These organizations are working around the globe combatting climate change, food and water insecurity, biodiversity loss, fossil fuel consumption and environmental injustices through policy, advocacy and activism.

**National and Global**
- 2nd Nature
- 350.org
- Climate Action Network
- Citizens’ Climate Lobby
- Earthjustice
- Fairtrade International
- Greenpeace
- Sierra Club
- Union of Concerned Scientists

**Local**
- Adirondack Mountain Club (ADK)
- Capital Roots
- Citizens’ Climate Lobby, Albany
- Environmental Advocates of NY
- People of Albany United for Safe Energy
- NY Renews
- Radix Ecological Sustainability Center
- Regional Foodbank, Northeastern NY
- Sierra Club, Hudson-Mohawk
- UAlbany Peace Action
- UAlbany Students for Sustainability
- UAlbany Graduate Students for Sustainability

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Over the last century, scientists have observed a significant increase in atmospheric concentrations of carbon dioxide ($CO_2$), methane ($CH_4$) and nitrous oxide ($N_2O$). As of December 2016, the average concentration of $CO_2$ has risen from 316 parts per million (ppm) in 1959 to 402 ppm as of December 2016. This increase in $CO_2$ can be attributed to the Industrial Revolution and the combustion of fossil fuels. Atmospheric carbon dioxide concentrations follow a cyclic pattern, but over the last century, we have experienced a significant deviation from the historic curve.

Scientists have observed increases in the gases in the Earth’s atmosphere, $CO_2$, $CH_4$, and $N_2O$. As of December 2016, the average concentration of $CO_2$ has risen from 316 parts per million (ppm) in 1959 to 402 ppm. This increase in $CO_2$ can be attributed to the Industrial Revolution and the combustion of fossil fuels. Atmospheric $CO_2$ concentrations follow a cyclic pattern, but over the last century, we have experienced a significant deviation from the historic curve.

Although $CO_2$ makes up about 64% of the greenhouse gases in the Earth’s atmosphere, $CH_4$ (17%) is 130 times more potent. Scientists have observed increases in the release of $CH_4$ into the atmosphere from livestock, landfills and natural gas. These gases trap heat in the atmosphere, like a greenhouse does. Scientists have also observed a rise in the global average temperature since the 1970s.

The term climate change is often used synonymously with “global warming”. There is a common misconception that these two terms mean the same thing, but they do not.

- **Climate Change**: Different regions on Earth are experiencing a long-term change in climate, some warmer and some cooler.
- **Global Warming**: Earth’s average surface temperature is rising. Although, not all regions are experiencing a rise temperature.

Scientists use historical and current data to predict future climate. Even if we stop emitting carbon today, there is a lag in temperature increases. It will take several decades before we can see a stabilization in temperature. As of 2015, we have experienced an average increase of 0.87°C. Oceans are also experiencing changes in temperature. Scientists have measured an average of +0.76°C in oceans, although there are some regions that have observed a cooling, such as the North Atlantic ocean to south of Greenland range.

**Effects**

As a result of these changes in the land and ocean temperatures, we are expected and in some cases already have experienced environmental and physical changes that have socioeconomic impacts:

- Changes in phenology (seasonal timing) that can impact agriculture and vegetation
- Changes in precipitation patterns—recent trends in heavy precipitation and flooding events in the Northeast US, but a decrease in the Southwest US
- More intense droughts and heat waves
- More intense hurricanes
- Sea level rise due to the melting land ice and expansion of sea water as it warms
- Warmer winters aiding in the overwintering of pests—increasing the invasion of nonnative species and infectious diseases
- Decreased access to fresh water
- Displacement of humans and animals due to habitat loss
- Decreased biological diversity

**Climate Change**

**Make a Positive Impact**

Take action to reduce your carbon footprint. The Nature Conservancy has an easy online tool to help you calculate your carbon footprint. Here are some ways you can reduce your impact:

**Energy:**
- Take advantage of the sun and naturally light up your room
- Plug devices into a power strip and switch off when you are finished using them
- Unplug your electronics and chargers when not in use as they suck up electricity
- Turn down the thermostat 1 degree in the winter and up 1 degree in the summer

**Waste Reduction:**
- Bring reusable bags when shopping
- Unsubscribe to unwanted mail
- Shop for gently used, name brand clothing at thrift stores and consignment shops
- Bring a reusable water bottle with you to fill up around campus for free

**Food:**
- Shop smart – plan your meals and use a grocery list to avoid impulse food purchases
- Shop Local! It boosts the local economy and travels less miles. UAlbany procures 30% of local food in the dining halls.
- Eat fruits and vegetables that are in season
- Reduce meat consumption

**Transportation:**
- Carpool or carshare (Zipcar) with friends
- Ride a bike to class or work
- Ride the UAlbany Shuttle or CDTA bus for free

**Be an advocate for climate action:**
- Contact your representatives
- VOTE for candidates that support environmental-friendly policies
- Think globally, act locally.