea Levels," Time Magazine, March 31, 2016

disease and people living in poverty – may be most at risk. The 2015 Paris accords included the pledge by richer nations to help poorer nations deal with the effects of changing climate.

More information on

Chasing Ice. James Balog's documentary film Chasing Ice 2012 trailer
Hydrosphere. *Getting the Picture: Our Changing Climate*, 3. Our changing hydrosphere, 5.4 Rising Seas and water scarcities
The Ocean. Conservation International film. Nature is speaking: HarrisonFord is The Ocean
Sea rise in Miami. National Geographic, *Years of Living Dangerously*, Season 2, Episode 2, *The Rising* with Jack Black. http://channel.nationalgeographic.com/streams/ngc/
Eco justice: Xavier Cortada's Longitudinal Installation's 24 Time Zone Quotes 2007
Pope Francis' Encyclical Laudato-Si on care for our common home, 2015
March for Climate, Jobs, Justice. April 29, 2017, Washington D.C.
Climate Change Negotiations Game. Using C-ROADS computer simulation, participants find out how their proposed policies impact the global climate system in real-time. On secondary school students playing the game, see Juliette Rooney-Varga: Climate Change Education
Some health consequences: *Getting the Picture: Our Changing Climate*, **5.6 What's up with the bugs?**

More information on Our State Connecticut



CT planning for the impacts of climate change, including sea level rise, Connecticut Institute for Resilience and Climate Adaptation (CIRCA)
New Britain High School Artists respond to James Balog's *Chasing Ice*, Art Exhibition, Stockman Gallery, Trinity-on-Main, New Britain, opening March 30, 5-7pm.

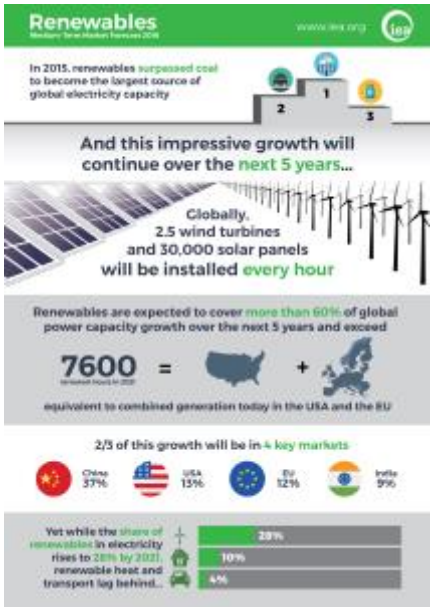
Air

Much of our renewable energy comes from the wind and the sun. In 2015 renewables surpassed coal to become the largest source of global electricity. According to The International Energy Agency (IEA) renewables will remain the fastest-growing source of electricity into 2021, reaching nearly 30 percent of all power generation by then. Two-thirds of this growth will be in 4 key markets: China 37%, US 13%, EU 12%, and India 9%. This means a lot of jobs![8]

Should the US not lead this development?[9] Iowa had "the right idea" as early as 1984 and in 2016 expanded its renewable energy infrastructure, starting to build a $3.6 billion wind farm, the largest in the nation.

In 2015 Connecticut, as one of the nine states in the US, joined the Under 2° Coalition that includes nations and cities around the globe that aim to limit global warming to 2ºC (3.6ºF). Will Connecticut reach its goal of pushing carbon emissions back to pre-industrial levels? According to the US IEA Connecticut ranked 45th in its use of renewables. Clean energy development in Connecticut has focused on trash to energy, hydropower, and expansion of natural gas (methane) pipelines and consumption, rather than on 100% renewable, non-carbon solar and wind power.[10]

In Austin, Texas artists Mags Harries and Lajos Heder have made use of solar energy in a retail development, merging light, color and shadow to create *SunFlowers*, an iconic public art installation. *Little Sun* created by the artist Eliasson and the engineer Frederik Ottesen provide clean, reliable, affordable light to off-the-grid communities in more than 10 African countries. And Alexander Dang's *Dancing Solar Flowers* introduce the younger generation to the realities of solar energy.



[8] International Energy Agency, "Medium-Term Renewable Energy Market Report 2016"
[9] Hiroko Tabuchi, "As US Cedes Leadership on Climate, Others Step Up at Davos, New York Times, Jan. 21, 2017
[10] Julius Graefe, "Is Connecticut Ready for 100?" The Quinnehtukqut, February 2017

More information on

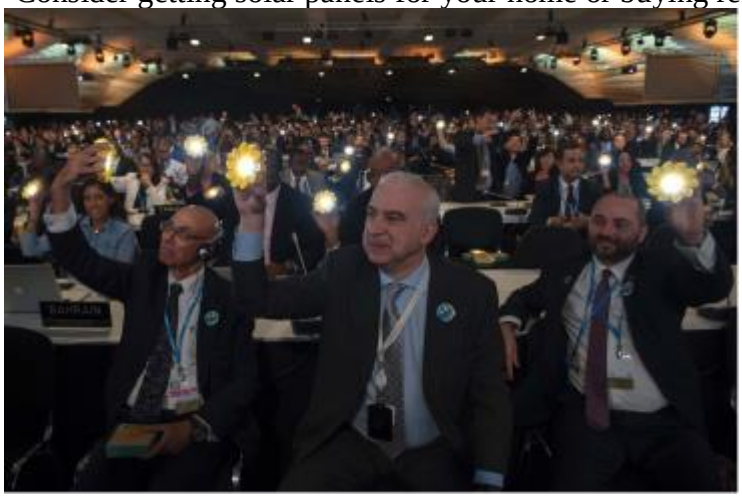
350.org, a global grassroots climate movement with a CT chapter working to hold our leaders to the realities of science and the principles of justice.
The energy transformation in Germany. Germany's Offshore Wind Push, 2014 video by Erik Olsen
Solar energy in India. National Geographic's *Years of Living Dangerously*, Season 2, Episode 1, "A Race Against Time" with David Letterman
China's impact on the global environment. National Geographic's *Years of Living Dangerously*, Season 2, Episode 8, "Uprising" with Sigourney Weaver. Available through Amazon.com
Art+Activism=Artivism at 350.org

More information on Our State Connecticut

The Solutions Project for 100% Renewable Energy Infographic for Connecticut
Connecticut's Clean Energy Future: Protecting the Climate, Creating Jobs, Saving Money
Making green energy accessible to everyone in the state, Connecticut Green Bank

What we can do

-Turn off and unplug computers, appliances and other electronics when not in use. Or think big and buy energy-efficient appliances and go solar.
-Consider getting solar panels for your home or buying renewable energy credits.



Source: Hiroko Tabuchi, U.S. Companies to Trump: Don't Abandon Global Climate Deal, New York Times, Nov. 16, 2016

Ideas for using the exhibition in CCSU classes:
The Gallery invites **CCSU class posters** (24 x 36") created by humanities, science, and business classes (such as Biology, Chemistry, Finance, Geography, History, Management and Organization, Marketing, Technology & Engineering) in response to the exhibition. The posters can be just text or charts reflecting class work, whether to deepen or expand climate change awareness presented in the art exhibition. One poster from each class will be presented, as it is created, in the Front Gallery. Call Gallery at 860-832-2633.

Exhibition Checklist
Earth, Fire, Water, Air: Elements of Climate Change at the Central Connecticut State University Art Gallery, March 9 – April 13, 2017

Earth

Earth at Night 2012. NASA Earth Observatory image by Robert Simmon, using Suomi NPP VIIRS data provided courtesy of Chris Elvidge (NOAA National Geophysical Data Center).

Elizabeth L. Langhorne, "Time to Choose: How much CO2? How hot?", Curatorial question.

Professor Ted Efremoff and students Zach Hanna, Roland Muniz and Michelle Thomas from CCSU's Art 465/565, Social Practice, Environmental Art course.
Salvage Ark, 2017, recycled plastic and other materials 10'6" x 6 x 14'
http://www.tedefremoff.com/

Scott Schuldt and Cecelia Bitz, *The Explorations of Professor Bitz*, wearable, glass beads, canvas anorak, 2010
http://www.scottschuldt.com/

Resa Blatman, Oval: *Trouble in Paradise 3*, 2015
Latex paint on Mylar and PVC; silk and plastic flora
76″h x 17.5″w x 10″d
http://resablatman.com/resa-wp/

The Beehive Design Collective *The True Cost of Coal Banner*, 2010, 56″h x 108″w
http://beehivecollective.org/

Video: *A Year in the Life of Earth's CO2*.
NASA model visualization of CO2 in the Earth's atmosphere. Image source: NASA
Available at https://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=11719
.

Jave Yoshimoto, *Evanescent Encounter*, 2010, Gouache on paper, 26 x 40″

http://www.javeyoshimoto.com/

http://www.artworksforchange.org/portfolio/jave-yoshimoto

Janet Culbertson, *Carpool*, 2009, Oil, collage, iridescent pigments on rag paper, 29 x 41"
http://www.janetculbertson.net/

Art Bike, by New Britain Artist.

CTfastrak poster for New Britain Station designed by CCSU's Central Design class in Fall 2015.

Christopher McNulty, *Stain*, 2009, Paper and exhaust pipe residue, series of 141 elements, 6″ x 6″ each [in front gallery]
christophermcnulty.com/

Fire

Janet Culbertson *Storm*, c.2008, oil on canvas 29 x41"
http://www.janetculbertson.net/

Video: *Global Warming from 1880 to 2016*. Credit NASA/Goddard Space Flight Center Scientific Visualization Studio. Data provided by Robert B. Schmunk (NASA/GSFC GISS).
Video available at NASA video, Global Warming from 1880 to 2016

Chart: *Global Temperature and Carbon Dioxide 1880-2012*. From the *National Climate Assessment* published by the Global Change Research Program: globalchange.gov. Image provided by NOAA.

Chart: *Temperature and CO2 from Antarctic ice cores over the past 800,000 years*. Image credit: Jeremy Shakun.

Alexis Rockman, *Untitled (Cherry Blossoms)* 2013, watercolor, ink and gouache on paper, 72.5 x 52"
alexisrockman.net/

Video: *Sting of Climate Change*. Credit: NASA Scientific Visualization Studio. Available at http://climate.nasa.gov/climate_resources/41/

Joseph Smolinski, *Ghost Bee 1*, 2015, 3D printed PLA plastic with resin coating, 9.5 x 10.75 x 8"
http://www.smolinskistudio.com/

Carol Padberg, *Regeneration Cycle,* 2016
http://www.nomad9mfa.org/the-team/staff/carolpadberg/

Water

Resa Blatman, *Glisten,* 2013, oil and glitter on lazer cut panels, 55 x132 x5"
http://resablatman.com/resa-wp

Lisa Goren, *The Strong Glacier*, watercolor, 22 x 30" [on top]
Lisa Goren, *Weight of the Glacier,* watercolor, 22 x 30" [on bottom]

https://www.lisagorenpaintings.com/

James Balog, "CHASING ICE" captures largest glacier calving ever filmed, 2012. Video available at https://www.youtube.com/watch?v=hC3VTgIPoGU

Mags Harries, *Rising Water,* 2015, rubber boots, rope, water in goldfish transport bag, dimensions vary, approximately 16" depth x 52" width, can be adjusted to 10' 7" height
http://magsharries.com/

Xavier Cortada, *Longitudinal Installation (at the South Pole),* 2007, Digital print, 24 x 36 in.
Cortada, *24 Time Zone Quotes*, 2007, as read by Cortada, audio file
cortada.com/

Ricardo Levins Morales, *Environmental Justice*, print, 24 x 16.38"
rlmartstudio.com/

Climate Central's *Surging Seas, Mapping Choices* interactive site: *New Haven*
sealevel.climatecentral.org

AIR
Julia Samuels, *Iowa has it Figured Out*, 2010, relief print, hand printed, full bleed, artist proof, 42 x 90"
http://www.crayolajunkie.com/

Mags Harries & Lajos Héder *SunFlower* Model, 10.25" x 8" x 5"; The Mueller Redevelopment Art Project, Austin, Texas, presentation drawing;
SunFlowers, an Electric Garden, 2009, Day image"; *SunFlowers, an Electric Garden*, 2009, Night Image, all photographs 32 x 44". Photo credits: David Newsom.
harriesheder.com/
http://harriesheder.com/

Olafur Eliasson and Frederik Ottesen, *Little Sun,* 2012 ongoing
http://www.olafureliasson.net/
http://littlesun.com/

Alexander Dang, *Dancing Solar Flowers*, a vertical garden, 50 photo-voltaic cells mounted with 50 flowers of man-made materials, on window 190 x 90". Collection of Anya and Andrew Shiva Gallery, John Jay University, New York City.
http://alexandredang.com/
http://alexandredang.com/spip.php?rubrique8